Narrowband Market Review: Draft Statement

Markets, market power determinations and remedies for wholesale call termination, wholesale call origination and wholesale narrowband access markets

Redacted [✂] for publication

DRAFT STATEMENT:

Notified to the European Commission: 26 October 2017

About this document

The 2017 Narrowband Market Review covers five wholesale markets that underpin the delivery of fixed voice telephone services. This review looks at the effectiveness of competition and what regulation, if any, is appropriate to ensure effective competition and further the interests of residential and business consumers.

In light of that review, we have decided to regulate BT and (in the Hull Area) KCOM in three wholesale access markets: wholesale analogue fixed telephone lines (the standard lines used by residential and business consumers) and two markets that enable the delivery of digital telephone services to businesses. We will also continue to regulate BT and KCOM's wholesale provision of calls over those lines. Given the market analysis undertaken in this review, we have decided to significantly reduce the wholesale regulation that we currently impose in these markets.

We have also decided to regulate wholesale fixed call termination, an arrangement where one telecoms provider charges another provider for terminating calls on its network. This regulation applies to all providers of calls to UK geographic numbers (numbers starting 01 and 02).

Contents

Section

1. Executive summary

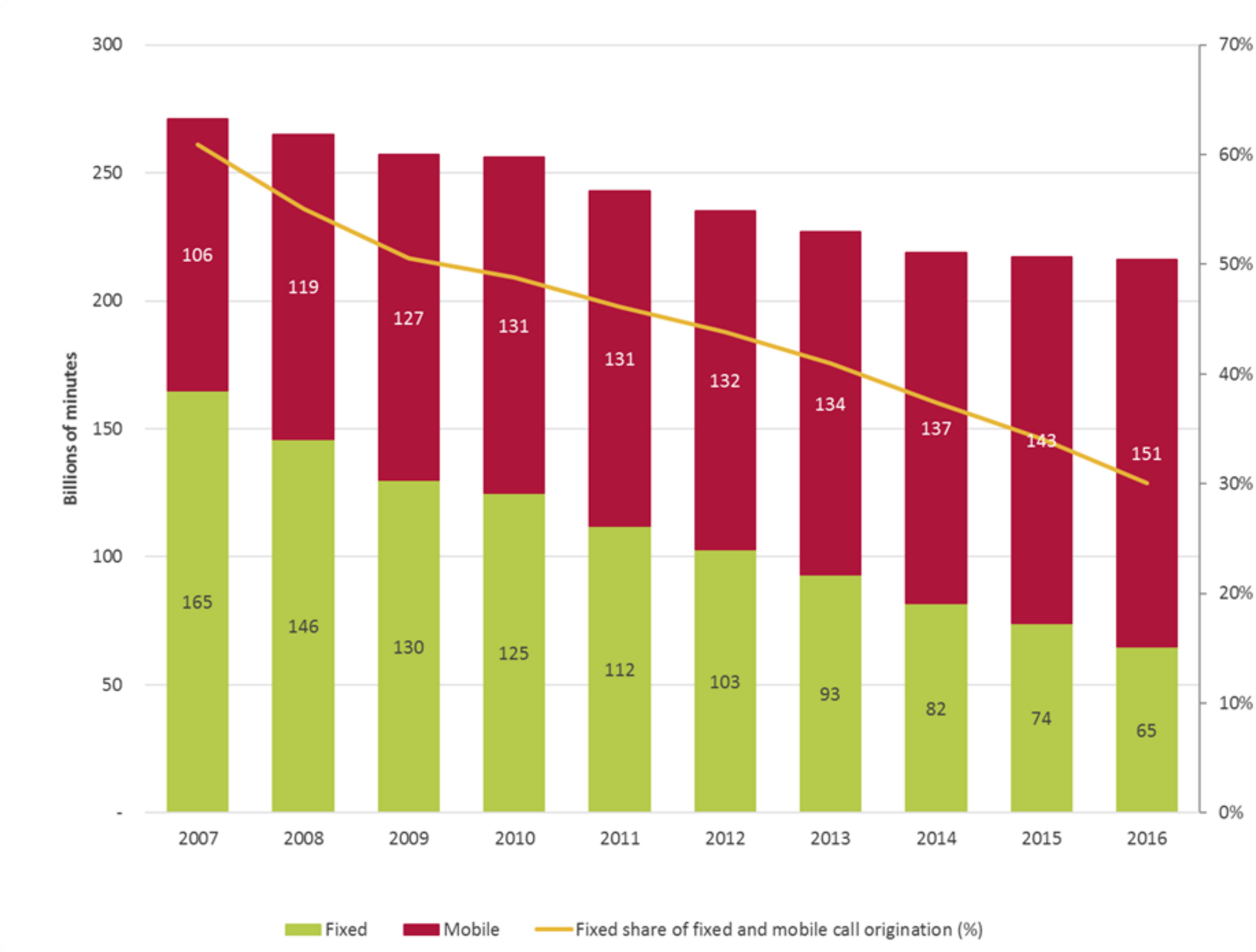
1.1 In our Strategic Review of Digital Communications (Strategic Review)[1], we highlighted how the telecommunications sector has changed since our first strategic review in 2005. Competition has delivered new voice services and increased choice to retail consumers: a large majority (88%) of households with a landline now have an accompanying fixed broadband connection, with an increasing proportion choosing to buy this as part of a bundle with telephony and often TV.[2]

1.2 These developments in large part reflect our regulation of the underlying wholesale markets, where the unbundling of BT's local network of copper lines (LLU) has promoted network competition to BT from providers including Sky and TalkTalk. This, alongside further roll-out of Virgin Media's cable network, has led to increased availability and choice of retail bundles that include voice and broadband.

1.3 Meanwhile, in the eyes of many consumers, fixed and mobile services are becoming more interchangeable. While most households and businesses in the UK still have fixed telephone lines, the relative importance of fixed voice calls has declined. We have seen continued growth in mobile calls (as shown in Figure 1.1 below). The use of internet-based (IP) voice services, particularly 'over-the-top' (OTT) services such as Skype and WhatsApp, is also increasing.[3]

[1] Ofcom, 2016. *Strategic Review of Digital Communications*.
[2] Ofcom. *Technology Tracker H1 2017.*
[3] In this context, OTT services enable consumers to make and receive voice calls on devices such as smartphones, tablets or PCs using an internet connection.

Figure 1.1: Fixed and mobile call origination volumes (billions of minutes)



Source: Ofcom Communications Market Reports.

1.4 Our Strategic Review said we would consider how far we can deregulate the traditional fixed voice markets, and replace narrowband regulation with targeted protection for those consumers who still need it.[4] We explained that in the longer term we anticipate traditional voice telephony being replaced by voice services carried over broadband. This will be supported by the wider availability of broadband-only lines.[5]

1.5 This statement sets out the conclusions of our review of wholesale markets for voice services and lines, and represents an important stage in delivering on this strategy.

1.6 In summary, given the market analysis undertaken in this review, we have decided to significantly reduce the wholesale regulation that we apply to BT in these markets. In particular, we are:

- removing cost-based charge controls for wholesale fixed telephone lines and calls made over those lines (known as wholesale call origination);

---

[4] Ofcom, 2016. *Strategic Review of Digital Communications*, paragraph 8.4.
[5] Ofcom, 2016. *Strategic Review of Digital Communications*, paragraph 8.7.

- removing regulation from the new supply of digital voice lines (known as ISDN), but retaining regulation to protect existing consumers of these services; and
- removing the 'no undue discrimination' regulation which currently restricts the terms upon which BT can sell wholesale call origination to other telecoms providers.

1.7 Regulation of voice services may no longer be necessary in future. In our next review, it may be possible for us to entirely remove wholesale regulation of lines and calls, if we find that competition is delivering for consumers or because other forms of protection are sufficient or appropriate. However, in this market review period, given BT's significant market power (SMP), regulation of BT's narrowband services is still needed to support competition for some groups of consumers and in areas where alternative wholesale infrastructure has had less of a competitive impact.

1.8 We are particularly concerned that competition is not working well for fixed voice-only consumers, who have been impacted by significant increases in retail line rental prices over recent years. To address our concerns about this group, we have conducted a separate review of retail standalone landline telephone services and published a consultation on proposals in relation to that market in February 2017.[6] We are announcing the outcome of that review alongside this statement – BT is reducing line rental prices for its voice-only customers by £7 per month and freezing the real prices of these lines and calls for the next three years, which addresses the concerns that we identified in our February consultation.

Our decisions

Background

1.9 The 2017 Narrowband Market Review (NMR) covers the following five markets:

- wholesale fixed analogue exchange lines;
- wholesale ISDN30;
- wholesale ISDN2
- wholesale call origination; and
- wholesale call termination.[7]

1.10 Wholesale fixed analogue exchange lines (WFAEL) are standard fixed lines used by residential and business consumers. ISDN is a digital exchange line service that supports telephony and some data services. ISDN30 is primarily used by larger businesses who require multiple lines, for example call centres. ISDN2 supports two voice or narrowband data channels (such data usage might include card payments or fax machines, for example). In this statement, we refer to the WFAEL, wholesale ISDN30 and wholesale ISDN2 markets collectively as the narrowband access markets.

[6] Ofcom, 2017. *The review of the market for standalone telephone services – provisional conclusions*.

[7] Narrowband refers to services (including telephony and fax) where the bandwidth available is limited by the network to that required to support telephony traffic. It is different to broadband, where services using much higher bandwidth can be supported.

1.11 Wholesale call origination is a complementary service to the provision of narrowband access lines, which enables consumers to make calls over those lines.

1.12 Wholesale call termination is a connection service provided by a fixed telecoms provider where their customer receives a call from a different network.

Narrowband access markets

Wholesale fixed analogue exchange lines

1.13 Residential and business users continue to show a strong attachment to fixed lines, and the number of fixed lines has remained relatively stable despite significant increases in retail line rental prices and falling call volumes.

1.14 Our analysis suggests that mobiles and voice services delivered over IP are not in the same market as fixed lines. We have therefore defined a market for WFAEL, which includes all copper lines, cable lines and voice-enabled fibre lines.

1.15 BT continues to hold SMP in this market in the UK excluding the Hull Area. Other telecoms providers continue to rely on access to BT's network to compete with BT. This is particularly important in the supply of lines to some consumer groups, namely: fixed voice-only residential consumers, those outside the footprint of competing networks (including Virgin Media's cable network and providers using LLU) and businesses using analogue lines (which have fewer competitive alternatives to BT, relative to residential consumers who buy voice services in a package with broadband).

1.16 However, we find BT's market power is less than at the time of the review we completed in 2014, because of increased competition from network based competitors such as TalkTalk, Sky and Virgin Media. We also recognise the growing use of mobile calling, although this has not translated to a reduced attachment to fixed lines by most consumers.

1.17 In the longer term, we anticipate that traditional fixed voice telephony will be replaced by voice services carried over broadband (facilitated by the ability to purchase broadband without traditional voice services) and/or services over mobile networks. In shaping our approach to remedies, we aim to provide incentives for competitors to BT to invest in infrastructure-based alternatives, which offer choices of voice services to consumers. We expect the availability of IP-based voice services to develop further during the forthcoming review period.

1.18 For the period of this review, BT will still be required to provide wholesale lines, to ensure that competing providers can effectively serve retail consumers, including those in segments where competition from other networks is weakest. However, in recognition of the growing alternatives to traditional fixed voice services, we conclude that BT's wholesale line rental (WLR) product should be subject to a fair and reasonable charging obligation, rather than a cost-based charge control.

1.19 Our Strategic Review also identified the importance of quality of service to consumers and considered that wholesale regulation of fixed lines should support this.[8] This is important not only for the quality of fixed voice services, but for the quality of broadband experience, because fixed lines are an important complement to the provision of broadband to most consumers. We are therefore retaining quality of service remedies for WLR, including quality of service standards and key performance indicators (KPIs).[9]

1.20 The regulatory obligations we are imposing on BT in the WFAEL market are summarised in Table 1.1 below.

Table 1.1: Summary of regulation on BT in WFAEL market (in the UK excluding the Hull Area)

	Regulatory obligations on BT
WFAEL	Provide network access on reasonable request
	Provide specific network access in the form of WLR
	Requirement not to unduly discriminate and EOI
	Publish a Reference Offer
	Notify changes to charges
	Accounting separation
	Cost accounting
	Quality of service: transparency and standards

Wholesale ISDN30 and ISDN2

1.21 Businesses are steadily migrating from legacy ISDN services to newer IP-based voice services. However, many SMEs and larger businesses continue to use ISDN. We are again defining separate wholesale ISDN30 and ISDN2 markets, and find that BT has SMP in each of these markets in the UK excluding the Hull Area.

1.22 For telecoms providers that serve businesses that do not already have ISDN, or those adding new lines, we consider that the availability of IP-based alternatives is likely to limit BT's market power. As a result, we are imposing targeted remedies for ISDN, restricting most regulation to existing ISDN lines only, in order to protect competition for existing users of these services. We are largely deregulating the provision and rental of new lines, after a transitional period of 12 months.

[8] Ofcom, 2016. *Strategic Review of Digital Communications*, Section 5.

[9] We are currently undertaking a comprehensive review of the quality of service standards and KPIs for WLR and LLU services as part of the Wholesale Local Access (WLA) market review. We have consulted on proposals that are aligned across these products, and which ensure consistency with our proposed new approach to incentivise Openreach to outperform the quality of service standards, in line with the strategic direction set out in the Strategic Review.

1.23 To address the risk of excessive pricing of existing ISDN lines, we are retaining charge controls on wholesale ISDN30 and ISDN2 services based on current charges. The regulatory obligations we are applying to BT in the ISDN markets are summarised in Table 1.2 below.

Table 1.2: Summary of regulation on BT in the ISDN markets (in the UK excluding the Hull Area)

	Regulatory obligations on BT
ISDN30 and ISDN2 (after 12-month transitional period)	**All lines** Accounting separation Cost accounting **Existing lines** Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Quality of service: transparency

Wholesale call origination

1.24 Wholesale call origination (WCO) enables calls to be made (rather than simply received) over telephone lines. However, the number of calls made over fixed lines has been falling for many years. Increasingly, residential and business consumers are using alternative options to make voice calls – mobile phones and newer IP-based voice services including OTT calls from smartphones.

1.25 Our review has found that while these alternative services increasingly act as a competitive constraint for some types of calls, and for some consumers, they are not yet in the same market as fixed line voice calls. We have therefore identified a separate market for WCO.

1.26 BT's market share of WCO is still close to 50%, but it has steadily fallen given competition from providers such as Sky and TalkTalk who offer fixed voice services, often with broadband and other services.[10] As well as a further decline in BT's share of fixed voice calls, we expect an increasing constraint from services outside the defined market – in particular, from mobiles and IP-based voice services – over the period of this review. We therefore conclude that, while BT continues to have SMP in the WCO market in the UK excluding the Hull Area, its market power is less than at the time of our 2013 review.

[10] As noted above, this reflects the success of our upstream regulation of LLU, and it adds to competition from Virgin Media's cable network in many parts of the country.

1.27 Given this development of fixed voice competition and the availability of alternative options for many consumers, we are imposing a lighter remedies package on BT in the WCO market. In particular, we have decided:

- to introduce a requirement for WCO charges to be fair and reasonable. Before now, we have set a cost-based charge control;
- to remove the no undue discrimination obligation on BT. This allows BT to better respond to competition and price more flexibly, as its wholesale competitors already can.

1.28 BT will still be required to provide network access on reasonable request to ensure that competing providers are able to offer call services to retail consumers. The regulatory obligations we are applying to BT in the WCO market are summarised in Table 1.3 below.

Table 1.3: Summary of regulation on BT in the WCO market (in the UK excluding the Hull Area)

	Regulatory obligations on BT
WCO	Provide network access on reasonable request Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting

Hull Area

1.29 We have defined three wholesale narrowband access markets and a market for WCO in the Hull Area, and found that KCOM has SMP in these markets.

1.30 There is no effective competition from LLU or cable-based operators in the Hull Area – competition in the retail fixed voice market largely relies on resellers having access to KCOM's wholesale products.

1.31 We are requiring KCOM to provide network access on fair and reasonable terms (including charges) in the WCO and WFAEL markets. We are removing the no undue discrimination obligation on KCOM in the WCO market, given increased competitive constraints from outside the defined market (most notably from mobiles).

1.32 For the wholesale ISDN30 and ISDN2 markets, as in the rest of the UK, we are targeting our remedies, focusing regulation on existing lines and largely deregulating new lines after a transitional period of 12 months.

1.33 The regulatory obligations on KCOM in each of these markets are summarised in Table 1.4 below.

Table 1.4: Summary of regulation on KCOM in the narrowband access and WCO markets (in the Hull Area)

	Regulatory obligations on KCOM
WFAEL	Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting
ISDN30 and ISDN2 (after 12-month transitional period)	**All lines** Accounting separation Cost accounting **Existing lines** Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges
WCO	Provide network access on reasonable request Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting

Wholesale call termination

1.34 Wholesale call termination (WCT) is a wholesale service for the termination of voice calls to UK geographic numbers (numbers starting 01 and 02). It is an important market in supporting effective competition between telecoms providers because every call to a different network will incur a termination rate.

1.35 We find that all 285 telecoms providers (including BT and KCOM) that we have identified in this review as terminating calls on UK geographic numbers have SMP in respect of those numbers, because the caller (or more specifically, the caller's telecoms provider) cannot choose which provider to connect to when making a call.

1.36 The regulatory obligations that we are applying to BT and to other providers with SMP in the WCT markets are summarised in Table 1.5 below. Additional obligations on BT are necessary due to the high volume of consumers that it serves compared to other telecoms providers.

Table 1.5: Summary of regulation on BT and other providers with SMP in the WCT markets

	Regulatory obligations on BT	Regulatory obligations on all other providers with SMP (including KCOM)
WCT	Charge control (including price notification obligation) Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Accounting separation Cost accounting	Charge control (including price notification obligation) Provide network access on reasonable request

Charge control

1.37 We are implementing a more consistent and transparent approach to the regulation of termination rates, including applying a charge control for WCT on all providers. This replaces our previous approach where only BT was subject to a charge control, while other providers with SMP were subject to a fair and reasonable charges requirement, with some potential for variation from the BT charge controlled rate.

1.38 We are also simplifying the charge control arrangements by introducing a single flat rate cap, rather than a control based on the average of rates charged at different times. The benefits of time of day pricing are now much reduced in termination markets and this represents a simple, transparent and proportionate way of regulating termination rates.[11]

1.39 The WCT charge control is based on long-run incremental cost (LRIC).[12] We are reducing the current nominal average charge of 0.0346 pence per minute (ppm) down to 0.0303ppm in 2018/19 (in real 2016/17 prices) and thereafter by a real reduction of around 6% per year. This amounts to an estimated overall reduction of around £6m over the three years of the control, or about 6p per year per line on average.[13] The cap based on our ‘bottom-up’ cost model is set out in Table 1.6 below:

---

[11] Mobile termination rates have been capped by reference to a single flat rate since May 2015: see Ofcom, 2015. *Mobile call termination market review 2015-2018*.

[12] LRIC are those costs which are caused by the provision of a defined increment or service – i.e. those costs that would not be incurred if that service was no longer provided, while all other services and products are still provided.

[13] This is based on assuming 37.0bn minutes of net incoming traffic per year based on data from 2016 (33.7bn minutes of mobile-to-fixed traffic and ~3.3bn minutes of incoming international traffic) and 33.5m fixed lines per year (including ISDN channels). Source: rates are taken from the Ofcom termination cost model published with this statement; volume data is taken from the Ofcom quarterly telecoms data tables.

Table 1.6: Termination rate cap for all providers (ppm)

	2017/18[14] Actual Nominal	2018/19 Forecast Real	2019/20 Forecast Real	2020/21 Forecast Real
LRIC cap	0.0346	0.0303	0.0286	0.0269

Note: real (CPI-adjusted) figures are expressed in 2016/17 prices.

Interconnect circuits

1.40 When two telecoms providers pass voice calls between their networks, interconnect circuits provide the physical infrastructure to allow calls to be routed between them.

1.41 We are regulating BT's interconnect circuits in the UK excluding the Hull Area to address concerns arising from its SMP in WCO and WCT. We have concluded that we should continue to regulate BT's interconnection circuits based on traditional Time Division Multiplex (TDM) technology. In addition, we expect BT to engage with the wider industry as it commences its migration to IP-based voice services during the review period.

1.42 We are applying remedies to BT's provision of interconnect circuits, including a charge control, as set out in Table 1.7. For the charge control, we are holding charges for a basket of TDM interconnection services at their current level in real terms (i.e. a CPI+0% cap) effective from 1 December 2017.

1.43 We are also regulating KCOM's interconnect circuits in the Hull Area, in order to address its SMP in WCO, as set out in Table 1.7. This includes maintaining a fair and reasonable charging requirement in relation to the provision of these circuits.

Table 1.7: Summary of regulation on BT and KCOM interconnect circuits

	Regulatory obligations on BT	Regulatory obligations on KCOM
Interconnection	Charge control Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting Quality of service: transparency	Provide network access on reasonable request Publish a Reference Offer Notify changes to charges

[14] The WCT charge control will apply to BT from 1 December 2017 and to all other providers with SMP in WCT from 1 February 2018. We are setting a charge control until 31 March 2021.

Next steps

1.44 Under Article 7 of the Framework Directive Ofcom is required, following completion of the domestic consultation process, to notify the European Commission, BEREC, and other national regulatory authorities, of our final proposals for our market analysis and remedies. There is a one-month period for these organisations to provide their comments to Ofcom. Subject to any comments we receive, we therefore intend to publish our final Statement by the end of November 2017.

2. Background

2.1 In this section we set out the scope of the 2017 Narrowband Market Review (2017 NMR) and our response to stakeholder comments on the scope of the review. We also provide an overview of the telephony services considered in the review.

2.2 We explain the consultations that we have conducted to inform our review and our approach to the period between the expiry of the previous NMR charge controls and the start of the new review period.

2.3 Finally, we summarise the process we have adopted in defining the markets in this review and the legal framework relating to the market review process.

Scope of this review

2.4 Under the European common regulatory framework for electronic communications, Ofcom is required to carry out periodic reviews of electronic communications markets in the UK. In the 2017 NMR, we have reviewed the level of competition, and where appropriate, the regulation that should apply in the following markets:

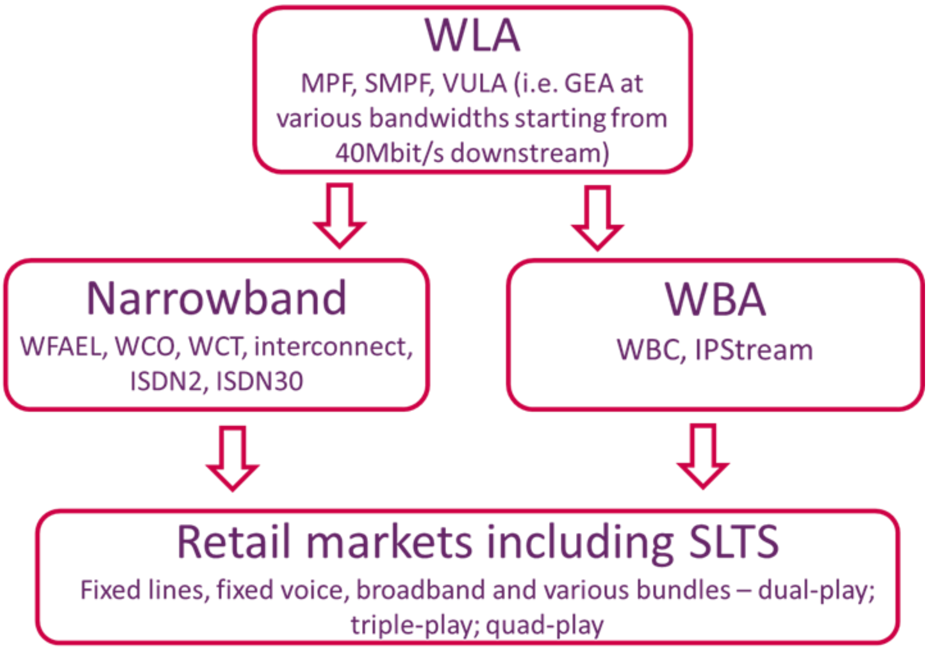
- wholesale fixed analogue exchange lines (WFAEL);
- wholesale ISDN2 (ISDN2);
- wholesale ISDN30 (ISDN30);
- wholesale call origination (WCO); and
- wholesale call termination (WCT).

2.5 This statement sets out our findings on the above five wholesale markets, which underpin the delivery of retail fixed voice telephony in the UK. It also sets out our approach to the regulation of interconnection, which supports WCO and WCT.

2.6 We are also carrying out reviews of the Wholesale Local Access (WLA) and Wholesale Broadband Access (WBA) markets, on which we expect separate statements to follow in the first quarter of 2018. We have also conducted a review of retail standalone landline telephony services (SLTS market review) and we are publishing the outcome of that review alongside this statement.

2.7 Figure 2.1 below shows the links between the different market reviews. The markets covered by the NMR and WBA market reviews are intermediate wholesale markets. They sit downstream of the WLA market, but upstream of the corresponding retail markets.

Figure 2.1: Links between the fixed market reviews



Source: Ofcom.

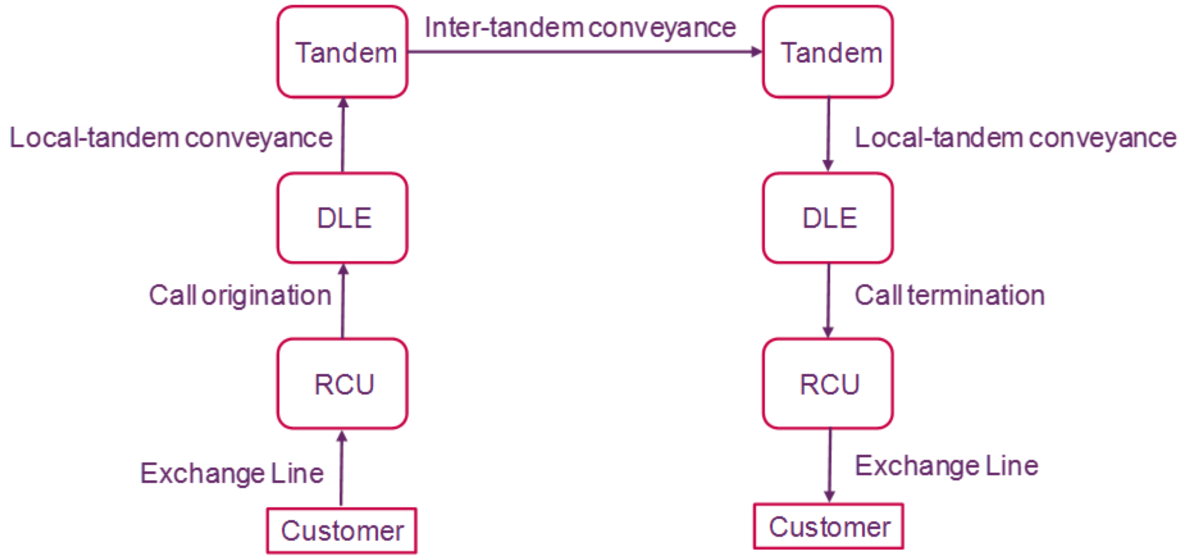
Services considered in this review

2.8 Retail voice telephony is provided using a number of wholesale inputs:

- WFAEL: a narrowband analogue access connection between a customer's premises and a local exchange;
- ISDN2: a digital narrowband access service for businesses which provides two 'channels' at 64 kbit/s each;
- ISDN30: a digital narrowband access service supporting up to 30 64 kbit/s channels, which is used most commonly to provide multiple telephone lines to larger businesses;
- WCO: the wholesale service that enables calls over a narrowband access line (WFAEL, ISDN2 or ISDN30);
- WCT: the wholesale service that allows the termination of calls over a narrowband access line;
- interconnect circuits, which link two different telecoms providers' networks so calls can pass between them; and
- unregulated transit and conveyance services, which connect calls between customers that are geographically dispersed.

2.9 Figure 2.2 below shows the wholesale components that may be used to provide a retail voice call on BT's network.

Figure 2.2: BT's voice network architecture



Source: Ofcom.[15]

2.10 An RCU (remote concentrator unit) is the point in a traditional voice network where the customer's access line terminates at a "line card", providing the customer with access to the voice network. BT's network includes more than 600 Digital Local Exchanges (DLEs). It also has a number of tandem exchanges.

2.11 BT's voice network uses Time Division Multiplex (TDM) technology. Some other telecoms providers have also built TDM networks (for example, Virgin Media uses a TDM network to provide voice calls, alongside the cable network it uses to provide TV and broadband).

2.12 Other telecoms providers have built call conveyance networks based on Internet Protocol (IP) technology. This is relevant for our consideration of interconnect services, as providers need interconnect circuits that can pass traffic from TDM networks to IP networks and vice versa.

2.13 IP can also be used in the access network to provide services that enable consumers to make voice calls over a (fixed or mobile) broadband connection – voice over IP (VoIP), also known as voice over broadband.

2.14 We consider that VoIP services can be characterized as including two main types:

- **Managed VoIP**: the Internet Service Provider (ISP) that provides a customer's broadband service also provides a voice service over the broadband connection. The ISP controls the provision and quality of this voice service.
- **Unmanaged VoIP**: the ISP that provides the broadband connection does not provide the VoIP service, and there is no guarantee the broadband provider will prioritise this VoIP traffic, so quality of service is likely to be more variable than a managed service.

[15] MPF (metallic path facility) and SMPF (shared metallic path facility) are LLU services that BT is required to provide in the WLA market. GEA (generic Ethernet access) is a range of services provided by BT under the VULA remedy in the WLA market. WBC (Wholesale Broadband Connect) is a service provided by BT in the WBA market.

The VoIP service provided is accessed via the public Internet. Calls between customers subscribing to the service are likely to be free. Subscribers may also be able to make and receive calls to and from the public switched telephone network (PSTN) but these calls may be charged for. 'Over-the-top' (OTT) VoIP services such as WhatsApp and Skype are examples of unmanaged VoIP.

2.15 To use VoIP, consumers may need to install a piece of equipment called an analogue telephony adaptor (ATA) to allow standard analogue telephone equipment to be used with the service. The ATA carries out the conversion between the analogue signals of the telephone and the IP carried over the broadband connection. However, this will not always be the case. Some VoIP services may integrate conversion to VoIP in the handset so that separate analogue to IP conversion is not required, or the VoIP service could be provided through other customer premises equipment (such as an application running on a PC or smartphone).

2.16 In future, we expect a greater shift to voice services being provided over IP. Currently, wholesale superfast broadband (Generic Ethernet Access, GEA) is typically provided in combination with a voice service provided over an analogue exchange line. However, BT is planning to provide a new wholesale product (single order GEA or SOGEA) that can be ordered on a freestanding basis – without a wholesale line rental (WLR) or metallic path facility (MPF) voice connection. This would mean any voice service is supplied using VoIP.

2.17 VoIP services provided to business include SIP trunking (where the business maintains equipment such as an IP-PBX and connects to the network via IP, with the connection allowing for a maximum number of simultaneous calls or SIP trunks) and 'hosted VoIP' (where the features that would typically reside on an IP-PBX are instead provided within the telecoms provider's network so that the business customer of that provider needs to maintain less equipment).

2.18 In this review we have also considered business services based on ISDN (Integrated Services Digital Network). ISDN30 is a narrowband access service designed to cater for larger business sites. ISDN30 supports up to 30 'channels' of 64 kbit/s each and is most commonly used to provide multiple telephone lines to private branch exchanges (PBXs). ISDN2 is a narrowband access service that provides two channels of 64 kbit/s each, and is used mainly for telephony and data services.

Call for inputs and scope change

2.19 On 2 April 2015, we published a call for inputs (2015 CFI) on our review of the WCO and WCT markets.[16] We sought views on the scope of the review, relevant developments since the last review (completed in September 2013) that may affect market definition and SMP

[16] Ofcom, 2015. *Review of Fixed Call Origination and Termination Markets 2016-19 Call for Inputs*. https://www.ofcom.org.uk/__data/assets/pdf_file/0028/84592/review-fixed-call-termination2016-19.pdf.

analysis, and the effectiveness and appropriateness of existing remedies in these two markets, including regulation of interconnection circuits. We received 12 responses.[17]

2.20 In summer 2015 we decided to extend the scope of the NMR to include the WFAEL, ISDN30 and ISDN2 markets (together referred to as the narrowband access markets). We did this so that we could take account in our analysis of the relationship between narrowband access and WCO. We notified stakeholders of this decision, which prompted a number of further submissions.

2.21 We responded to the 2015 CFI responses and the further submissions in our main NMR Consultation (2016 NMR Consultation).

Consultations

2.22 On 1 December 2016, we published our 2016 NMR Consultation, to gather stakeholders' views on the work we had undertaken in assessing the state of competition in the narrowband markets in the UK and our proposals for regulating these markets in the next NMR review period.[18]

2.23 On 31 March 2017, we published a consultation (March 2017 QoS Consultation)[19] setting out preliminary proposals for regulating the quality of Openreach's various access line services (both LLU and WLR) as part of our separate 2017 WLA review.[20]

2.24 On 6 July 2017, we published a further consultation (July 2017 NMR Further Consultation) on revised price notification requirements for all telecoms providers that offer WCT. In addition, we proposed clarifications to the regulation of interconnection provided by BT when involving next generation voice networks (which rely on IP technology).[21]

2.25 On 22 August 2017, we published another consultation (August 2017 NMR Further Consultation). This set out a revised list of providers of WCT that we propose have SMP in WCT. In addition, we proposed to include an additional ISDN30 service (Direct Dial Inward Planning Service) in the ISDN30 charge control.[22]

---

[17] Non-confidential stakeholder responses can be found at: https://www.ofcom.org.uk/consultations-and-statements/category-2/review-fixed-call-origination-termination-markets.

[18] Ofcom, 2016. *Narrowband Market Review – Consultation on the proposed markets, market power determinations and remedies for wholesale call termination, wholesale call origination and wholesale narrowband access markets*. https://www.ofcom.org.uk/__data/assets/pdf_file/0016/95011/Narrowband-Market-Review.pdf.

[19] As explained in Section 10, we subsequently published a further consultation on quality of service regulation on 14 September 2017, revising some of our proposals for QoS standards in the WFAEL market. These proposals do not affect the decisions we are making in this review.

[20] Ofcom, 2017. *Wholesale Local Access Market Review – Volume 1: Consultation on the proposed market, market power determinations and remedies.* https://www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-access-market-review.

[21] Ofcom, 2017. *Narrowband Market Review Further Consultation - Proposals on price notification remedies in the WCT markets and regulation of BT's interconnect circuits.* https://www.ofcom.org.uk/consultations-and-statements/category-3/further-consultation-narrowband-market-review.

[22] Ofcom, 2017. *Narrowband Market Review Further Consultation - Proposed list of wholesale call termination (WCT) providers with significant market power and amendment to wholesale ISDN30 charge control legal instrument.* https://www.ofcom.org.uk/__data/assets/pdf_file/0021/105915/wct-providers-isdn30.pdf.

2.26 These consultations, associated documents, clarifications and non-confidential stakeholder responses can be found on our website.[23]

2.27 We discuss the responses to the 2016 NMR Consultation, the March 2017 QoS Consultation, and the July and August 2017 NMR Further Consultations, at appropriate points throughout this document.

2017 SLTS market review

2.28 In the 2017 NMR, we have analysed relevant retail services as part of identifying the potential competitive constraints acting (indirectly) on the wholesale markets under review. We do not see wholesale regulation as an end in itself, but as a means to deliver effective downstream (and ultimately retail) competition.

2.29 However, wholesale regulation may not always be able to ensure that all consumers are able to fully benefit from competition. Retail prices for standalone landline telephony services have increased in a way that suggests that consumers of these services have not benefited from competition, as compared to purchasers of bundled services.

2.30 We therefore conducted a review of retail standalone landline telephony services and in February 2017 we published our 2017 Standalone Landline Consultation, in which we considered what, if any regulatory measures, we needed to take above and beyond wholesale regulation to protect consumers of such services. We are publishing the outcome of the retail SLTS market review alongside this statement - BT is reducing line rental prices for its voice-only customers by £7 per month and freezing the real prices of these lines and calls for the next three years.[24] This addresses the concerns that we identified in our February consultation.

Charge control period

2.31 When we published the 2016 NMR Consultation, we anticipated concluding our review in time for any regulation, including our proposed charge controls, to come into effect on 1 October 2017. However, we subsequently launched the SLTS market review and, separately, identified further areas in the review of wholesale markets requiring further consultation. This has resulted in a short delay to the publication of our statement for the NMR.

2.32 We have therefore considered whether we should impose NMR charge controls (for WCT, the Internet Services Basket (ISB) and ISDN) for a period shorter than three years, or for a period of a few months longer than three years.[25] We consider that it is helpful for stakeholders to align the NMR charge controls with financial years and other wholesale

---

[23] https://www.ofcom.org.uk/consultations-and-statements/category-1/narrowband-market-review.

[24] https://www.ofcom.org.uk/consultations-and-statements/category-1/review-of-landline-telephone-services.

[25] We also considered imposing the NMR charge controls for a period of exactly three years from the publication of the final statement but decided it is preferable to align them with financial years.

market reviews. For example, BT said in its response to the 2016 NMR Consultation that Ofcom should align the charge control periods for ISDN30 and ISDN2 with financial years.[26] It said that this would allow it to co-ordinate its pricing for ISDN products with products related to the charge control which we might impose as part of the WLA market review.[27]

2.33 We have concluded that it is preferable to align the NMR charge controls with financial years. Hence, the next charge control period will start on 1 December 2017 and will finish on 31 March 2021.

Stakeholder comments on the scope of the review

2.34 Some stakeholders made comments about specific services that they felt we should consider within the scope of the review, as discussed in the following paragraphs.

Previously regulated transit services

2.35 [✂] said we should take account of BT increasing its prices for single tandem handover after our deregulation of conveyance in previous NMR reviews. [✂] said that BT has now added a 'pence per call' element to its charges.[28]

2.36 We deregulated different transit and conveyance services in previous fixed narrowband market reviews in 2005, 2009 and 2013.[29] Transit and conveyance services are not within the scope of the current review and we do not consider that it is appropriate to extend the scope of this review to include them at this time. Consequently, we have not undertaken a detailed analysis of BT's price changes.

Other wholesale voice services

2.37 UKCTA and Vodafone raised concerns about BT's control of services including emergency call handling, text relay and payphone access charges.[30] UKCTA said we should put a safeguard cap on these "monopoly essential services" and Vodafone said that BT has been able to push through large price rises without any competitive restraint.[31] UKCTA and Vodafone noted that Ofcom has declined to accept two disputes relating to payphone access charges.

2.38 This NMR is assessing whether or not to apply conditions to telecoms providers with SMP in certain narrowband markets that were previously subject to SMP regulation. We have

[26] Openreach response to 2016 NMR Consultation, paragraphs 75-76.

[27] In the March 2017 WLA Consultation we proposed to impose a charge control for MPF and align it with financial years. Please see Ofcom, 2017*, Wholesale Local Access Market Review – Consultation on the proposed market, market power determinations and remedies*, Table 1.3 and paragraphs 1.24 – 1.31.

[28] [✂].

[29] Ofcom, 2013. *Review of the Fixed narrowband services markets, Statement on the proposed markets, market power determinations and remedies*, https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.

[30] UKCTA response to 2016 NMR Consultation, paragraphs 30-32; Vodafone response to 2016 NMR Consultation, part 1, paragraph 21, and part 2, page 19, and part 2, paragraphs A3.7 – A3.10.

[31] For example, for emergency call handling in November 2016.

not looked at competition conditions to define the markets for the services that UKCTA and Vodafone referred to and nor do we consider it a priority to do so at this time.

Porting charges

2.39 Vodafone said we should calculate the rate for average porting conveyancing charges (APCCs) within the scope of this review.[32] Vodafone noted that both APCCs and the Donor Conveyance Charge (DCC) are governed by General Condition 18, and that we calculate the Donor Conveyance Charge, together with Mobile Termination Rates (MTRs), when we review the Mobile Call Termination (MCT) markets. Vodafone said telecoms providers have invested significant resources to calculate the current APCC rate, and to feed into the disputes over APCC rates with their subsequent appeal to the Competition Appeal Tribunal. Vodafone said it would be practical for Ofcom to use the cost model developed in this dispute to set the rate for APCCs.

2.40 We do not consider it appropriate to expand the scope of this review to include APCCs, and note that there are good reasons to link the calculation of MTRs and the DCC which are not present for fixed termination rates (FTRs) and APCCs:

i) APCCs are provider-specific because the cost of providing onward routing depends on the interconnection arrangements between the telecoms providers in question. This means that the calculation of APCCs requires provider-specific routing information and it would not be appropriate to set an industry-wide APCC. This is not the case for the DCC, as the interconnection arrangements between mobile providers involve fewer switching stages and so it is more straightforward to draw on the cost model for an average efficient national mobile provider.

ii) Our 2014 Porting Charges Guidance explained that porting conveyance costs should be set on the basis of the technology used to provide the service.[33] In the case of fixed networks we explained that both TDM (based on depreciated asset values) and IP networks could be an efficient choice, and that it would be reasonable for fixed providers to charge for porting conveyance based on the costs of the technology of their own network. As explained in Section 17 we remain of the view that operating a depreciated TDM network remains efficient for the present time.

2.41 We also believe that the 2015 APCC Final Determination set out a clear and robust calculation method for APCCs, which has since been upheld by the CAT.[34] This should facilitate the resolution of any future disputes.

[32] Vodafone response to 2016 NMR Consultation, part 1, paragraphs 16-20.
[33] https://www.ofcom.org.uk/__data/assets/pdf_file/0026/79424/statement_on_porting_charges_under_gc18.pdf.
[34] See http://webarchive.nationalarchives.gov.uk/20160704053828/http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01161/.

Contractual mechanisms

2.42 Two stakeholders expressed concerns about contractual matters relating to BT's Standard Interconnect Agreement (SIA), Carrier Price List (CPL) and Element Based Charging (EBC) matrix.[35]

2.43 UKCTA and Vodafone said the SIA has not been updated to reflect our deregulation of certain narrowband markets in previous reviews. Vodafone said BT can impose price changes to the SIA unilaterally but that other telecoms providers must obtain BT's agreement for pricing changes. Similarly, Vodafone and UKCTA said that telecoms providers must obtain BT's agreement for changing pricing to their own services in the CPL. Vodafone gave an example of where it has lost revenue while waiting for BT's agreement for changes to the pricing of its own service.

2.44 Vodafone also raised concerns about BT's ownership of billing and product manuals linked to the SIA, including the EBC matrix, where it said BT has altered pricing to encourage telecoms providers to use its IP Exchange service.

2.45 We do not consider that contractual mechanisms should be part of the scope of our review. The SIA is a commercial agreement and it is open for telecoms providers to agree to amend it to reflect changed conditions, particularly in markets that have been deregulated. There are dispute resolution processes within the SIA and we understand that there are industry forums where changes to these processes can be made. Therefore, providers should use these commercial mechanisms in the first instance. Further, in appropriate cases and in line with the statutory framework for complaints and dispute handling set out in the Act[36], Ofcom may have a role where these commercial mechanisms have been fully exhausted without the disagreement being resolved.

Retail markets

2.46 In a response to the 2016 NMR Consultation, a respondent said we should expand the scope of our review to include remedies in the retail market which address the increases in BT's retail line rental prices.[37] In particular, the respondent commented that split purchasers[38] and customers who purchase a bundled service principally for broadband access are negatively affected by these price increases. The respondent said we should apply a charge control on retail fixed lines (without analogue voice services) as this will reduce costs for consumers, allow for more retail competition from smaller ISPs, and accelerate the ability of consumers to purchase broadband without voice.

---

[35] UKCTA response to 2016 NMR Consultation, paragraphs 29-32; Vodafone response to 2016 NMR Consultation, part 2, paragraphs A3.1-A3.6.

[36] Sections 181-191 of the Act set out Ofcom's duties and powers in resolving regulatory disputes. Any dispute referral would need be carefully considered in line with our published Dispute Resolution Guidelines which are available at: https://www.ofcom.org.uk/__data/assets/pdf_file/0020/71624/guidelines.pdf.

[37] An individual [✂] response to 2016 NMR Consultation, pages 1-3.

[38] Consumers who buy both landline and broadband services but on a standalone basis outside of a bundle.

2.47 In this review we consider wholesale inputs to retail voice telephony. We have addressed concerns about the retail prices of standalone landline telephony services in our SLTS market review, as set out above. In relation to the availability of broadband-only services, we noted in our March 2017 WLA Consultation that Openreach is in the process of developing a VULA[39] variant known as single order GEA (SOGEA), which will enable providers to purchase VULA without also purchasing WLR or MPF. SOGEA will support the development of retail broadband-only services by competing providers.

Our conclusions on the scope of the review

2.48 We set out above that we do not consider it appropriate to expand the scope of the review to include transit and conveyance markets or APCCs, or to include contractual matters relating to BT's SIA, or services such as emergency call handling, text relay and payphone access charges.

2.49 The focus of the 2017 NMR has been on delivering effective competition in downstream voice markets that use WFAEL, ISDN30, ISDN2, WCO and WCT (and the associated interconnection services). We recognise that there are a number of links with other wholesale markets, including those described above, such as the WLA market and retail markets. Where these other markets are important to the analysis, we take this into account. However, this statement does not discuss what, if any, regulation of those other markets might be appropriate.

Timetable of NMR

2.50 In February 2016 we published the initial conclusions of our strategic review of the UK's digital communications (Strategic Review).[40] We explain how we have taken account of the Strategic Review in Section 7.

2.51 The expansion of the markets within scope of this review (explained above), coupled with the need to take account of the conclusions of our Strategic Review, necessitated a change of timetable for the NMR and the associated regulation of charges as we explain below.

Charge controls in the lacuna periods

2.52 The charge controls we imposed in 2013 for WCO, WCT and the ISB expired on 30 September 2016. The charge controls for the WFAEL, ISDN30 and ISDN2 markets expired on 31 March 2017. The delay to our 2016 NMR Consultation and statement therefore led to a lacuna between the end of the preceding charge controls and the date of implementation of new controls.

---

[39] VULA is an access service used to deliver superfast broadband over BT's FTTC and FTTP networks.
[40] Ofcom, 2016. *Making Communications Work for Everyone – Initial Conclusions from the Strategic Review of Digital Communications*. https://www.ofcom.org.uk/__data/assets/pdf_file/0016/50416/dcr-statement.pdf.

2.53 In August 2016 we published letters between us and Openreach and BT Wholesale & Ventures which set out BT's voluntary approach to the pricing of previously charge controlled narrowband services during the lacuna periods.[41] In addition, we published supplementary guidance on the pricing of WCT by other telecoms providers with SMP during the lacuna periods.[42]

2.54 In our 2016 NMR Consultation, we considered whether, in light of our proposals, it was necessary for us to exercise our powers to impose pricing obligations in the interim period leading up to the conclusion of this market review. We proposed that the commitments BT made on the pricing of charges during the lacuna period would not adversely affect consumers of narrowband services. We therefore did not propose any further action to regulate prices in these markets during the lacuna period.

2.55 We have not received any stakeholder comments on our proposed approach, and so did not take further action to regulate prices in the narrowband markets during the lacuna period.

Market research

2.56 As part of this review, we commissioned a number of surveys of residential and business customers. In 2015, we commissioned two surveys of residential and small business customers, and one survey of businesses using ISDN and/or IP-based alternatives, and published them alongside our 2016 NMR Consultation. In 2017, we ran further similar[43] surveys which we are publishing alongside our statement:

- 2017 NMR Small Business survey
- 2017 NMR Residential survey
- 2017 NMR ISDN survey

Regulatory framework

2.57 The regulatory framework has its basis in five EU Directives, each of which has been implemented into national legislation. It imposes a number of obligations on relevant national regulatory authorities (NRAs), such as Ofcom. One of these obligations is to carry out market reviews. We set out the applicable regulatory framework and the market analysis framework in more detail in Annexes 6 and 7. In this section, we have set out, in summary, what the market review process involves.

[41] BT's voluntary commitments expire on the date of implementation of new controls or 31 December 2017, whichever is sooner.
[42] We published these letters and our supplementary guidance on our website at https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/narrowband-broadband-fixed.
[43] Some revisions to the questions in the 2017 surveys mean the results are not always directly comparable with the results of the 2015 surveys.

Market review process

2.58 The review is carried out in three stages:

- we identify and define the relevant markets;
- we assess whether the markets are effectively competitive, which involves assessing whether any operator has SMP in any of the relevant markets; and
- where we find SMP, we assess the appropriate remedies, based on the nature of the competition problems identified in the relevant markets.

2.59 In carrying out the review, we are required to define relevant markets appropriate to national circumstances. In so doing, we are also required to take due account of the European Commission’s (EC) Recommendation on relevant product and service markets (the 2014 EC Recommendation) and SMP Guidelines. More broadly, in carrying out the review (including assessing appropriate remedies), we are required to take utmost account of all applicable opinions, common positions, recommendations, guidelines, advice or regulatory best practice adopted by BEREC.

The 2014 EC Recommendation

2.60 The 2014 EC Recommendation[44], which replaced the 2007 EC Recommendation, sets out those product and service markets which, at a European level, the Commission has identified as being susceptible to ex ante regulation. These markets are identified on the basis of the cumulative application of three criteria:

- the presence of high and non-transitory barriers to entry;
- a market structure which does not tend towards effective competition within the relevant time horizon; and
- the insufficiency of competition law alone to adequately address the market failure(s) concerned.

2.61 The 2014 EC Recommendation contains a different (and shorter) list of markets to the 2007 EC Recommendation, which was in place at the time of the 2013 NMR. Of the five markets we consider as part of this review, the Commission continues to regard the market for wholesale fixed call termination as warranting ex ante regulation at a European level.

2.62 We, as the UK NRA, in accordance with competition law and taking due account of the 2014 EC Recommendation, have defined the relevant markets appropriate to our national circumstances. In doing so, to the extent necessary, we have applied the three criteria set out above (for all markets except WCT, which is Market 1 in the 2014 EC Recommendation). We refer to this analysis as the three-criteria test.

[44] *Commission Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2014/710/EU).* http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014H0710&from=EN.

The SMP guidelines

2.63 The SMP Guidelines include guidance on market definition, assessment of SMP and SMP designation.[45] In the relevant chapters below in this statement we set out how we have taken the SMP guidelines into account in reaching our decisions.

Forward look

2.64 Market reviews look ahead to how competitive conditions may change in future. For this review, we have taken a forward look from the publication of the final statement until 31 March 2021, reflecting the characteristics of the retail and wholesale markets and the factors likely to influence their competitive development. The forward look is just over three years for this review. We will conduct the next review of the markets covered by this review in accordance with our obligations under Article 16 of the Framework Directive.

Relevant legal tests and statutory duties

2.65 Where we decide that a market is not effectively competitive, we identify the undertaking(s) with SMP in that market and decide what we consider to be appropriate SMP obligations. When imposing a specific SMP obligation, we need to demonstrate that the obligation in question is 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.[46]

2.66 Specifically, we explain why we consider each of the conditions we are imposing satisfies the test set out in section 47 of the Communications Act 2003 (the Act)[47], namely that the 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 is intended to be achieved.

2.67 Additional legal requirements also need to be satisfied depending on the SMP obligation in question. For example, when we impose a price control, we must consider whether there is a relevant risk of adverse effects arising from price distortion; and the appropriateness of the control for the purpose of promoting efficiency; sustainable competition; and conferring the greatest possible benefits on end-users of public electronic communications

---

[45] *Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C 165/03)*. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52002XC0711(02).
[46] *Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services, as amended by Directive 2009/140/EC and Regulation 544/2009*. http://ec.europa.eu/information_society/policy/ecomm/doc/140framework.pdf.
[47] The Communications Act 2003 as amended. http://www.legislation.gov.uk/ukpga/1998/41/contents.

services; and we must take account of the extent of the investment in the matters to which the condition relates of the person to whom it is to apply.

Ofcom's statutory duties under sections 3, 4 and 4A of the Act, and under Article 3 of the BEREC Regulation

2.68 We also explain why we consider the performance of our general duties under section 3 of the Act would be secured or furthered by our regulatory intervention, and that it is in accordance with the six Community requirements under section 4 of the Act. This is also relevant to our assessment of the likely impact of implementing our decisions.

2.69 Consistent with our duties under section 4A of the Act and under Article 3(3) of the BEREC Regulation[48], we have also taken due account of the applicable EC recommendations and utmost account of the applicable opinions, common positions, recommendations, guidelines, advice and regulatory best practices adopted by BEREC relevant to the matters under consideration in this statement.

Impact assessment and equality impact assessment

Impact assessment

2.70 The analysis presented in the 2016 NMR Consultation constituted an impact assessment as defined in section 7 of the Act.

2.71 Impact assessments provide a valuable way of assessing the options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that, generally, we have to carry out impact assessments in cases where our conclusions are likely to have a significant effect on businesses or the general public, or where there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out impact assessments in relation to the great majority of our policy decisions.

Equality impact assessment

2.72 Annex 8 sets out our equality impact assessment (EIA) for this market review. Ofcom is required by statute to assess the potential impact of all its functions, policies, projects and practices on equality. EIAs also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity.

2.73 We have considered whether our decisions will have an adverse impact on promoting equality. In particular, we have considered whether the decisions will have a different or adverse effect on UK consumers and citizens with respect to the following equality groups:

[48] *Regulation (EC) No 1211/2009 of the European Parliament and of the Council of 25 November 2009 establishing the Body of European Regulators of Electronic Communications (BEREC) and the Office* (the BEREC Regulation). http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0001:0010:EN:PDF.

age, disability, sex, gender reassignment, pregnancy and maternity, race, religion or belief and sexual orientation, and, in Northern Ireland, political opinion and persons with dependants.

2.74 We consider that our decisions will not have a detrimental impact on any equality group. Further, we have decided not to carry out separate EIAs in relation to race or gender equality or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we anticipate that our regulatory intervention will not have a differential impact on people of different genders or ethnicities, consumers with protected characteristics in Northern Ireland or on disabled consumers compared to consumers in general. Therefore, we have not carried out separate EIAs in relation to race or gender equality or equality schemes under the Northern Ireland Disability Equality Schemes.

2.75 Rather, we consider that our decisions will further the aim of advancing equality of opportunity between different groups in society by furthering the interest of all consumers in the retail fixed voice markets.

Document structure

2.76 The structure of this document follows the structure of our analysis and is set out in the following way:

- Section 3 provides an overview of retail market developments;
- Sections 4 to 6 cover the market definitions for WFAEL, WCO, ISDN30 and ISDN2, in addition to the three-criteria tests and our SMP analysis for these markets;
- Section 7 sets out our approach to remedies in the WFAEL, WCO, ISDN30 and ISDN2 markets;
- Sections 8 to 11 explain the remedies we are imposing on BT and KCOM in the WFAEL, WCO, ISDN30 and ISDN2 markets;
- Section 12 covers the market definition and the assessment of SMP for WCT;
- Section 13 sets out the general remedies on all telecoms providers with SMP in the WCT markets;
- Sections 14 to 16 covers our approach to the price regulation of WCT, the cost modelling of the WCT charge control and the charge control specification;
- Section 17 explains our approach to the regulation of interconnection;
- Section 18 sets out the general remedies for BT and KCOM’s interconnect circuits;
- Section 19 sets out the price regulation for BT’s interconnect circuits; and
- Section 20 addresses our approach to both BT’s and KCOM’s regulatory financial reporting.

2.77 In addition, we are publishing Annexes to this consultation which support our main conclusions. We are also publishing the legal instruments that implement our remedies (Annexes 9 and 10).

3. Retail market developments

3.1 In this section we discuss the major trends in retail fixed line and voice services. We are interested in retail services as demand for wholesale services is derived from demand for retail services. Overall, the behaviour and trends seen in the retail services have not changed much since we published our consultation in December 2016. BT's retail share of both fixed analogue lines and calls remains at around 40%. Consumers' access to and use of mobile and VoIP services continues to increase.

Analogue line rental and calls

3.2 In this section we consider fixed analogue lines and the calls made over these lines. Fixed analogue lines are used by both residential and business customers.

Number of lines and call volumes

3.3 The total number of fixed analogue lines has been relatively stable over the last 10 years, with a slight upwards trend since 2009, as shown in Figure 3.1 below. The number of business lines has been in steady decline, which has been offset by increasing numbers of residential lines. As discussed in the 2016 NMR Consultation, much of the recent increase in the number of residential lines is likely to be due to the number of households in the UK growing by around 0.7% per year over the last decade, although the growth in residential lines has exceeded this (at around 1.2% on average over the period) meaning other factors are also driving demand.[49]

[49] HMG, 2014. *Live tables on household projections*, Table 401, https://www.gov.uk/government/statistical-data-sets/live-tables-on-household-projections [accessed 19 July 2017].

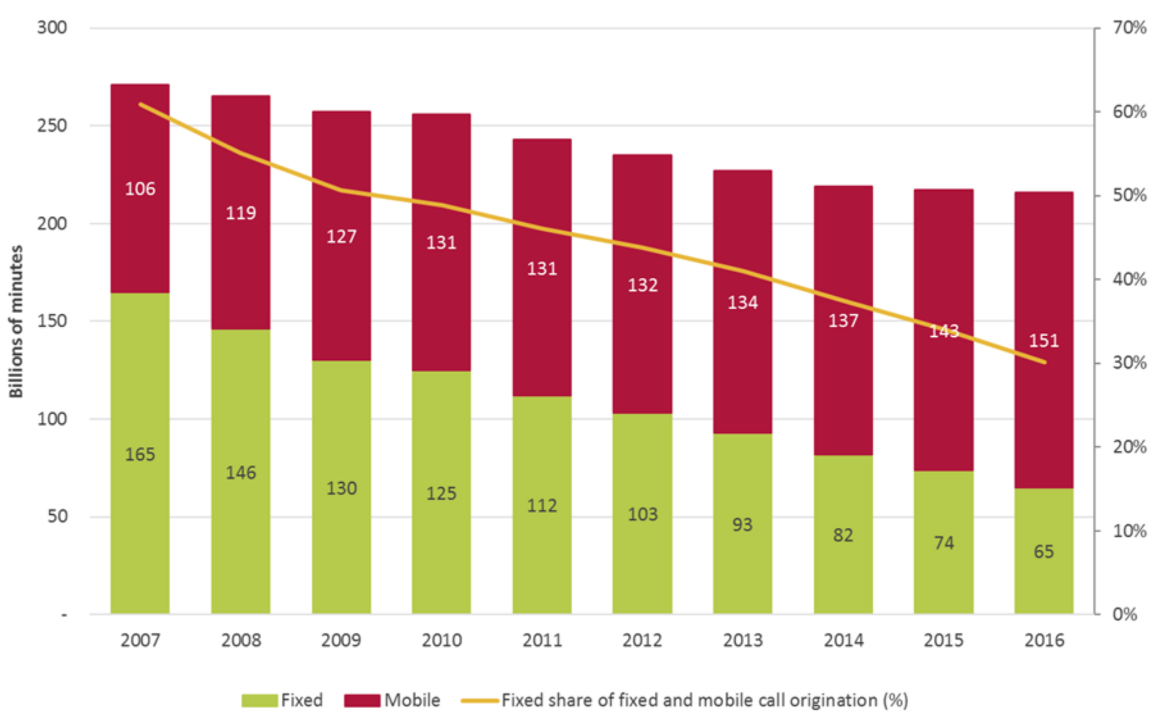
Figure 3.1: Number of analogue fixed lines (millions, calendar years)

Source: Ofcom/operator data.

Note: In contrast to Figure 4.9 of the 2017 CMR, this data excludes other PSTN lines such as Centrex (Featureline) connections.

3.4 Although the volume of fixed lines has remained relatively stable, the overall volume of calls, and the volume of fixed calls in particular, continues to fall, as shown in Figure 3.2. below. The proportion of calls made from a fixed line has fallen from 61% in 2007 to 30% in 2016.

Figure 3.2: Outgoing fixed and mobile call volumes (residential and business, billions of minutes)



Source: Ofcom/operators.

Note: Includes calls made over analogue, ISDN and other PSTN lines such as Centrex connections.

3.5 An explanation for the stable number of fixed analogue lines, despite falling fixed call volumes, may be that many residential customers keep their fixed line mainly for internet access. Among residential consumers who use their fixed line for internet access and calls, only 13% identified making or receiving calls as the most important use of their landline, 47% said that internet access was the most important use and the remaining 40% said the two were equally important.[50] In response to the 2017 NMR Residential survey, 50% of residential survey respondents said that the main reason they have a landline is to get broadband, while 31% said it was to make or receive calls or for emergencies.[51]

Telecoms providers that provide retail lines and calls

3.6 The four largest telecoms providers providing retail lines and voice calls are BT, Virgin Media, Sky and TalkTalk. Figure 3.3 below shows the retail share of fixed analogue lines for

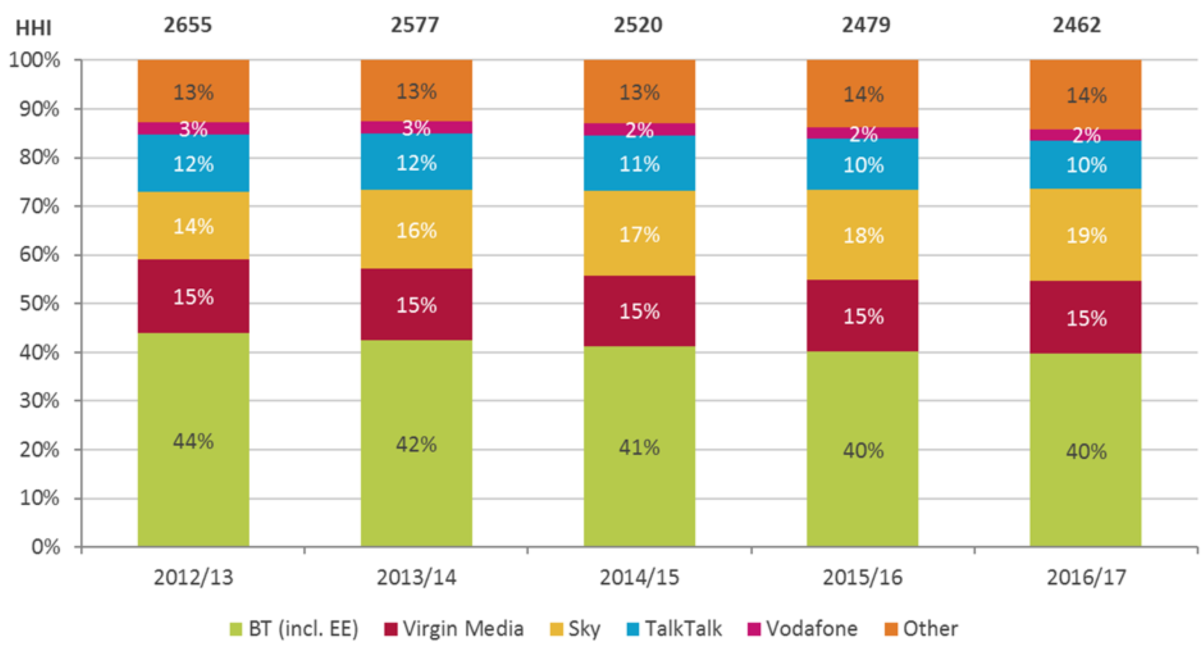
[50] Ofcom. *Technology Tracker H1 2017*, QC3, Base reported is those who use their landline for internet access and to make or receive calls. https://www.ofcom.org.uk/__data/assets/pdf_file/0015/101292/technology-tracker-data-tables-h1-2017.pdf.

[51] 2017 NMR Residential Survey, Q9/Q10. Base reported is UK adults aged 16+ with a landline phone service (or pay line rental for their fixed broadband service). Other reasons included, for example, 'more reliable than mobile', 'always have had/never thought about it' and 'cheaper than making calls with a mobile'.

the major providers across both residential and business customers. We also show the HHI (Herfindahl-Hirschman Index) values, which is a measure of market concentration.[52]

3.7 BT's retail share of fixed analogue lines has fallen steadily over time, although that has plateaued to around 40% since the last NMR. Sky's share has increased steadily and is now around 19% making it the second largest retail provider in 2016/17 (at just under half BT's share). TalkTalk and Virgin Media's retail shares have remained relatively stable as has the share of other providers (when combined). The Herfindahl-Hirschman Index (HHI) measure of market concentration has also fallen each year since the last review (from 2655 in 2012/13 to 2462 in 2016/17).

Figure 3.3: Retail shares for fixed analogue lines (residential and business)



Source: Ofcom/operator data.

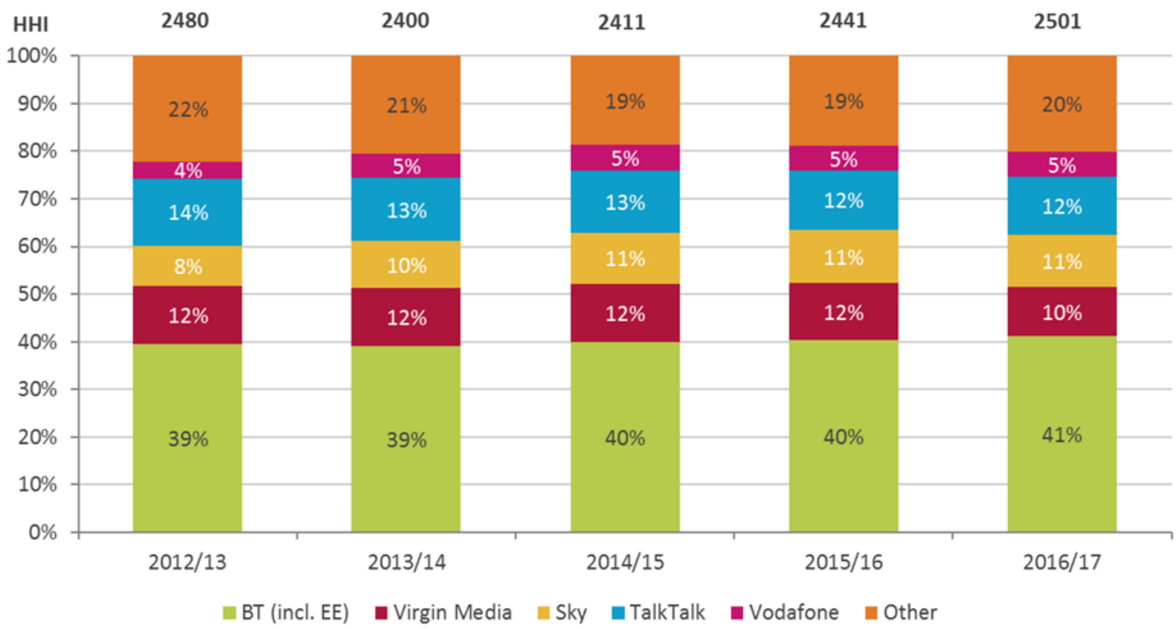
Notes: Figures for 'others' includes estimates for those providers that do not submit data to Ofcom. EE is included in BT's share for all years.

3.8 Based on the data available, we estimate BT's retail share has remained fairly static since the last review and is still the largest provider.

3.9 Figure 3.4 shows the retail share of calls (over analogue and ISDN lines) for the major providers across both residential and business customers.[53] BT is the largest retail provider, with a retail share for residential and business customer calls at around 41%, slightly higher, than at the time of the previous review.

[52] HHI is calculated by squaring the retail shares of each CP and then summing them. HHI values can range from 0 to 10,000, with the value in a monopoly market being 10,000.
[53] It has not been possible to reliably distinguish calls made over analogue and ISDN lines, so Figure 3.4 shows retail shares of calls originated from analogue and ISDN lines.

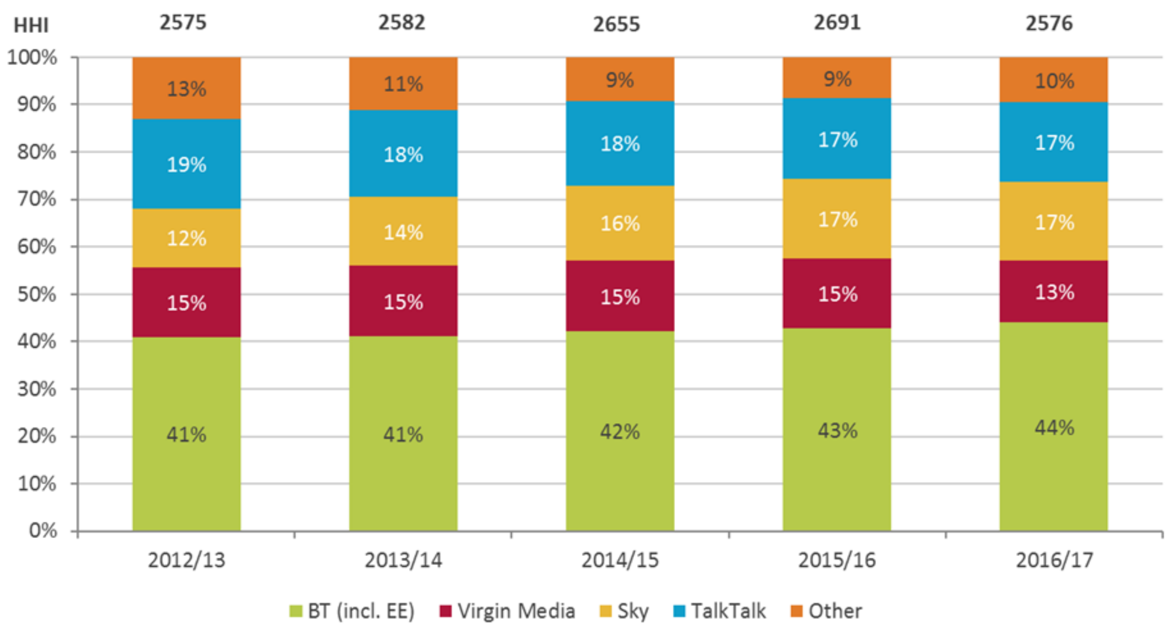
Figure 3.4: Retail shares for calls originated from fixed analogue and ISDN lines (residential and business)



Source: Ofcom/operator data.

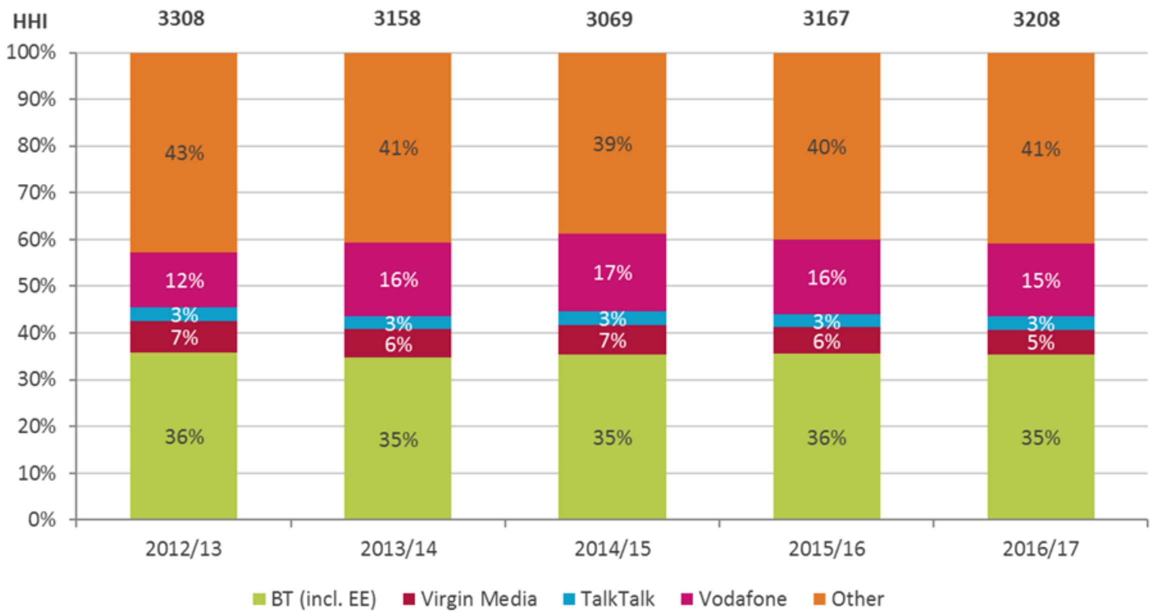
3.10 Figures 3.5 and 3.6 show the retail share of calls (over analogue and ISDN lines) for the major providers across residential and business customers respectively. BT's retail share of residential customers' calls has increased to 44% since the previous review, while its share of business calls has remained broadly stable at around 35%.

Figure 3.5: Retail shares for calls originated from fixed analogue and ISDN lines (residential)



Source: Ofcom/operator data.

Figure 3.6: Retail shares for calls originated from fixed analogue and ISDN lines (business)



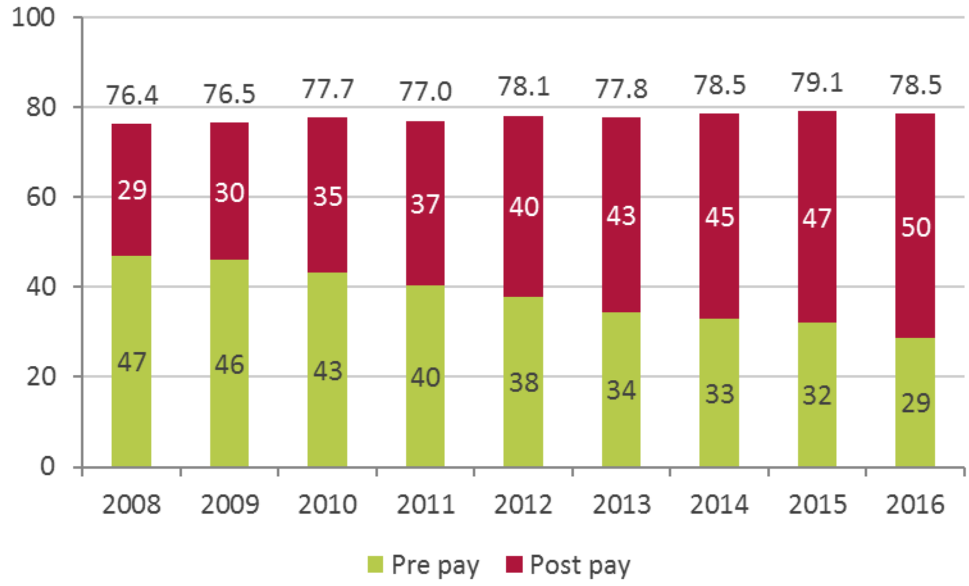
Source: Ofcom/operator data.

Factors contributing to reducing fixed call volumes

Growth of mobile calls

3.11 As shown in Figure 3.2 above, the volume of calls made from mobile phones has increased over recent years. In the last ten years, the volume of calls made from mobiles has increased by 42% (around 4% p.a.), from 106 billion minutes in 2007 to 151 billion in 2016. There are several factors which may be contributing to this. As shown in Figure 3.7 below, the total number of mobile subscriptions has increased by 3% between 2008 and 2016. This suggests that some of the increase in the volume of calls made from mobile phones is due to a larger number of mobile subscriptions. It may also be partly explained by decreases in the average price of a basket of mobile services (as discussed below in paragraph 3.28 and illustrated in Figure 3.17). Finally, as Figure 3.7 also shows, the take-up of post pay tariffs, which tend to have larger call allowances, has increased in recent years.

Figure 3.7: Number of mobile subscriptions (millions) by pre- pay and post-pay



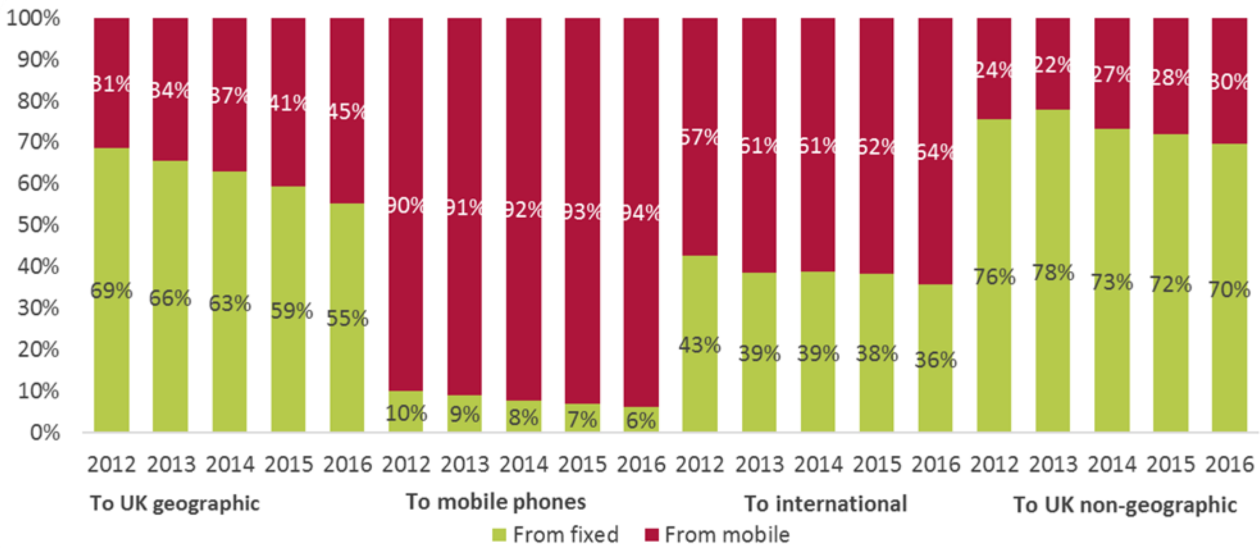
Source: Ofcom/operator data.

Note: Excludes data connections and M2M.

3.12 Calling patterns suggest that fixed and mobile telephony are used for different types of calls. Figure 3.8 below shows the percentage of calls (minutes) terminating on fixed geographic, mobile, international and non-geographic numbers originating from fixed and mobile handsets for 2012 to 2016.[54] This graph shows mobile taking a gradually increasing share of all types of call, but also that there remains a marked difference between the call types for which mobile and fixed devices are used.

[54] Other sources of calls (e.g. from international callers and VoIP calls made and received) are excluded.

Figure 3.8: Percentage of calls originating from fixed and mobile devices terminating at fixed, mobile and international numbers

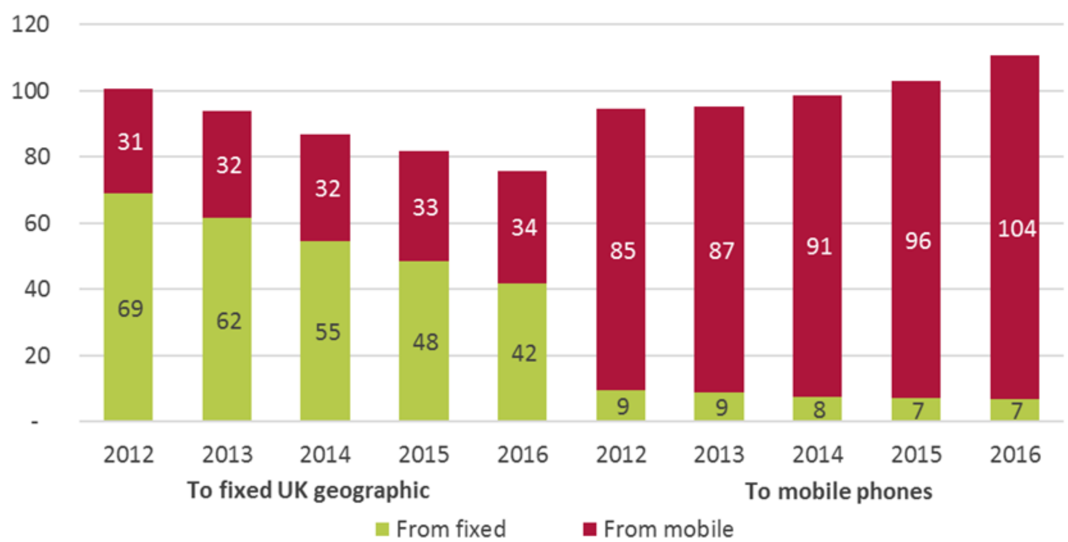


Source: Ofcom/operators.

Notes: Calls estimated are calls to 01/02 numbers and calls to mobiles. Data excludes calls originating outside of the UK.

3.13 Figure 3.9 below shows the volume of calls terminating on fixed lines and mobiles. The volume of calls terminating on mobiles (from fixed lines and mobiles) increased by 17% between 2012 and 2016, while the volume of calls terminating on fixed geographic lines (from fixed lines and mobiles) decreased by 25%. A greater volume of calls was terminated on mobiles (111 billion minutes) than on fixed lines (76 billion minutes) in 2016, having started from approximate parity at the start of the previous review period (2013).

Figure 3.9: Calls terminating on fixed and mobile numbers (billions of minutes)

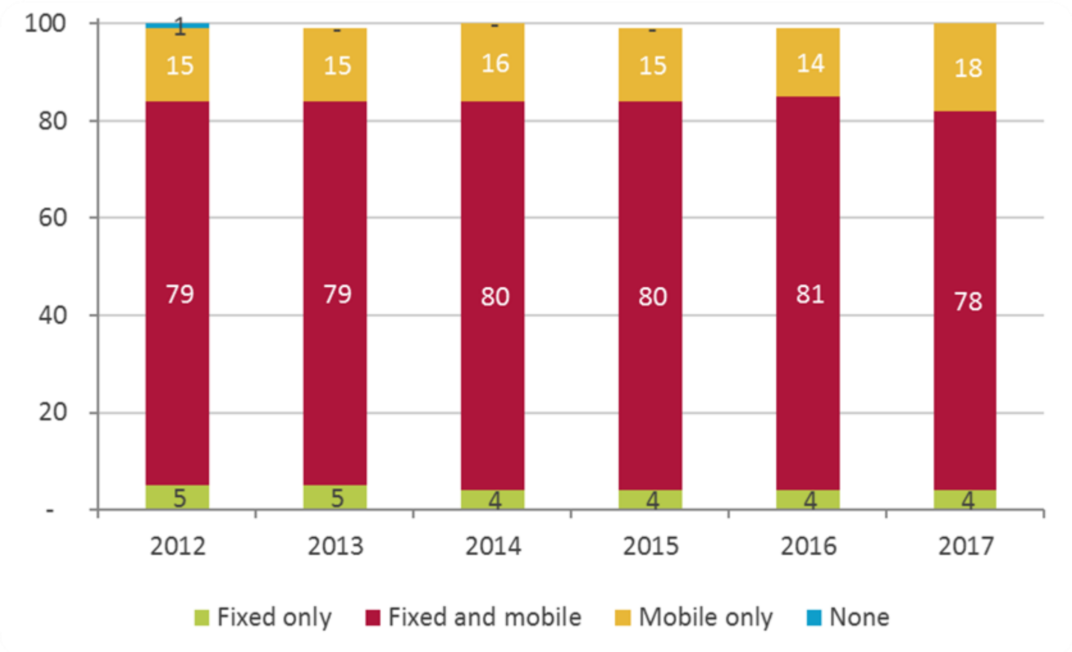


Source: Ofcom/operators.

Note: Calls estimated are calls to 01/02 numbers and calls to mobiles. Data excludes calls originating outside the UK

3.14 Figure 3.10 below shows the proportion of survey respondents with fixed voice services only, both fixed and mobile voice services, and mobile voice services only. Despite the growth in the number of mobile subscriptions and the volume of mobile phone calls, Figure 3.10 shows that the majority (78%) of residential customers buy both fixed and mobile voice services and this is little changed since the last review.

Figure 3.10: Proportion of residential respondents (%) with fixed and mobile voice services



Source: Ofcom Technology Tracker. Data from Q1 2012-2014, then Half 1 2015-2017. Base: All Adults Aged 16+.

3.15 It seems likely that residential customers are increasingly using mobile phones to make calls, keeping a fixed line mainly for broadband. Among all landline customers, a greater proportion (88%) of customers have access to broadband at home than in 2012 (81%).[55]

3.16 Evidence from the Technology Tracker suggests that a small and stable proportion (4%) of residential customers only have fixed voice services, i.e. have no access to mobile phones or fixed broadband.[56] As discussed at paragraph 3.43 below, based on provider data we estimate that 6% of residential customers do not have fixed broadband.[57] The proportion of business customers who do not have broadband is likely to be similar to residential customers.

---

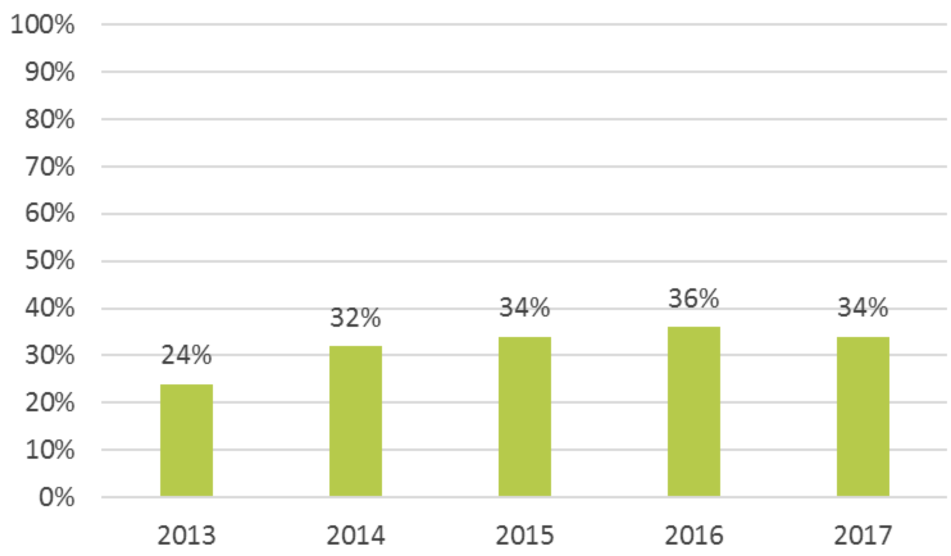
55 Ofcom, *Technology Tracker H1 2017*. Base: all residential landline users.
56 Ofcom, *Technology Tracker H1 2017*. Base: all residential landline users.
57 Based on data provided for the Standalone Landline Telephony Services (SLTS) market review.

Growth of VoIP

3.17 As discussed in Section 2, VoIP services can be managed or unmanaged. While unmanaged VoIP is used by both residential and business customers, managed VoIP is more likely to be used by businesses than residential customers.

3.18 In addition to the growth in calls from mobile phones (discussed above), residential consumers are increasingly making calls over broadband connections and mobiles using VoIP. Our 2017 NMR survey evidence suggests that in 2017, 39% of landline users have access to VoIP services such as Skype, Vonage, FaceTime or WhatsApp at home, an increase from 27% in 2015.[58] However, as shown in Figure 3.11, not all consumers who have access to VoIP services use them on a regular basis. Responses to the 2017 Technology Tracker suggest that 34% of residential landline customers actively use VoIP services such as Skype through the internet, including on a mobile phone.

Figure 3.11: Proportion of residential landline consumers who actively use VoIP



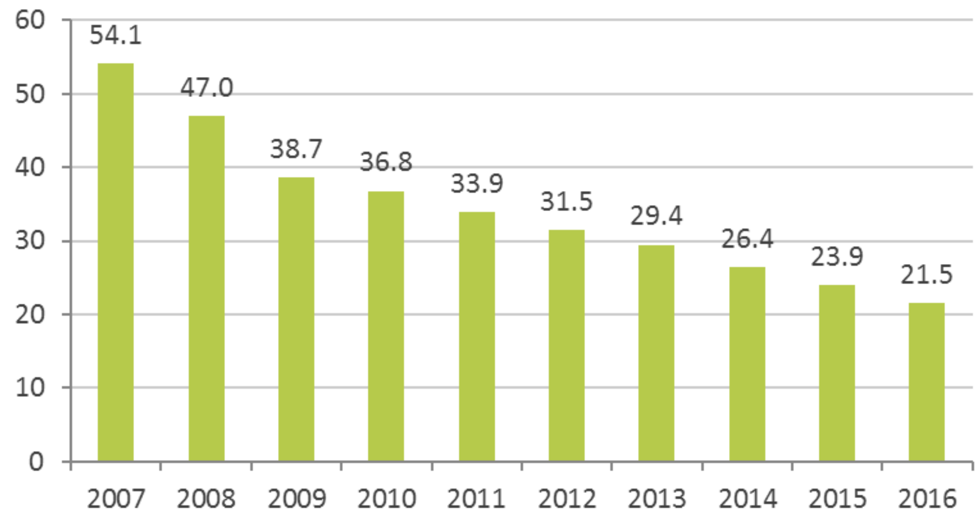
Source: Ofcom Technology Tracker. Data from Wave 1 2013-2014, H1 2015-2017. QD28A and Q25A.

3.19 Consumers can use a range of devices to make VoIP calls such as smartphones, laptop computers and tablets. Smartphone use increased by 10pp (percentage points) between 2015 and 2017, while tablet use increased by 4pp.[59] VoIP calls made using these devices are likely to be using unmanaged VoIP services (including OTT services), e.g. Skype, WhatsApp or FaceTime. As discussed in Section 4, there is evidence of steep growth in the volume of calls provided by these providers, with volumes increasing at an annualized rate of 40% per year to Q4 2016/17.[60]

[58] 2017 NMR Residential Survey, QS5. Base reported is all UK adults aged 16+ with a landline phone service.
[59] Ofcom. *Technology Tracker H1 2017*, QD4 (QD24B) and QE6 (QE36).
[60] Responses to s.135 notices. Volumes refer to minutes of voice calls (including video calls) over the Internet using a device such as a PC, tablet, smartphone or other device. This data does not cover all telecoms providers in the market, but does include Skype, Google, Vonage and Facebook (including WhatsApp), and so is indicative of wider trends.

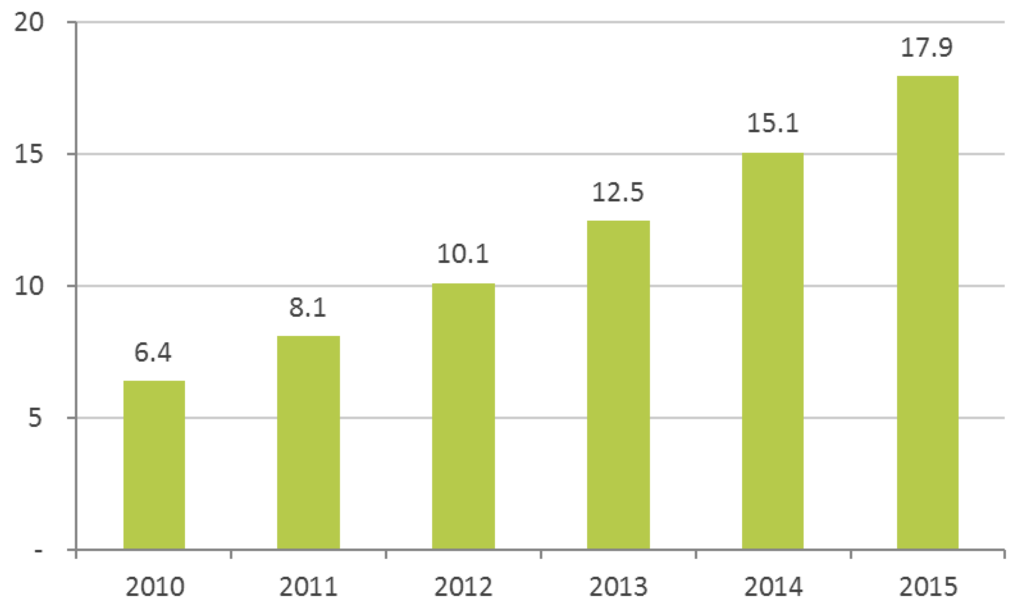
3.20 Turning to business call volumes, Figures 3.12 and 3.13 below show the volume of calls made from fixed lines and using VoIP services. While the volume of calls businesses made from fixed lines fell by approximately one third over the period of the last review (2012 to 2016), call volumes made using VoIP services increased considerably over a similar period by around 121% (from 2011 to 2015).

Figure 3.12: Outgoing fixed call volumes (business only, billions of minutes)



Source: Ofcom/operators.

Figure 3.13: Business managed VoIP call volumes (billions of minutes)



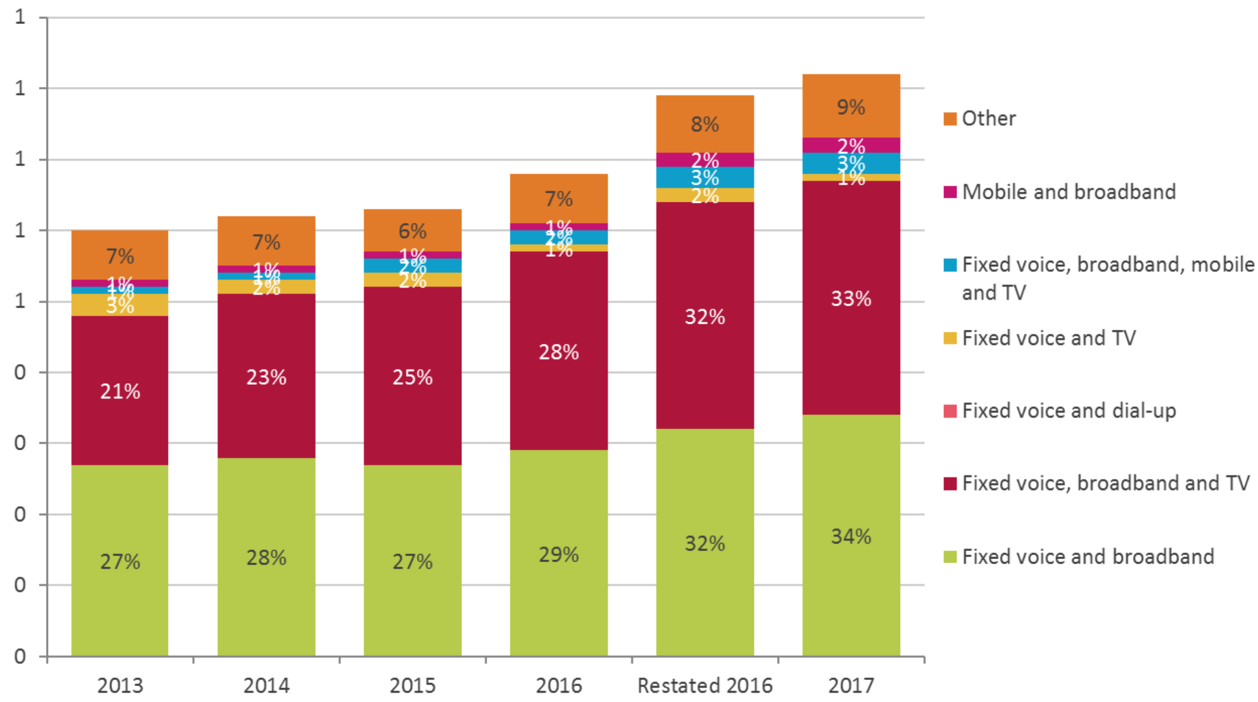
Source: Ofcom, 2016 Communications Market Report, Figure 4.28 (data provided by IDC).

Bundling of retail services

3.21 As shown in Figure 3.14 below, households are increasingly purchasing two or more communications services from the same provider as part of a bundle. The most common services to bundle are fixed voice and broadband, with around 70% of households now purchasing a bundle that contains fixed voice and broadband services. A third of households buy a triple-play service which includes fixed voice, broadband and TV and a small proportion (around 3%) also bundle mobile services with fixed voice, broadband and TV.

3.22 Consumers can typically make savings by buying services within a bundle. The average bundled monthly price of a basket of services, typical of the usage of a family household comprising two adults and two teenage children, was £102 in 2016. This is 27% less than the average standalone price for the same services (£140).[61]

Figure 3.14: Reported take-up of bundled services among households



Source: Ofcom Technology Tracker, data as at Q1 2009-2014; H1 2015-2017. Base: All adults 16+.

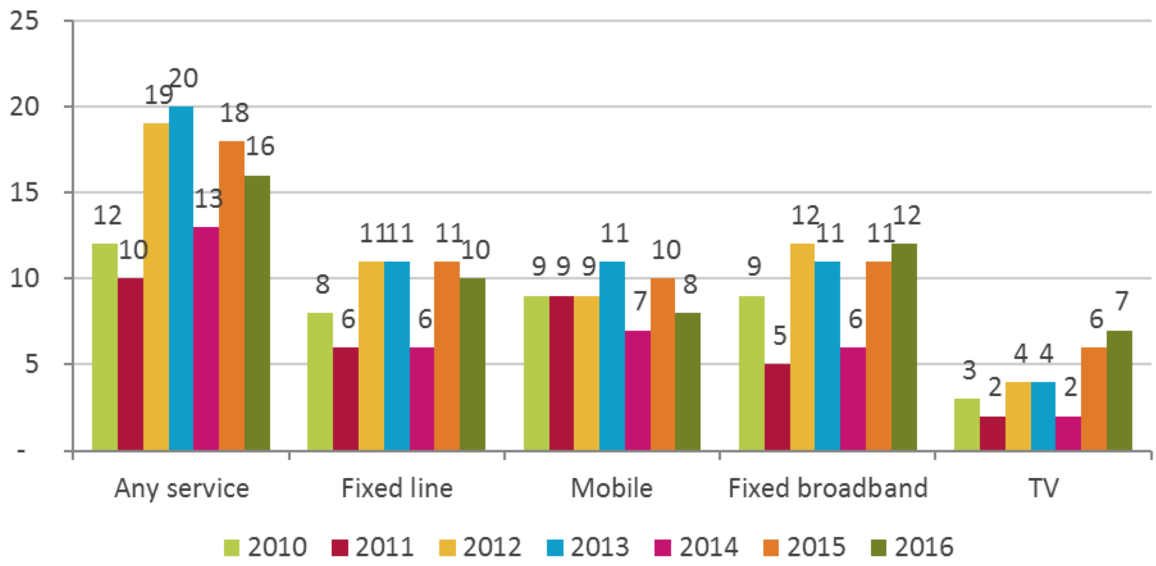
Switching

3.23 As shown in Figure 3.15 below, the reported switching rates (from our 2010-2016 switching tracker surveys) for fixed lines as a whole are broadly similar to those reported for mobile and fixed broadband services, with TV switching rates being lower. Our separate 2017 Residential survey reported switching rates of 12% for landline providers and 14% for

[61] Ofcom, 2017. *Pricing trends for communications services in the UK*, page 32, Figure 1.20. https://www.ofcom.org.uk/__data/assets/pdf_file/0028/98605/Pricing-report-2017.pdf.

broadband providers.[62] Customers who buy a bundle (dual or triple play) have higher switching rates than voice-only customers. 14% of bundle customers have switched in the last 12 months, in comparison to 3% of fixed voice-only customers.

Figure 3.15: Reported rates (%) of switching supplier



Source: Ofcom Switching Tracker.

Note: Data includes home moves.

Retail prices

3.24 In March 2017, we published a report outlining the pricing trends in communications markets.[63] Figure 3.16 below shows, in real terms, the residential line rental prices charged by the major telecoms providers. Retail line rental prices since the last review increased 24%[64], despite MPF and WLR charges falling 1% and 12% over that period (from mid-2013 to mid-2017). These are key inputs telecoms providers need to provide retail voice services to residential customers (if a telecoms provider does not have its own network). This represents a continuation of the trend in retail price increases seen since 2012 despite falling wholesale charges.

3.25 Line rental prices offered by these suppliers have also converged to some degree in recent years, due mainly to significant increases in price by Sky and Post Office.

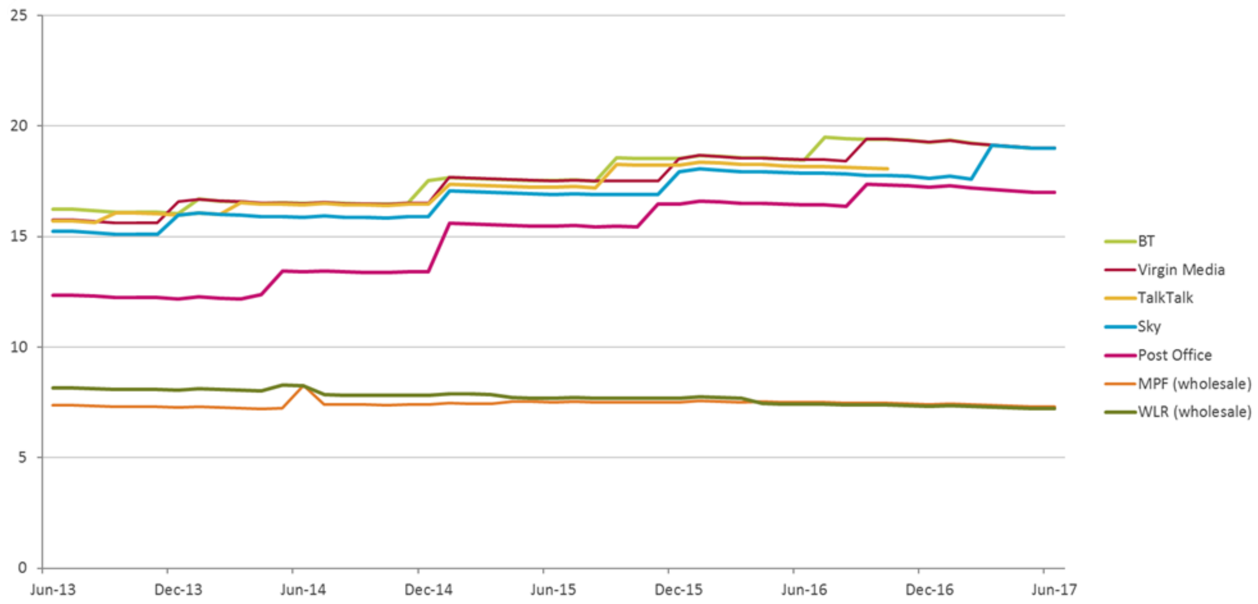
---

[62] 2017 NMR Residential Survey, Q17/Q18. Base is all UK adults aged 16+ with a landline phone service or with a landline phone service and fixed broadband.

[63] Ofcom, 2017. *Pricing trends for communications services in the UK.*

[64] This is the average based on five providers: BT, Virgin Media, Sky, EE and Post Office.

Figure 3.16: UK residential line rental (£/month in June 2017 prices)



Source: Ofcom / Pure Pricing Broadband Updates.

3.26 Line rental typically accounts for the majority of the final price paid by residential consumers for their fixed voice services. Table 3.1 below shows the real price paid by a consumer for a bundle of fixed voice services (including line rental and calls) based on average use in 2016. Overall, the price of the complete basket increased by just over 7% in real terms between 2012 and 2016.

Table 3.1: Real price of basket of residential fixed services

	2010	2011	2012	2013	2014	2015	2016
£/month (2016 prices)	19.21	19.30	19.81	20.13	20.15	20.88	21.26

Source: Ofcom/operators.

3.27 At the same time, the out-of-bundle call price has risen.[65] The price of an hour-long daytime call to a landline made outside an inclusive call allowance increased by 22% in real terms between 2013 and 2016.[66]

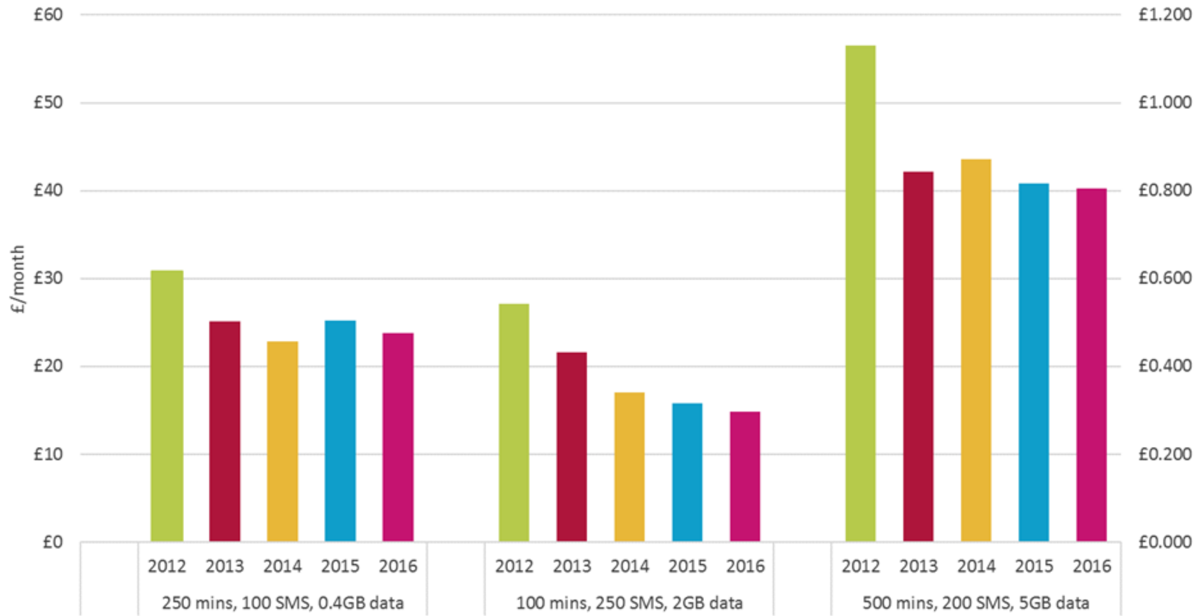
3.28 Figure 3.17 below shows that the prices of baskets of mobile services have fallen over the last four years despite data use increasing by 550% over the same period, and an increase in the number of minutes used of 13%.[67] The volume of SMS has also declined by 38%,

---

[65] Ofcom, 2017. *Pricing trends for communications services in the UK*, Figure 1.3.
[66] Ofcom, 2017. *Pricing trends for communications services in the UK*, page 14. Based on data from Simplify Digital. Data is based on the average of the prices offered by BT, Sky, TalkTalk and Virgin Media; adjusted for CPI (December 2016).
[67] Source: Ofcom/Teligen.

which may reflect increasing use of data based alternatives such as Facebook Messenger, iMessage and WhatsApp.

Figure 3.17: Real price of a basket of residential mobile services[68]



Source: Ofcom/Teligen.

Notes: excludes handsets. CPI adjusted (2016 prices). Prices represent weighted average of cheapest prices available from primary providers for 2014-2016 and weighted average of cheapest offers by three largest providers for 2012 and 2013. All prices include any promotional discounting that may have been available for the period.

Hull Area

3.29 In the Hull Area, KCOM is the incumbent and has a share of 98% of retail fixed analogue lines (approximately 153,000) as of March 2017.[69] In the table below we compare the prices that BT charges across the UK excluding the Hull Area with those that KCOM charges in the Hull Area.

[68] Figure 3.14 of the 2016 NMR Consultation estimated a per unit price based on out-of-bundle revenues. We no longer use this comparison because a greater proportion of calls are now made within inclusive allowances.
[69] KCOM response dated 30 June 2017 to the 5th NMR s.135 notice.

Table 3.2: BT and KCOM retail list prices for residential line rental and calls (£/month including VAT)

Product	BT in the UK excluding the Hull Area	KCOM in the Hull Area
Cheapest available	£18.99 including weekend calls	£15.99 including unlimited local calls and 60 minutes of calls to mobiles
Including weekend calls	£18.99	£17.99
Including evening and weekend calls	£22.79 (line rental plus £3.80 evening calls)	£19.99

Source: BT's prices from https://www.productsandservices.bt.com/products/phone-packages/ and KCOM's from https://www.kcomhome.com/products/phone/. Prices are list prices as of 25 July 2017.

3.30 While a like-for-like comparison is not possible, it appears that KCOM charges lower prices than BT for fixed voice line rental and calls packages, even in the absence of significant direct retail competitors.

3.31 This supports our decisions in the 2013 NMR and 2014 FAMR that ex ante retail regulation in the Hull area was unnecessary. This assessment still seems applicable and therefore we are not imposing any ex ante retail regulation on KCOM in this Statement. However, we will continue to monitor KCOM's retail pricing and remain open to reconsidering our position in the event of retail market concerns that cannot be adequately addressed by wholesale remedies or competition law alone.

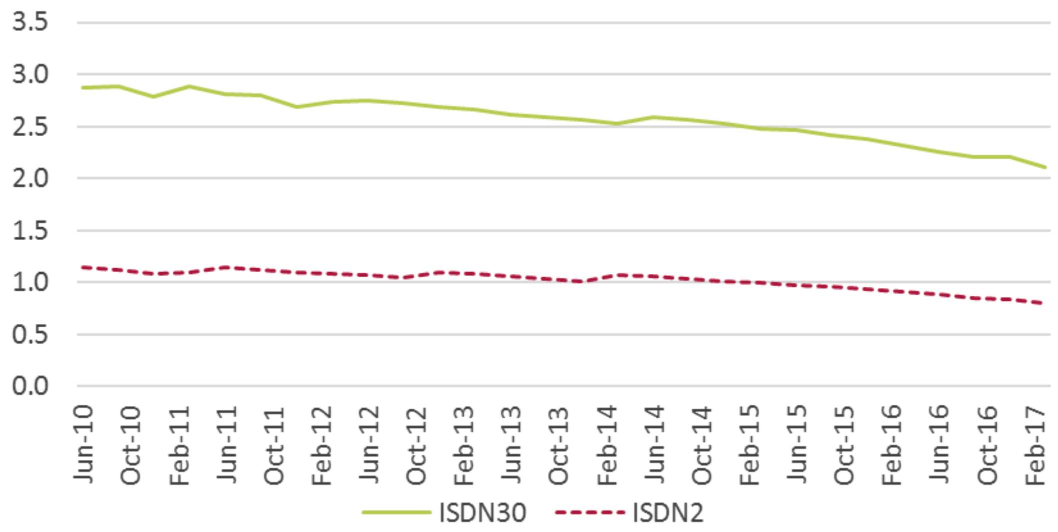
Digital (ISDN30 and ISDN2) lines and IP-based services

3.32 We now consider retail market trends for ISDN and IP-based voice services.

ISDN and IP volumes

3.33 As shown in Figure 3.18, ISDN30 and ISDN2 channel volumes have been falling over time, although to date this decline has been quite gradual. Over the period shown, the volume of ISDN30 and ISDN2 channels fell by a (compound annual) rate of 4.3% and 4.9% respectively.

Figure 3.18: Historic ISDN30 and ISDN2 volumes (millions of channels)



Source: Data until December 2013 from FAMR Statement, Figures 4.1 and 5.1. Data from January 2014 onwards from BT, Colt, KCOM, Verizon, Virgin Media and Vodafone in response to the s.135 notices of August 2015, July 2016 and May/June 2017.

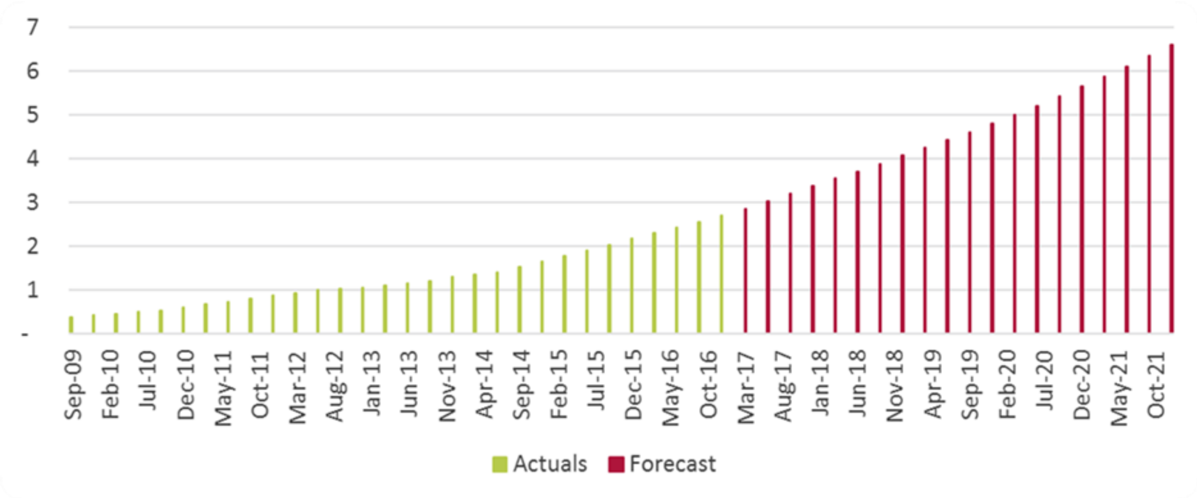
3.34 We have also considered reports by the Cavell Group which looked into hosted VoIP and SIP trunking services in the UK.

3.35 Hosted VoIP and SIP trunking are services provided to businesses. Each ISDN channel or SIP trunk allows one concurrent call, whereas a hosted VoIP seat is needed for each employee or handset.

3.36 We have updated the IP volume data provided by the Cavell Group since the 2016 Consultation. The data suggests that volumes of hosted VoIP and SIP trunking seats have continued to increase. Between June 2016 and December 2016, UK hosted VoIP services grew by an estimated 281,904 seats (12%) while SIP trunking services grew by 233,549 SIP trunks (11%). The Cavell Group reports suggest that much of this increase for hosted VoIP and SIP trunking has been in the SME and Large Enterprise segments of the market respectively. We discuss the trends in ISDN and IP-based volumes in more detail in Section 6. [70]

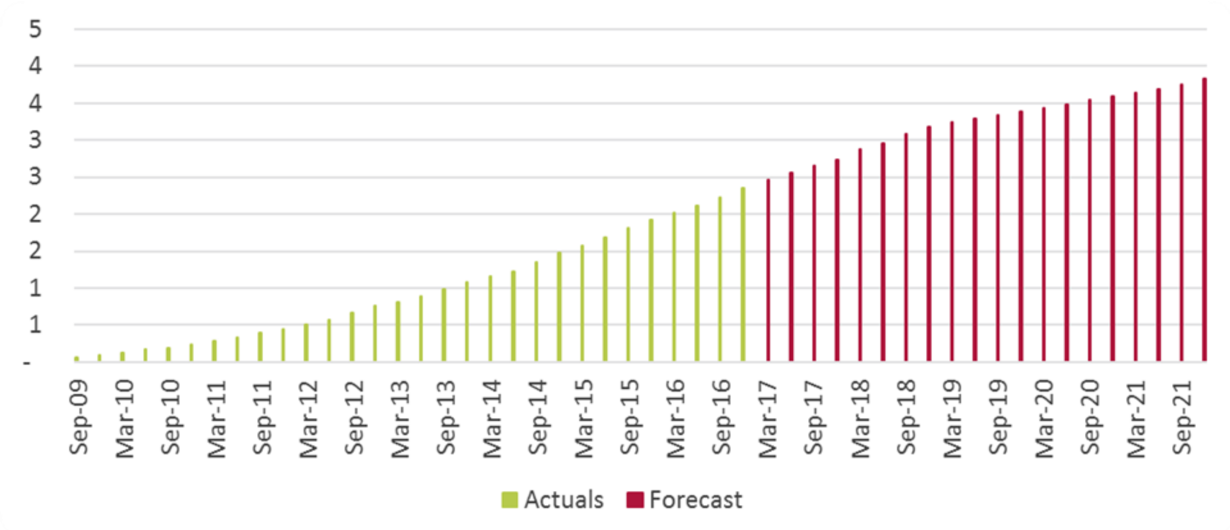
[70] We note that the total volumes of IP-based services estimated by Cavell Group are higher than our estimates using data from providers discussed in Section 6. Cavell Group may have overestimated IP connections, or we may not have collected data from all relevant telecoms providers.

Figure 3.19: Historical and forecast wholesale hosted VoIP volumes (millions of seats)



Source: Cavell Group, 2017. Hosted VoIP Report and Forecast (2016-2021).

Figure 3.20: Historical and forecast wholesale SIP/IP trunk volumes (millions of trunks)



Source: Cavell Group, 2017. UK SIP Trunking Report and Forecast (2017-2021).

Providers of ISDN

3.37 A number of telecoms providers sell retail ISDN30 and ISDN2, including BT, Daisy, Vodafone and Gamma. Data provided by Openreach suggests that BT's retail share is approximately 30% for ISDN30 and 40% for ISDN2.[71]

ISDN and IP pricing

3.38 Table 3.3 below shows the retail list prices shown on the BT Business website at several points in time over the last four years. These prices are all on a per-channel basis excluding

[71] Telecoms providers can also retail ISDN30 over other networks. This may mean that these market shares are slightly overstated.

VAT and based on a one-year contract. DDI (direct dial in numbers) is the functionality to allocate extension numbers to different phone handsets.

3.39 BT Business' retail ISDN list prices appear to be increasing over time, although whether this is true for prices actually paid depends on the extent of discounting offered and bespoke deals taken by customers. Since 2013 BT has increased its retail ISDN30 and ISDN2 list prices by a little under one-third. These prices are illustrated in the table below.

Table 3.3: BT Business' retail prices for ISDN30 and ISDN2 channels (£/month based on a 12-month contract, excluding VAT)

	ISDN30	ISDN2
19 June 2013	£20.04 (not including DDI)	£20.43
17 March 2014	£24.14 (including DDI), £21.15 (not including DDI)	£21.15
9 November 2016	£24.90 including DDI	£25.40
27 June 2017	£26.40 including DDI	£27.00

Source: 2017 and 2016 data from BT Business website[72], 2014 data from FAMR Statement, footnotes 144 and 145, 2013 data from 2013 FAMR Consultation, footnotes 83 and 84.

3.40 BT also charges a connection charge for each ISDN channel. The price for ISDN30 is £160 per channel for the first 15 channels and £45 thereafter.[73] The price for ISDN2 is up to £375 for both channels.[74]

3.41 A report by Cavell Group forecasts the path of prices of hosted VoIP and SIP trunking over the next five years. Cavell Group expect the price of hosted VoIP to fall slowly over the next five years as providers bundle more features into the basic service.[75] SIP trunk base prices have been falling consistently year on year and with an annual drop over the last year of 15%. Cavell Group forecast these service margins to fall further in the future.[76]

Groups of interest

3.42 In the 2016 NMR Consultation, we identified a number of groups of interest including voice-only customers, split-supplier customers[77], business customers and off-net

[72] BT, *ISDN lines including ISDN2 and ISDN30.* https://business.bt.com/products/voice/isdn/ [accessed 16 October 2017].
[73] BT Global Services, *BT One Voice access – ISDN30 services and pricing options*. http://www.globalservices.bt.com/static/assets/pdf/products/isdn2e/bt-one-voice-access-ISDN-2e-pricing-options-2017.pdf.
[74] BT Global Services, *BT One Voice access – ISDN2e pricing options.* http://www.globalservices.bt.com/static/assets/pdf/products/isdn2e/bt-one-voice-access-ISDN-2e-pricing-options-2017.pdf.
[75] Cavell Group, 2017. *Hosted VoIP Report and Forecast (2016-2021)*, page 20.
[76] Cavell Group, 2017. *UK SIP Trunking Report and Forecast (2017-2021)*, page 13.
[77] We referred to these customers as split-purchasers in the 2016 NMR Consultation.

customers. We recognise that there are a number of differences between these segments at the retail level which may impact the conditions of competition for these consumers. For example, WLR and WCO is a far more common basis of supply to these customer segments than MPF or cable.

Residential voice-only customers

3.43 Based on provider data, we estimate that residential fixed voice-only customers account for 6% of residential landline users.[78] We also recognise that residential fixed voice-only customers are more likely to be elderly, have lower income and to have lower rates of mobile adoption compared to residential fixed voice customers who have broadband.

Split-supplier customers

3.44 Based on data from providers approximately 3% of residential landline consumers buy landline and broadband services from separate telecoms providers.[79]

Business customers

3.45 Based on data from providers, we estimate business customers account for approximately 3.9 million lines or 13% of total fixed analogue lines.[80]

3.46 The majority of SMEs with a landline also use a mobile (76%). Among all SME landline customers, a greater proportion (92%) now use broadband than in 2015 (85%) (8% do not currently use broadband).[81] Of those who use both a landline and fixed broadband, many will still have voice-only lines.

3.47 A greater proportion of SMEs (19%) than residential customers (2%) report having a different supplier for their standard landline and fixed broadband.[82] This includes smaller businesses with second lines, as well as larger businesses who have landline and broadband from separate suppliers. SMEs are also more likely to use ISDN or videoconferencing than residential customers, with 15% of SMEs using one of these business services.[83]

Off-net customers

3.48 Off-net customers are customers (including businesses) outside the MPF and cable footprints who, as a result, cannot be served using either MPF or cable as an alternative to

[78] Based on data provided for the SLTS market review.
[79] Based on data provided for the SLTS market review.
[80] Based on Openreach data on the number of WLR premium lines and operator data on the number of MPF and cable lines used to supply business customers. This estimate will exclude business customers that take residential contracts and so is likely to be an underestimate.
[81] 2017 NMR Small Business survey, Q1. Base reported is all SMEs using standard landlines.
[82] 2017 NMR Small Business survey, Q8a, 8b. Base reported is those who use standard landlines.
[83] 2017 NMR Small Business survey, Q1, Q2a-f. Base reported is all SMEs using standard landlines.

WLR. Based on data from providers, we estimate that approximately 5% of customers are off-net customers.[84]

Aggregate scale of groups of interest

3.49 As a share of total analogue lines, WLR (Basic and Premium) represents just over 50% (see section 6, Figure 6.1). However, much of this represents supply to residential customers who also take broadband services or are otherwise in areas where there is competition from MPF or cable providers.

3.50 Based on our evidence above in relation to the groups of interest, residential fixed voice-only and off-net customers account for 10% of fixed analogue lines.[85] This increases to 13% if residential split-supplier customers are included (using data provided to the SLTS market review). This share of analogue lines increases to 25% if all business fixed voice lines are included.

3.51 The number of fixed line connections is greater than just the analogue lines alone as ISDN30 and ISDN2 volumes remain material. Demand from ISDN consumers will drive usage of WCO as will voice demand from analogue lines. As a share of all fixed line channels, (both analogue and ISDN), ISDN represents 9%. Adding this to the groups of interest above, the groups of interest would represent one third of all fixed channels.

[84] Based on data provided by BT and Virgin Media for the WBA market review. For more detail, please see Table A8.1 in Annex 8 of the 2017 WBA Market Review Consultation.

[85] In the 2016 NMR Consultation we estimated based on survey evidence that residential fixed voice-only and off-net customers accounted for about 15% of all fixed lines. We have now revised our estimates based on data provided by CPs. Ofcom, 2017. *Pricing trends for communications services in the UK.* https://www.ofcom.org.uk/__data/assets/pdf_file/0028/98605/Pricing-report-2017.pdf.

4. Market definition and three criteria test: WFAEL and WCO

4.1 This section explains the product and geographic market definition in relation to WFAEL and WCO and applies the three-criteria test to these markets. In defining markets, we follow the analytical framework set out in Annex 7.

Summary

4.2 WFAEL is a wholesale narrowband analogue access connection between a customer's premises and a local exchange. We define the relevant product market as including WFAEL delivered via copper access, cable access, Metallic Path Facility (MPF) and fibre-to-the-premises (FTTP) deployments offering a narrowband voice service using an analogue telephone adaptor (ATA). We assess indirect constraints at the retail level from mobile access, broadband access and ISDN, and direct constraints at the wholesale level from broadband. Notwithstanding the growing use of mobile and broadband access, we do not find them to be sufficient constraints on the provision of WFAEL at present. We also define a single product market, without segmentation between different groups of retail customers. We define geographic markets for the UK excluding the Hull Area and, separately, the Hull Area.

4.3 WCO is the wholesale service that enables voice calls over an access connection on a fixed narrowband market. We define the relevant product market as including WCO over WFAEL or ISDN lines. We assess the indirect constraints at the retail level from mobile, VoIP, and from text-based messaging, email and social media, and direct constraints at the wholesale level from broadband. We recognise that these constraints appear greater for calls than access but, consistent with the WFAEL product market definition above, do not find them a sufficient constraint on WCO at present. We define a single product market, without segmentation between different groups of retail customers. We define geographic markets for the UK excluding the Hull Area and, separately, the Hull Area.

4.4 We consider the three-criteria test and find it is satisfied for both WFAEL and WCO in each of the geographic markets identified for the period of this review. We assess whether there is SMP in these markets in Section 6.

WFAEL

4.5 WFAEL is a narrowband analogue access connection between a customer's premises and a local exchange.[86]

4.6 In our assessment, we:

[86] That is, the part of the wholesale service from a network provider which provides a connection between the customer's premises and the local exchange.

- set out our market definition proposals from the 2016 NMR Consultation;
- summarise stakeholder responses to those proposals;
- assess the indirect constraint at the retail level including from mobile and fixed broadband access;
- assess the direct constraint from substitution at the wholesale level;
- conclude on the product market;
- identify types of customers that are more reliant on WFAEL (and WCO) and consider whether the wholesale market should be segmented by customer type; and
- assess the relevant geographic market.

2016 NMR Consultation

4.7 In the 2016 NMR Consultation, we proposed a single product market for WFAEL provided via copper access, cable access, and FTTP deployments offering a narrowband voice service using an ATA, and separate geographic markets for the UK excluding the Hull Area and the Hull Area.[87]

Stakeholder responses

4.8 BT argued in favour of a wider market.[88] Vodafone disagreed with our market and said that a narrower market definition, excluding services based on MPF and cable, is appropriate.[89] Verizon generally agreed with our proposed market definition for WFAEL.[90] UKCTA also broadly agreed with our approach to market definition and our characterisation of the market.[91] Some stakeholders did not present an overall view on market definition, but rather responded to specific elements of our assessment. Where relevant, we address stakeholder responses in the following discussion.

Retail services

Focal product

4.9 The starting point of our analysis is a narrow access product, which is the use of a retail FAEL using copper access, even though access and calls are typically purchased as a bundle, increasingly with broadband.

---

[87] 2016 NMR Consultation, paragraphs 4.113 and 4.208. We also adopted the same market definition in the 2014 FAMR: Ofcom, 2014. *Fixed access market reviews – Statement*, paragraph 3.70. https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/narrowband-broadband-fixed/fixed-access-market-reviews-2014/statement.
[88] BT response to 2016 NMR Consultation, paragraph 4.6; Openreach response to 2016 NMR Consultation, section 2.
[89] Vodafone response to 2016 NMR Consultation, part 2, paragraph 3.14.
[90] Verizon response to 2016 NMR Consultation, pages 2-4.
[91] UKCTA response to 2016 NMR Consultation, page 1.

Access and calls

4.10 In the 2016 NMR Consultation, we assessed access and calls separately. In response, Vodafone said access and calls are not substitutes and hence cannot be in the same market but should be considered together for regulatory purposes because they are linked both at the wholesale and at the retail level.[92] [✂] said bundling of voice and data services in the business sector was less common.[93] This was based on an analysis of SIP voice services rather than FAELs.

4.11 The potential for call-by-call substitution means the nature of substitution differs between access and calls. Additionally, fixed access is a necessary gateway to access other valued services such as broadband and pay TV, and not just fixed voice services. These factors allow for a divergence in competitive conditions between access and calls.

4.12 The Explanatory Note to the 2014 EC Recommendation says that at the retail level, "it has been observed that fixed calls services (retail services which are a downstream product of wholesale call origination) are more often bundled with the access to the fixed network/narrowband service. At the wholesale level, both call origination and narrowband access services can be purchased separately, and have been defined separately for the purposes of *ex ante* regulation by most Member States." We consider this is relevant to the UK. We also note that adopting a bundle as a focal product would not be consistent with the principle of beginning the hypothetical monopolist test with a narrowly defined focal product.[94]

4.13 Although the number of residential customers buying access and calls separately is negligible[95], 4% of SMEs continue to purchase access and calls from different telecoms providers.[96] However, while most residential customers and SMEs said they think about the costs of line rental and calls together, a notable minority (15% of SMEs and 18% of residential survey respondents)[97] still state they consider them separately. Such behaviour would also be consistent with the marketing of retail lines where it is often possible to purchase access with calls on a pay-as-you-go basis or with various packages of inclusive calls bundled through the monthly charge (e.g. weekend calls, weekend and evening calls, calls to mobiles and/or international calls). This allows consumers to self-select their retail

---

[92] Vodafone response to 2016 NMR Consultation, part 2, page 34.

[93] [✂]

[94] See Annex 7 and *Commission Staff Working Document Explanatory Note accompanying the document Commission Recommendation on relevant product and service markets within the within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2014/298/EC)*, page 25. http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=7056.

[95] Only 1% of survey respondents (Jigsaw 2015 Residential survey – wave 2) said they had a landline to make calls and used a separate supplier for calls and access. This compares with 14% of residential users purchasing calls and access from different suppliers in 2009.

[96] 2017 NMR Small Business survey, Q12 and Q13. Base reported is those who whose main voice calls method is a landline (Q4) and excludes those who do not know their supplier.

[97] 2017 NMR Small Business survey, Q14. Base reported is those who whose main voice calls method is a landline; 2017 NMR Residential Survey, Q15.

access package based on their varying demand for calls – which will reflect the perceived effectiveness of substitutes for calls from a fixed line.

Bundle of broadband and voice services

4.14 In the 2016 NMR Consultation, we did not include broadband within the focal product. We said that an assessment of retail competition founded on a bundled focal product may not give sufficient scope to recognise differences between broadband and voice services, as not all retail customers buy these services together and these services are not always bundled at the wholesale level.[98] No consultation responses suggested we should adopt a bundle of broadband and fixed voice services as a focal product.

Conclusion

4.15 Based on the above considerations, we adopt a retail FAEL as the focal product for our assessment of indirect constraints on WFAEL and assess WCO separately. Our market analysis and remedies assessment take account of the links between access and calls (as Vodafone suggests we should), and the impact of the bundling of fixed voice services and broadband is also considered later in this section and in our assessment of remedies.

Indirect constraint from retail competition

4.16 We assess indirect constraints at the retail level by considering whether retail customers would switch away from FAELs and use alternatives in response to an increase in the price of the focal product.[99] The alternatives we consider are:

- access over alternative fixed telecoms network infrastructure;
- mobile access;
- broadband access; and
- ISDN access.

Alternative forms of fixed telecoms network infrastructure

4.17 In the 2016 NMR Consultation, we began our analysis from the narrowest possible candidate focal product: a hypothetical monopolist of FAELs on the copper network. We provisionally concluded that the relevant market should be wider than this, including all analogue lines using copper access (including MPF), cable, and FTTP using an ATA.[100]

---

[98] 2016 NMR Consultation, paragraphs 4.27 to 4.31.

[99] See Annex 7 for a discussion of indirect constraints from retail and direct constraints from wholesale level in the context of market definition. Note we also recognise that the strength of any indirect demand constraint could vary between residential and business services, as well as between other types of retail customer, and so take this into account in our assessment where relevant.

[100] Where a customer is only connected via FTTP, and dedicated capacity is made available for a narrowband voice service, it would provide the equivalent of a WFAEL service. In general, an ATA is used to connect the customer premises equipment. As with our approach to market definition in the FAMR 2014 Statement, we proposed including these services within our candidate market where they involve a narrowband voice service using an ATA. While the underlying technology would be different to the copper network, the service presented to the customer would be very similar and substitution from a copper FAEL has already taken place. We assess managed and unmanaged VoIP services over FTTP (or other infrastructure including mobile) which do not correspond to this description separately below.

Stakeholder responses

4.18 KCOM said we should consider whether fixed-wireless should fall within the relevant market definition and the extent to which fixed-wireless and FTTP networks will act as a competitive constraint over the review period.

4.19 Vodafone said we should define a narrower market that excludes cable and MPF self-supply.[101] It said we have not followed "a sufficiently rigorous approach in assessing the effectiveness of indirect constraints".[102] It said we relied on assertions that customers would consider any technically similar type of product as substitutes and on this basis extended the market from the focal product to include cable, MPF and FTTP using an ATA. It also notes a 10% increase at the wholesale level would translate into a smaller increase at the retail level, particularly when a customer is purchasing a package of services, and that factors such as the level of cost-pass through and retail level price sensitivity are also relevant factors in assessing indirect constraints.

Evidence and analysis

4.20 We maintain that we should begin our analysis from the narrowest possible candidate focal product, which in this case is a hypothetical monopolist of FAEL on the copper network. But, as we explained in the 2016 NMR Consultation, retail customers are likely to consider all fixed narrowband voice access services as substitutes regardless of the underlying network (whether copper or otherwise). The service received by retail customers has similar characteristics irrespective of whether it is provided over copper access, cable access or FTTP using an ATA.

4.21 The pricing of line rental services over alternative fixed networks is also similar, for example Figure 3.16 shows that despite using different mixes of copper, MPF and cable connections to supply voice services BT, Sky, TalkTalk and Virgin Media charge similar prices for line rental.[103] Sky and TalkTalk use both WLR and MPF to supply voice services to their customers, but their retail packages are not differentiated based on the type of connection. FTTP is at the early stages of roll-out and so retail sales of communication services based on FTTP are currently small. However, we do not expect material differences in price or the other characteristics of the voice element of products supplied using FTTP with an ATA and we expect FTTP based services to be substitutable with equivalent products based on copper or cable.

4.22 Over 95% of premises are served from an LLU-enabled telephone exchange and Virgin Media covers around half of premises,[104] and this will increase to about 60% when its

---

[101] Vodafone response to 2016 NMR Consultation, part 2, page 43.
[102] Vodafone response to 2016 NMR Consultation, part 2, page 21.
[103] See also Figure 1.2 of Ofcom, 2017. *Pricing trends for communications services in the UK*. https://www.ofcom.org.uk/__data/assets/pdf_file/0028/98605/Pricing-report-2017.pdf.
[104] Ofcom. Communications Market Report 2015 (2015 CMR), figure 1.4. https://www.ofcom.org.uk/__data/assets/pdf_file/0022/20668/cmr_uk_2015.pdf; Ofcom, 2016. *Making communications work for everyone: Initial conclusions from the Strategic Review of Digital Communications*, paragraph 1.19, https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/policy/digital-comms-

'Project Lightning' network expansion is completed.[105] We consider that MPF and cable are likely to remain the technologies of choice underlying provision of fixed voice access on alternative network infrastructure and will continue to provide competing services over the review period.

4.23 Based on the observed market shares (see Section 6), we have seen a significant degree of switching from the focal product to services based on other forms of copper access and cable.

4.24 In response to Vodafone's submission, we agree that bundling, the extent of pass-through from wholesale to retail prices and retail price sensitivity are relevant considerations in assessing how much wholesale prices might change before indirect constraints (at the retail level) would become effective in constraining wholesale price changes. We also recognise that the bundling of retail services and uncertain levels of pass-through make it difficult to accurately estimate how much substitution there will be at the retail level in response to a price rise at the wholesale level. Nevertheless, we consider that to evaluate the constraints at retail level we should start by evaluating the impact of price rises of 5-10% at the retail level. If retail markets were effectively competitive without wholesale access (e.g. because the retail market is sufficiently wide), then the possibility of a hypothetical wholesale price increase of more than 5-10% a long way up the value chain becomes less important in the context of identifying whether wholesale ex-ante regulation is necessary.

4.25 That said, we recognise the supply to some 'groups of interest' is currently more reliant on wholesale analogue access services and discuss this further in the assessment of whether to segment the markets between customer groups, and in Section 6 where we consider whether any provider has SMP in these markets. In particular, we recognise that MPF and cable are not available in all parts of the UK and have played a more limited role in competition for some groups such as business analogue customers and residential fixed voice-only customers.

4.26 In response to KCOM's arguments in relation to FWA, this form of infrastructure competition represents an opportunity for substitution to broadband only access (without a voice enabled analogue line). We explain later in this section (under the heading of "indirect constraint from broadband access") why we have not identified broadband only access as a substitute for a FAEL in this review period.

review/conclusions-strategic-review-digital-Communications; Ofcom, 2014. *Infrastructure Report*, paragraph 3.3 https://www.ofcom.org.uk/__data/assets/pdf_file/0011/46010/infrastructure-14.pdf?lang=en; Virgin Media 2015. *Virgin Media and Liberty Global announce largest investment in UK's internet infrastructure for more than a decade.* http://about.virginmedia.com/press-release/9467/virgin-media-and-liberty-global-announce-largest-investment-in-uks-internet-infrastructure-for-more-than-a-decade [accessed 23 October 2017].

[105] TalkTalk response to March 2017 WLA Consultation, page 7, said that Virgin Media appears to have scaled back the speed of roll-out of Project Lightning and that is implausible that Virgin Media will reach anywhere near 60% of UK premises by 2020. We recognise there are inevitably risks associated with such a roll-out, and are monitoring the expansion of Virgin Media's network, and have taken into account any information emerging since the Consultation as part of our assessment. https://www.ofcom.org.uk/__data/assets/pdf_file/0014/105026/TalkTalk.pdf.

4.27 Finally, in relation to leased lines, these can, in principle, be a substitute for businesses using FAELs. The extent of substitution is likely to be limited in practice by the cost associated with the different characteristics and additional features of leased lines compared to FAELs. We consider leased lines are unlikely to place a significant constraint on WFAEL pricing.

Conclusion

4.28 Based on the above we have widened the market from the initial focal product of access provided using all copper lines (including MPF), to also include cable and FTTP using an ATA.

Indirect constraint from mobile

4.29 In the 2016 NMR Consultation, we proposed that mobile access is not a sufficiently strong substitute to fixed narrowband access for enough residential and business customers to justify its inclusion in the relevant wholesale market definition.

Stakeholder responses

4.30 BT said demand for FAELs is driven by demand for fixed broadband and that this "suggests caution in interpreting survey data on specific demand for fixed voice services in the current circumstances".[106]

4.31 Verizon agreed that mobile access is not a sufficiently strong constraint to include in the relevant market.[107]

4.32 UKCTA said that mobile is a less effective demand side substitute for business because mobile devices can be more costly than fixed voice equipment and mobile lacks features native to a fixed service such as extension dialling, call transfer, call recording and CLI flexibility.[108] Verizon made a similar argument.[109]

4.33 Some stakeholders said that certain legacy systems and devices are designed to work over analogue connections. Colt said it expects any decline in FAEL and WCO volumes will be slowed by mobile and VoIP not being substitutes for certain legacy systems which use FAELs and WCO.[110] [✂][111], Sky[112], Verizon[113] and UKCTA[114] referred to systems such as alarms and monitoring systems, emergency services such as personal care alarms or elevator helplines, and payment terminals as examples.

---

106 BT response to 2016 NMR Consultation, paragraph 4.11.
107 Verizon response to 2016 NMR Consultation, pages 2 and 3.
108 UKCTA response to 2016 NMR Consultation, page 8.
109 Verizon response to 2016 NMR Consultation, pages 2 and 3.
110 Colt response to 2016 NMR Consultation, page 4.
https://www.ofcom.org.uk/__data/assets/pdf_file/0012/101631/Colt.pdf.
111 [✂]
112 Sky response to 2016 NMR Consultation, page 4.
https://www.ofcom.org.uk/__data/assets/pdf_file/0019/101638/Sky.pdf.
113 Verizon response to the 2016 NMR Consultation, page 3.
114 UKCTA response to the 2016 NMR Consultation, page 3.

Evidence and analysis

4.34 The strength of the constraint from mobile will depend on the willingness of customers to give up their FAEL and use a mobile device for voice services. Broadband users giving up their FAEL would also need to substitute to fixed broadband-only products (which do not require the purchase of a voice enabled line, i.e. FAEL), mobile broadband (including internet access via smartphones), or, in the unlikely extreme, give up broadband access.

4.35 Regarding mobile broadband, the March 2017 WLA Consultation said that:

- mobile broadband provides internet access at comparable prices to fixed broadband, but average speeds (across all technologies) are slower than fixed broadband (when including fibre broadband) and mobile broadband data allowances are limited;
- customers use fixed broadband connections rather than mobile data when both are available;
- few customers have mobile broadband or smartphones but do not have fixed broadband; and
- given this, mobile broadband access appears to be a poor substitute for fixed broadband access for the majority of customers.[115]

4.36 We consider these factors mean that mobile broadband would be a poor alternative for existing broadband users giving up their FAEL.

4.37 Instead, customers who wish to maintain broadband access and avoid a price increase on a FAEL would need to switch to a fixed broadband-only product. These are not commonly offered by major telecoms providers to residential customers, as either an element of calls is included within the monthly subscription and, if not, the FAEL is bundled with the broadband such that calls can be made at a chargeable rate (e.g. per minute) and calls can be received in the usual way. The main exception (i.e. with no active FAEL bundled) that we are aware of is more expensive than many dual-play offers, including many superfast broadband packages (i.e. offering speeds greater than 30 Mbit/s).[116]

4.38 An alternative means of obtaining broadband at a fixed location without a FAEL is fixed wireless access (FWA). However, as set out in the March 2017 WLA Consultation, FWA services:

- often have limited data allowances (e.g. 20GB or lower) compared with increasingly unlimited allowances from the major fixed line broadband providers;

[115] Ofcom. 2017. *Wholesale Local Access Market Review – Consultation on the proposed market, market power determinations and remedies*, paragraphs 3.56 to 3.68.
https://www.ofcom.org.uk/__data/assets/pdf_file/0033/99636/Vol1-Market-review.pdf.

[116] Virgin Media offers a broadband-only service, but the cheapest (VIVID 50) is £33 per month (source: http://www.virginmedia.com/shop/broadband.html [accessed 13 September 2017]). Cheaper broadband services with a FAEL are, however, available. For example, TalkTalk has a £19.95 per month standard broadband offer with a 24-month contract which includes line rental, calls at standard chargeable rates, and an option to block outgoing calls (source: https://www.talktalk.co.uk/shop/broadband [accessed 13 September 2017]). Vodafone offers a 38 Mbit/s broadband dual-play tariff for £20 per month on an 18-month contract which includes line rental and calls at standard chargeable rates. Even with an anytime calls package (£8), the total cost of this offer is below Virgin Media's broadband only service (source: https://www.vodafone.co.uk/broadband [accessed 13 September 2017]).

- are available in a limited range of geographic areas;
- can have considerable set-up charges (with many in excess of £100 and some up to £200); and
- have low take up.[117]

4.39 Given this, the March 2017 WLA Consultation provisionally concluded that for most customers, FWA is unlikely to be a close substitute for broadband services over copper, fibre or cable over this review period. These considerations suggest FWA services are unlikely to be an effective substitute for most customers giving up their FAEL but who wish to maintain a broadband service.

4.40 Overall, we consider the broadband options available to residential customers giving up their FAEL are likely to be relatively poor substitutes for broadband services sold alongside a FAEL, and this may deter these customers from giving up their FAEL.

4.41 Moreover, residential customers have not abandoned their FAELs and relied on mobile access to any significant extent. Survey evidence indicates 78% of adults have both fixed and mobile access while 18% were mobile-only.[118] In fact, the number of residential FAELs rose from 24.5 million in 2012 to 26.4 million in 2016.[119]

4.42 Business customers also commonly have both fixed and mobile access (79% of SMEs both a landline and mobile phones[120]), however, in contrast to the residential sector, as set out in Section 3 the number of FAELs has declined in the business sector, falling from 4.5 million in 2012 to 3.9 million in 2016. As we said in the 2016 NMR Consultation, it is possible that this trend among businesses may reflect, in part, substitution to mobile. However, it is also likely to reflect substitution to other alternatives such as dedicated VoIP systems.

4.43 Survey responses also show strong customer attachment to fixed lines in response to a price increase. As set out in the table below, survey evidence suggests many residential customers would not be willing to give up their landline in response to a 10% price increase.

[117] March 2017 WLA Consultation, paragraphs 3.71 to 3.76.
[118] This compares to 79% having both fixed and mobile access and 15% only having mobile access in 2012. See Figure 3.10.
[119] See Figure 3.1.
[120] 2017 NMR Small Business survey, Q1.

Table 4.1: Survey data related to willingness to give up a landline

	Residential: All with landline	Residential: Landline but no broadband	Residential: Landline and Broadband	SME
Would give up landline in response to 10% increase in landline bills	14%	10%	14%	18%
Disagree that "under certain circumstances, I would be prepared to give up the ability to make and receive calls from my landline"	39%	66%	35%	73%

Source: 2017 NMR Residential Survey, Q32 and Q45. 2017 NMR Small Business survey, Q15 and Q28.

4.44 Our survey evidence indicates that broadband is a leading reason for residential customer attachment to their landline:

- 60% of residential survey respondents with a landline reported needing a landline to get broadband as a reason for having a landline (50% reported this as the main reason for having a landline).[121]
- 47% of residential survey respondents agreed that they would be prepared to give up the ability to make and receive calls from a landline in certain circumstances.[122] When this group was asked what those circumstances were, 64% of them said not needing a landline for broadband.[123]
- Additionally, half of residential survey respondents with fixed broadband say they would be unlikely to continue to pay for a landline service if they could buy a standalone broadband service without needing a landline (assuming some price reduction for not having the landline).[124]

4.45 The results in Table 4.1 above also show residential landline users without broadband report a greater attachment to their landlines than those with broadband. Compared to those with broadband, these customers make and receive calls more regularly from their landline and are less likely to have a mobile phone in the household, and so their attachment is driven by demand for voice rather than broadband services.[125]

4.46 Table 4.1 above also indicates that 73% of SMEs disagree that they would be prepared to give up the ability to make and receive calls from a landline compared to 39% of residential

[121] 2017 NMR Residential Survey, Q9 and Q10. Among those with a landline and fixed broadband, 66% of respondents cited needing a landline for broadband as a reason for having a landline, and 55% said it was the main reason.
[122] 2017 NMR Residential Survey, Q32.
[123] 2017 NMR Residential Survey, Q33.
[124] 2017 NMR Residential Survey, Q47.
[125] 80% of landline users without fixed broadband make calls weekly or more regularly and 85% receive calls weekly or more regularly on their landlines. This compares to 57% and 69% respectively among landline users with fixed broadband. (2017 NMR Residential Survey, Q12 and Q13). 72% of landline users with no fixed broadband have a mobile phone compared to 97% of landline users with fixed broadband. (2017 NMR Residential Survey, S5).

customers, though a slightly higher proportion of SMEs (18%) said that they would give up landline in response to 10% increase in their bill. SMEs cite different reasons for having a landline than residential customers. The leading factors cited by the 73% of SMEs who said they would not be willing to give up their ability to make and receive calls were "reliability of connection" (25%), "landline is essential" (21%), "clients/customers/partners are familiar with it" (21%) and "quality of lines/calls" (13%).[126]

4.47 We recognise that mobile may not be as well suited to certain functions more heavily used by businesses or unable to accommodate certain legacy uses, as set out above. While we expect these differences between fixed and mobile services to diminish over time, we consider that mobile (or VoIP for that matter) may not be perceived as effective substitutes for FAELs (or fixed call origination) in certain instances.

4.48 Nevertheless, survey evidence suggests mobile is the strongest constraint at the retail level. 17% of respondents to our Residential survey with a landline said they would switch all of their calls away from their landline in response to a 10% increase in their total landline bill. Of these respondents 83% said they would use mobile voice calls instead.[127] This compares with 32% who would use SMS or instant messaging, 30% who would use VoIP and 19% who would use email.[128] Among SMEs, 17% said they would switch all of their calls away from their landline in response to a 10% increase in their total landline bill and of those, 82% would use mobile voice calls instead. This compares with 53% who would use SMS or instant messaging, 33% who would use VoIP, and 46% who would use email.[129]

Conclusion

4.49 The strength of the constraint from mobile access depends on the willingness of customers to abandon their FAEL and rely entirely on mobile access. Survey evidence suggests that many customers have an attachment to their landline and have a low willingness to give it up. This is supported by customers continuing to subscribe to both mobile and fixed voice services and stability in FAEL volumes, despite rising line rental prices and declining call origination from FAELs. SME customers also show a strong attachment to FAELs. Given this, we consider that mobile access is not a sufficiently strong substitute to widen the product market based on indirect constraints at this time.

[126] 2017 NMR Small Business survey, Q17. Base reported is those SMEs whose main voice calls method is a landline. We note this data is consistent with Verizon statement that businesses are more sensitive to the quality of coverage and reliability. (Verizon response to 2016 NMR Consultation, page 2).
[127] Results from 2017 NMR Residential Survey, Q43 and Q44. Note the constraint from mobile access will be influenced by the share of customers willing to give up their landline rather than the share who would reduce their calls. However, what they would switch their calls to is useful evidence for determining the relative strength of constraints from alternatives.
[128] 2017 NMR Residential survey, Q43 and 44. Note respondents were able to specify more than one alternative which they would switch calls which is why responses sum to more than 100%.
[129] 2017 NMR Small Business survey, Q26 and Q27.

Indirect constraint from fixed broadband access

4.50 VoIP services over fixed broadband can take the form of OTT VoIP services (the main form of VoIP services used by residential customers) or managed services (seen in the business but not residential sector to date).[130]

4.51 In the 2016 NMR Consultation, we said broadband access is not a sufficient indirect constraint over the review period to be included in the relevant market with FAEL access at this time.

Stakeholder responses

4.52 Vodafone said it believes that currently available voice over broadband services are not in the same market as WFAEL.[131] It also noted the technical challenges that single order GEA (SOGEA)[132] needs to overcome and expressed scepticism about it replacing WLR-based voice services in the review period.[133]

Evidence and analysis

4.53 Most customers who might be willing to substitute to fixed broadband access would not be able to avoid a SSNIP on the FAEL, as retail offers typically bundle a FAEL with broadband and existing broadband-only offers are considerably more expensive than voice-only landline offers.[134]

4.54 We expect the key enablers of a switch to broadband-only lines are likely to be the development of mass-market VoIP products that are attractive to residential landline users, cost pressures as traditional voice networks become costlier to maintain[135], and suitable wholesale products.

4.55 In respect of the latter we note, the vast majority of the cost of a FAEL is the connection itself, rather than the voice capability. The cost of the connection is shared with broadband access and so this large common cost of the physical connection acts as supply-side driver for bundling. Therefore, the cost of a broadband-only service may not be very different to the cost of a FAEL, though this may change as traditional networks become costlier to maintain. When coupled with the convenience for consumers and the continued (but declining) use of fixed voice calls, it may therefore take some time for broadband-only lines to become commonplace.

---

[130] See Section 2 for an explanation of the difference between managed and unmanaged VoIP.
[131] Vodafone response to 2016 NMR Consultation, part 2, page 43.
[132] SOGEA enables the provision of wholesale superfast broadband without the need for WLR or MPF to support it.
[133] Vodafone response to 2016 NMR Consultation (Part 2), pages 12-13 and 48-49.
[134] As discussed above, Virgin Media offer a broadband only service for £33 per month. This compares with BT line rental of £18.99 per month (source: http://www.productsandservices.bt.com/products/phone-packages, [accessed 23 August 2017]).
See Sections 17 and 18.
[135] See Sections 17 and 18.

4.56 The anticipated launch date of SOGEA is now March 2018.[136] BT told us that its aim at launch was for SOGEA to be available to the [✂].[137] An Openreach Investment Board document contains a forecast which indicates SOGEA would primarily be used to serve customers who would otherwise have been served with WLR+GEA or G.fast.[138] This transition will begin in 2019/20, [✂].

4.57 Charges for SOGEA have still not been finalised, its commercial appeal is unproven and take-up at the retail level may take some time. For these reasons, we consider retail broadband-only services based on SOGEA are unlikely to impose a significant constraint during much of this review period – at least the first couple of years. That said, we recognise that in the longer term the development of SOGEA is likely to be an important enabler of competition and future voice deregulation.

4.58 Virgin Media have introduced a managed VoIP offering as part of their Project Lightning rollout.[139] A limited pilot started in November 2016 for certain customers in areas which are part of the Project Lightning roll-out, [✂]. Limited migration of existing residential customers may start in 2018, although plans and timings for this migration process have not yet been finalised. Virgin Media does not expect migration of its existing customers to VoIP to be complete within the review period. [✂]. The current evidence does not indicate, to a sufficient degree of certainty, that this transition will change the competitive dynamics in the WFAEL market to a significant extent during the review period.

4.59 Evidence on the use of VoIP can be informative on the extent of the future constraint from fixed broadband access on WFAEL in a setting where fixed broadband can be purchased separately from a FAEL (e.g. if SOGEA or FWA were an established alternative to existing modes of delivering broadband at fixed locations). In that context, we observe that:

- Residential VoIP usage has increased but many customers still do not use it. As noted in Section 3, our survey evidence suggests that in 2017, 39% of residential landline users have access to VoIP services such as Skype or Vonage at home, an increase from 27% in 2015.[140] However, active use is less than this. Responses to the 2017 Technology Tracker suggest that 34% of residential landline consumers actively use VoIP services such as Skype through the internet, including on a mobile phone.[141] As noted in section 3, use of managed VoIP amongst businesses has increased in recent years and in contrast to the residential sector the number of Business FAELS is in decline.[142] Our survey showed, however, that 93% of SMEs with a landline used fixed broadband but only 19% reported using VoIP in the last month.[143]

---

[136] Openreach response dated 31 May 2017 to the 15th NMR s.135 notice.
[137] [✂]
[138] [✂]
[139] Ofcom meeting with Virgin Media on 27 September 2017.
[140] 2017 NMR Residential survey, S5; NMR 2015 Residential survey (wave 2, S2). This will include some usage of VoIP on mobile devices. This is slightly below the 2015 survey results (21%), but the difference is not statistically significant.
[141] Ofcom. *Te*chnology *Tracker H1 2017*, QD28A and Q25A.
[142] See Figures 3.1 and 3.13
[143] 2017 NMR Small Business survey, Q1.

- Survey evidence discussed earlier in relation to mobile access shows that certain residential customers have a significant attachment to their landline and are not very price sensitive (although for many this appears to be due to the need to purchase a FAEL given it is bundled with broadband access at the retail level). Similarly, survey evidence for SMEs who use landlines, shows that many continue to have an attachment to their landlines and, whilst they appear marginally more price sensitive than residential customers they in terms of price increase, they still display high attachment in relation to access.

Conclusion

4.60 At present, except for switching to a relatively expensive broadband-only service or a FWA service (where availability and take-up has been historically low), it is difficult for residential customers to avoid a price increase for a FAEL, while retaining their fixed broadband. Technological and commercial pressures may change this in due course, as may the introduction of SOGEA as a wholesale service, but these developments are unlikely to become mass-market propositions in a short period such that broadband only services impose a significant constraint during this review period.

4.61 Business customers may be able to exercise greater choice than residential customers in terms of voice over broadband services. However, business customers represent a minority (about 13%) of FAEL users.

4.62 Given this, we consider that broadband access will not be a sufficient indirect constraint over the review period to widen the wholesale product market, although we recognise that beyond the period covered by this review this may change.

Indirect constraint from ISDN access

4.63 From a functional point of view, ISDN can provide the same functionality as a FAEL (as well as additional functionality). However, an ISDN line is considerably more expensive than a FAEL at the retail level, and switching will lead to high one-off connection charges.[144] We expect retail FAEL customers would not switch to ISDN in response to a SSNIP by a hypothetical monopolist of FAELs to any significant extent.

Conclusion on indirect constraints from the retail level

4.64 Considering the analysis set out above, our conclusion is that FAELs are not sufficiently constrained at the retail level by mobile, broadband or ISDN access to widen the product market.

---

[144] For example, a BT business analogue retail line (Value Line) is £16.90 per month, or £23.70 per month for the BT Standard Line, but for ISDN2 the price is £27 per channel per month and ISDN30 £26.40 per channel per month. The connection charge for ISDN30 is £160 per channel for the first 15 channels and £45 [per channel?] thereafter. The connection charge for ISDN2 is £375 for both channels. See Section 3 for further detail. Sources: BT Website: https://business.bt.com/products/voice/phone-lines/ [accessed 25 September 2017] BT price list: http://www.globalservices.bt.com/static/assets/pdf/products/isdn2e/bt-one-voice-access-ISDN-2e-pricing-options-2017.pdf [accessed 18 September 2017].

Wholesale product market

4.65 In the 2016 NMR Consultation, we proposed that broadband access and other alternatives are not a sufficient direct constraint to be included in the relevant market and did not consider there are any other realistic supply-side substitutes. In summary, we said:

- The potential for switching to VoIP access was limited, managed VoIP was not available to any significant extent among residential customers, and SOGEA was unlikely to offer a sufficient constraint in the review period.
- The constraint imposed by cable and FTTP deployments offering narrowband voice access using an ATA were considered as part of our assessment of indirect constraints rather as sources of wholesale supply side substitution, and we were not aware of other significant alternatives.

4.66 On this basis, and absent contrary evidence from stakeholder responses or further evidence, we consider the constraints from direct demand or supply side substitution at the wholesale level are not sufficient to widen the market.

Conclusion on product market definition

4.67 WFAEL is a wholesale narrowband analogue access connection to a customer's premises. Our conclusion is that the product market comprises copper, cable and ATA enabled FTTP connections. Mobile access and other alternative forms of connection (such as broadband-only lines and reliance on VoIP) are not a sufficient direct constraint to be included in the relevant market at this time.

Should the wholesale market be segmented?[145]

4.68 If a hypothetical monopolist had the ability and incentive to discriminate between customers, then it can be appropriate to segment the product market between types of customers.[146]

4.69 We have therefore considered whether it is appropriate to segment at the wholesale level between:

- Businesses and residential customers; and
- Those 'groups of interest' who are more reliant on wholesale analogue access products and other customers.

[145] Since similar considerations apply in respect of lines and calls in this respect, much of the reasoning below applies to both WFAEL and WCO.

[146] The incentive to discriminate will depend on the variance in price sensitivity among customers, which in turn, will depend on factors such as competitive conditions for those customers including those customers' reliance on the product in question. The ability to discriminate will depend on the ability to identify and adopt a commercial strategy which varies the prices (or otherwise varies the terms or nature of the product) for these customers, and prevents exchange between them.

4.70 We note the 2017 Standalone Landline Consultation excluded businesses and dual-play residential customers from the relevant markets proposed for standalone fixed voice access and calls at the retail level.[147] However, it can be appropriate to take different approaches to segmenting wholesale and retail markets. Although the price sensitivity of a telecoms provider purchasing at the wholesale level will be derived from the price sensitivity of its own retail customers, the ability and incentive to discriminate between customers at the wholesale level may be different from the ability and incentive to do so at the retail level.

Residential and business customers

4.71 In the 2016 NMR Consultation, we proposed assessing business and residential customers together at the wholesale level for both access and calls.

4.72 UKCTA and Verizon said we did not sufficiently distinguish business (particularly large businesses) and residential customers.[148]

4.73 We recognise there are some differences between businesses and residential customers, for example, mobile and VoIP may be a weaker alternative for some businesses which use certain functions (e.g. call transfers, CLI flexibility) or systems (e.g. alarms) that are more suited to, or can be used with, FAELs and fixed call origination.

4.74 However, our latest survey evidence, particularly related to attachment to landlines and propensity to switch to alternatives, shows smaller differences between SMEs and residential customers than the evidence in the 2016 NMR Consultation.[149] Additionally, although some telecoms providers specialise, a significant proportion of the sales to both residential and SME customers are accounted for by the same telecoms providers (e.g. BT, TalkTalk and Virgin Media), suggesting there is scope for supply-side substitution.

4.75 Furthermore, the factors below suggest that a hypothetical monopolist of WFAEL may be unable to identify whether a particular retail customer is a business or a residential customer or unable to charge them different prices (i.e. it may lack the ability or incentive to discriminate):

[147] Ofcom, 2017. *Standalone Landline Consultation, The review of the Market for Standalone Telephone Services – Provisional Conclusions*, paragraphs 3.10-3.12 and 3.30-3.43. https://www.ofcom.org.uk/__data/assets/pdf_file/0030/97806/Consultation-Review-of-the-market-for-standalone-landline-telephone-services.pdf.

[148] UKCTA response to 2016 NMR Consultation, pages 2 and 3; Verizon response to 2016 NMR Consultation, pages 2 and 9.

[149] For example, in the 2016 NMR Consultation, survey results from 2015 indicated 19% of residential customers reported that they would be certain or very likely to give up their landline in response to a 10% increase in the total landline bill (paragraph 4.50) compared to just 4% of SMEs (paragraph 4.53). Table 4.1 above sets out responses to our 2017 survey which uses an updated set of survey questions. The 2017 survey reported that 14% of residential survey respondents said they would give up their landline in response to a 10% increase in bills compared to 18% among SMEs. Compared to the former results, the more recent results reverse the order and show a much smaller difference between SMEs and residential customers.

- A significant proportion of SMEs (30%[150]), do not have business-specific contracts, and if a hypothetical monopolist were to attempt to increase the price of WFAEL to businesses customers they would have a greater incentive to use a residential contract.
- While the WLR Premium service is more likely to be used to supply business customers than residential customers, business customers also use services based on WLR Basic. If a hypothetical monopolist were to attempt to increase the price of WLR Premium, businesses customers would have a greater incentive to use a WLR Basic. Moreover, absent SMP regulation of WFAEL, it is not clear whether a higher quality service would be created at all (i.e. a service like WLR Premium may not exist) and thus it is unclear whether discrimination would be feasible.
- While the volume or pattern of call usage over a FAEL could provide some indication of whether the end customer is residential or business (e.g. a large volume of call traffic in the day is more likely for a business customer), but this will be a highly imperfect basis for discrimination. Moreover, WCO product used for calls made by businesses and for calls made by residential customers is the same. This implies telecoms providers could supply both retail groups and a supplier of WCO would be unable to identify which type of retail customer was being served.

4.76 This suggests that any retail level differences would not always be apparent at the wholesale level. Based on this, we consider it is appropriate to assess business and residential customers together at the wholesale level.

2016 NMR Consultation proposals relating to the groups of interest

4.77 In the 2016 NMR Consultation, we identified certain groups of customers as being more reliant or completely reliant on wholesale analogue services (i.e. WLR and WCO). These were fixed voice-only customers, split-supplier customers (i.e. with different providers of FAELs and broadband) and off-net customers, but not for example, customers supplied using MPF or cable. All three groups include both business and residential customers. We referred to these as 'groups of interest'.

4.78 Not all these customers will be wholly reliant on WLR in the long run, but nonetheless, we considered a significant share of those customers, which in turn will represent a significant share of the WFAEL market, are likely to remain reliant on WLR over the review period.

4.79 We considered that a hypothetical monopolist of WFAEL would be unlikely to have an incentive to vary pricing by type of customer (i.e. segment the market), but rather it would be more likely to have a uniform wholesale charge for WFAEL and respond to competition in the dual-play segment, by varying its wholesale broadband charges.[151]

4.80 Given this, we proposed assessing the WFAEL market as a single market, not segmented between different groups of retail customers.

---

[150] Ofcom, 2017. *SME experience of communications services – a research report*, Figure 103. https://www.ofcom.org.uk/__data/assets/pdf_file/0030/96348/Ofcom-SME-customer-experience-research-2016-Report.pdf.

[151] 2016 NMR Consultation, paragraphs 4.96, and 4.103-4.104.

Stakeholder responses relating to the groups of interest

4.81 Some respondents agreed that certain customers are reliant on WLR and WCO:

- Sky said that significant cohorts of customers are dependent on WFAEL. It said a significant minority ([✂]%) of its customers continue to be supplied via regulated WFAEL products (i.e. WLR) and it continues to place an average of [✂] new WLR orders with BT each month.[152]
- Vodafone said that until fully fit-for-purpose SOGEA capability is introduced, for those without existing MPF infrastructure (or capacity constraints), there is no alternative to WLR and WCO for the narrowband element of superfast broadband bundles.[153]
- Colt said WLR (and WCO) are an important element of serving large multi-site business contracts, as these may be the only suitable options for some sites (e.g. because they are off-net).[154]

4.82 Some respondents noted, that in addition to the groups of interest identified in the 2016 NMR Consultation, certain other types of customers will be more reliant on WLR:

- Sky said in some cases it is unable to provide number porting onto MPF-based services (e.g. because the new customer was previously with a telecoms provider with whom Sky has not established number porting arrangements), and so it will need to rely on WLR.[155] Vodafone also said issues in porting numbers to MPF-based services can lead to WLR being used rather than MPF.[156]
- Vodafone said if a telecoms provider is capacity constrained at an exchange, it might be more effective to use WLR rather than MPF based voice.[157]

4.83 Additionally, we discussed above how mobile and VoIP are unable to accommodate certain legacy services, which makes customers who buy such services more reliant on WLR. Sky explained that in some cases, these services may also work less effectively over MPF or cable, leaving the customer reliant on WLR.[158]

4.84 BT said that most customers identified as being in the groups of interest could be served by MPF based suppliers and/or by Virgin Media. It also said voice-only customers are a shrinking customer segment and the prospect of their switching to dual-play packages can be a source of constraint.[159]

4.85 BT said that we understated the extent of competitive pressures arising from WLA regulation and so overstated the concerns relating to these ‘groups of interest’.[160] It said these customers could be served by MPF-based suppliers or Virgin Media and the incremental cost of connecting a ‘standalone voice customer’ using spare MPF capacity in

[152] Sky response to 2016 NMR Consultation, page 3.
[153] Vodafone response to 2016 NMR Consultation, part 2, page 5.
[154] Colt response to 2016 NMR Consultation, page 4.
[155] Sky response to 2016 NMR Consultation, page 4.
[156] Vodafone response to 2016 NMR Consultation, part 2, page 10.
[157] Vodafone response to 2016 NMR Consultation, part 2, page 10.
[158] Sky response to 2016 NMR Consultation, page 4.
[159] Openreach response to 2016 NMR Consultation, page 7 and 16-21.
[160] BT response to 2016 NMR Consultation, page 8.

exchanges would be low and acquisition of these customers will drive long-term incremental value.

Further evidence and analysis on the groups of interest

4.86 We agree that in some circumstances, telecoms providers supplying the groups of interest, may be reliant on WLR and WCO for reasons such as difficulties with serving customers in certain locations (including multi-site business contracts[161]), number porting and use of legacy services.

4.87 In light of Vodafone's comments, we note GEA is bundled with either WLR or MPF, and cannot yet be bought on a standalone basis. In the 2016 NMR Consultation, we said that telecoms providers who have not already invested in MPF and potential entrants will be likely to rely on a WLR and GEA bundle for providing superfast broadband, and will not be able to avoid increases in WLR charges. Data received from Sky and TalkTalk confirms they use MPF rather than WLR alongside GEA for the voice component of most of their FTTC connections.[162] In the March 2017 WLA Consultation we proposed that, where the copper bearer is not provided via MPF (e.g. it is provided via WLR or a new product such as SOGEA), any charges related to the copper bearer should be fair and reasonable and reflect the costs of providing that bearer for any GEA 40/10 service (the cost-based anchor for fibre access).[163] This proposal is designed to prevent reliance on WLR used alongside GEA from having an adverse effect on retail competition in superfast broadband.[164]

4.88 In response to BT, we do not consider that switching to a dual-play service represents a significant source of constraint for standalone fixed voice customers (i.e. residential fixed voice-only and split-supplier customers). This is based on our analysis set out in the 2017 Standalone Landline Consultation, which said dual-play services exerted a weak constraint on standalone fixed voice customers. This was based on factors including:[165]

- Standalone fixed voice services have been increasing at a faster rate than ADSL dual-play prices;
- Standalone fixed voice access prices (and profits) being substantially above competitive levels;
- voice-only customers are unlikely to be making a price-quality trade-off between their current service and dual-play in sufficient numbers to provide a competitive constraint;
- switching to dual-play has not prevented line rental increases and reported switching rates being low for fixed voice-only customers; and

[161] WLR and WCO will be required to service the off-net sites in any multi-site contract.
[162] Sky's response dated 12 June 2017 to the 6th NMR s.135 notice. TalkTalk's response dated 28 June 2017 to the 8th NMR s.135 notice.
[163] March 2017 WLA Consultation, paragraph 8.57.
[164] This proposal does not cover WCO pricing, but as set out below, it is difficult to restrict access to WCO or vary WCO pricing by the type of line, which lessens the concerns in relation to WCO.
[165] 2017 Standalone Landline Consultation, paragraphs 3.30-3.43. We consider that enough of these considerations also apply for businesses to draw the same conclusions for them.

- where there have been small price gaps between dual-play and standalone voice services these have been typically accounted for by introductory or promotional offers.

4.89 Section 6 has further evidence on the extent to which alternatives such as MPF can be used to serve the groups of interest.

4.90 Section 3 sets out estimates of the size of the groups of interest. Off-net, residential fixed voice-only, and residential split-supplier customers account for 13% of FAELs, and adding all business FAELs increases this to 25% of FAELs.[166] We said these groups accounted for approximately 47% of FAELs at the time of the 2013 NMR Statement.[167]

Incentive to vary charges for groups of interest

4.91 BT agreed with our view in the 2016 NMR Consultation that it is unlikely that a hypothetical monopolist supplier of WLR would discriminate in the charges applied to customers on a line by line basis.[168]

4.92 The greater reliance of these groups on WFAEL makes them a potential target for price discrimination. To assess whether we should segment the market, we consider the incentives of a hypothetical monopolist of WFAEL to vary its charges between the groups of interest and other users. Our view remains that a hypothetical monopolist of WFAEL (which was also serving the wholesale dual-play sector using GEA, WBA or SMPF alongside WFAEL) would be unlikely to vary its charges for WFAEL. Rather, it would be most likely to respond to competition by reducing the charge for the wholesale broadband component of its service. Adjusting the overall price of the wholesale bundle in this way allows the hypothetical monopolist to respond to competition in wholesale broadband services and profit maximise in the uniform pricing of WFAEL to take account of the likely price insensitivity amongst the groups of interest.

Conclusion

4.93 Certain groups of interest are more likely to be reliant on services based on WLR (and WCO). Although the share of FAELs accounted for by the groups of interest has fallen in recent years, and is likely to fall further during the review period, these customers account for a significant share of the overall WFAEL sales and are likely to continue to do so during the review period. We consider these groups of interest would be sufficiently large in scale to influence the profit maximising price of WFAEL by a hypothetical monopolist.

4.94 For the reasons set out above, we do not consider that a wholesale supplier of WFAEL would be likely to have the incentive to discriminate in the provision of, or wholesale charges for, lines used to supply different retail segments. Given this, our conclusion is that

---

[166] We note BT highlighted (page 3 of its response) that only 5% of households purchase a FAEL but have neither broadband nor a mobile. While wholesale supply to these customers is likely to be particularly reliant on WLR, other fixed voice only customers (i.e. those who have a landline but not broadband) will also be reliant on WLR.

[167] Based on data in 2013 NMR, paragraphs 5.118, 5.122 and 5.190; Ofcom, 2013. *Review of the fixed narrowband services markets – Statement on the proposed markets, market power determinations and remedies.* https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.

[168] BT response to 2016 NMR Consultation, page 21; Openreach response to 2016 NMR Consultation, page 7.

it is appropriate to assess competition in the provision of WFAEL market as a single market, not segmented between different retail customer groups.

Geographic market

UK excluding the Hull Area

4.95 In the 2016 NMR Consultation, we said there is a common pricing constraint at the retail level across the UK excluding the Hull Area and this is likely to extend to pricing at the wholesale level, even absent SMP regulation.

4.96 The reasons for this can be summarised as follows:

- At the retail level, the Universal Service Conditions (USC)[169] require the designated provider (BT in the UK excluding the Hull Area) to provide retail telephony services that are priced uniformly, irrespective of geographic location. Setting low wholesale charges in low-cost geographic areas would create an opportunity for other retail providers to set lower retail prices (i.e. allowing them to undercut the uniform retail price set by the USC provider), whereas setting high wholesale charges in high-cost geographic areas would undermine retail sales as the USC provider has to offer a uniform national price.[170] This would create unsustainable commercial conditions for the USC provider in terms of the wholesale charge and the retail price.
- Even if we were to ignore the implications of the USC, local pricing is likely to involve costs associated with local variation in published prices and loss of economies of scale (e.g. in advertising). We also note that other telecoms providers price uniformly across the areas in which they are present (at least to residential customers).

4.97 TalkTalk disagreed with our assessment.[171] It said there is no evidence that setting low wholesale charges in low-cost areas would lead to entry into retail voice markets and that setting high wholesale prices in high-cost areas would not undermine wholesale sales. Additionally, it said that our approach to geographic market definition leads to remedies which fail to adequately protect customers in off-net areas.

4.98 In response to TalkTalk, we recognise that, in practice, if the wholesale price were reduced in low cost areas some features of competition in the retail voice market (i.e. low levels of engagement among certain customers) could reduce the likelihood or extent of entry.[172] However, in conducting the hypothetical monopolist test at the wholesale level we assume a competitive retail market, rather than imperfect competition which could arise due to barriers to entry or lack of retail consumer engagement in certain segments. The

[169] Further information is available on the Ofcom Website: http://stakeholders.ofcom.org.uk/telecoms/ga-scheme/specific-conditions-entitlement/universal-service-obligation/designation-of-bt-and-kingston/. Ofcom also conducted a review in 2006 http://stakeholders.ofcom.org.uk/consultations/uso/main/.

[170] In the case of sales to the downstream division of a vertically integrated USC provider, this presumes that high wholesale charges cannot be sustained due to the requirement not to impose a margin squeeze (e.g. under competition law).

[171] TalkTalk response to 2016 NMR Consultation, section 2.

[172] The 2017 Standalone Landline Consultation, paragraphs 4.36-4.43, identified barriers to entry in relation to customer acquisition.

combination of these factors suggests that, in the framework in which we assess market definition, reducing wholesale charges in low cost areas would be likely to induce retail-level entry, such as to undermine the sustainability of a uniformly priced national service.

4.99 In relation to TalkTalk's suggestion that higher wholesale prices in high-cost areas would not undermine wholesale sales, we are referring to sales to any provider constrained by the universal retail set by the USC provider. If retail margins were reduced in this way, competing retail providers would withdraw from retail sales leaving only the universal service provider – but selling at a loss downstream. Such a loss would be expected to amount to a margin squeeze if the USC provider were vertically integrated, and so we consider a hypothetical monopolist would not price in this manner.

4.100 Therefore, while we recognise there may be differences in wholesale competitive conditions between on-net and off-net areas (which correlates with lower cost and higher cost areas respectively),we consider that the retail-level USC is likely to carry over to uniform pricing at the wholesale level.

4.101 On this basis, we consider it is appropriate to define a single market for WFAEL in the UK excluding the Hull area.

Hull Area

4.102 In the Hull Area, KCOM is the USC provider and BT is not present. As in the UK excluding the Hull Area, we consider that the obligation to price uniformly in the Hull Area at the retail level would carry over to uniform wholesale pricing in that area. Moreover, there is no competing infrastructure in the form of cable or MPF in this area (i.e. no geographic variation in competitive conditions) and the costs of supply to different premises are likely to vary much less within the smaller geographic space of the Hull Area. Thus, we believe that the Hull Area represents a separate geographic market from the rest of the UK.

Conclusion on geographic market definition

4.103 Considering the above, we define two geographic areas:

- the UK excluding the Hull Area; and
- the Hull Area.

Three-criteria test for WFAEL

4.104 Under the European Framework, and in particular, Article 15 of the Framework Directive, in considering whether it is appropriate to impose regulation in electronic communications markets, NRAs must begin by defining relevant markets appropriate to national circumstances in accordance with the principles of competition law and taking utmost account of the 2014 EC Recommendation and SMP Guidelines.

4.105 The 2014 EC Recommendation seeks to identify those product and service markets within the electronic communications sector the characteristics of which may be such as to justify the imposition of regulatory obligations, without prejudice to markets that may be defined in specific cases under competition law. It therefore lists markets in which the European Commission considers that *ex ante* regulatory obligations may be warranted, taking into account the particular features of those markets.

4.106 The WFAEL market is not listed in the 2014 EC Recommendation as a market in which *ex ante* regulation may be warranted.[173] However, the 2014 EC Recommendation also recognises that there may be other markets, aside from those specifically identified, in which it is appropriate to impose *ex ante* regulatory obligations according to national circumstances. To assess whether it is appropriate to impose such obligations in a market not listed, the 2014 EC Recommendation sets out the following three criteria which must all be met (the three-criteria test):

- the presence of high and non-transitory barriers to entry. These may be of a structural, legal or regulatory nature;
- a market structure which does not tend towards effective competition within the relevant time horizon. The application of this criterion involves examining the state of infrastructure-based and other competition behind the barriers to entry; and
- the application of competition law alone is insufficient to adequately address the identified market failure(s).[174]

4.107 We now set out our analysis of the three-criteria test in relation to WFAEL.

Stakeholder comments in response to the 2016 NMR Consultation[175]

4.108 Vodafone agreed with our proposals in relation to the three-criteria test. BT disagreed with our proposals. In addition to issues discussed elsewhere relating to constraints and market power, BT said we did not appear to consider the third element of the test relating to the adequacy of competition law.[176]

---

[173] Note, retail access to the public telephone network at a fixed location for residential and non-residential customers was previously identified as a market susceptible to *ex ante* regulation in the 2007 EC Recommendation but not in the 2014 EC Recommendation.

[174] *Commission Recommendation of 9 October 2014 on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2014/710/EU),* point 5. http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014H0710&from=EN.

[175] Some stakeholders made comments relating to the three criteria test which restated points expressed elsewhere in relation to the market definition or SMP assessment. Where we have responded to such comments in our market definition or SMP assessment we do not repeat those responses here.

[176] BT response to 2016 NMR Consultation, paragraph 5.6.

Presence of high and non-transitory barriers to entry

UK excluding the Hull Area

4.109 We have assessed the barriers to entry and expansion as part of our SMP analysis in Section 6. We consider the factors we set out there are also relevant for our assessment of the first criterion, including:[177]

- the historical reliance by telecoms providers on WLR (and WCO) to supply voice services to certain groups of interest (e.g. business, fixed voice-only, off-net) which suggests it has not been cost effective or otherwise commercially effective to use MPF or cable to supply these segments; and
- although there may be scope for rivals to provide a stronger competitive alternative for these customer groups, substitution of this type is not of sufficient likelihood and scale to eliminate the high barriers to entry.

4.110 For these reasons, we consider that barriers to entry are likely to remain high and non-transitory over the period of this review in the UK excluding the Hull Area.

Hull area

4.111 We have assessed barriers to entry and expansion as part of our SMP analysis in Section 6. In particular:

- the significant investment required to build an alternative network, particularly when combined with the relatively small population over which the fixed costs of entry could be spread; and
- the absence of entry in the Hull Area to date, except for a small number of fixed wireless access providers.[178]

4.112 For these reasons, we consider that barriers to entry are likely to remain high and non-transitory over the period of this review in the Hull Area.

A market structure which does not tend towards effective competition

UK excluding the Hull Area

4.113 We have assessed competition in WFAEL in the UK excluding the Hull Area as part of our SMP analysis in Section 6. We consider the factors set out there are also relevant for our assessment of the second criterion. In particular:

- BT's high market share which although declining is still high (54% in Q4 2016/17);

[177] We note that point 11 of the 2014 EC Recommendation says that the "main indicators to be considered when assessing the first and second criteria are similar to those examined as part of a forward-looking market analysis to determine the presence of significant market power".
[178] Some but not all of these offer VoIP services.

- the low likelihood for telecoms providers switching in sufficient volumes from BT's WLR to alternative wholesale services (or being able to credibly threaten such switching) to generate effective competition;
- the somewhat limited constraint imposed by switching to mobile and VoIP, and the absence of these services as effective alternatives for some customers;
- that BT has generally been charging at the regulated caps for WLR, which is consistent with there being a limited constraint from competition;
- barriers to entry and expansion as discussed above; and
- limited countervailing buyer power.

4.114 For these reasons, we consider that market structure will not tend towards effective competition in the review period in the UK excluding the Hull Area.

Hull Area

4.115 We have assessed competition in WFAEL in the Hull Area as part of our SMP analysis in Section 6. In particular:

- KCOM's market share remains nearly 100% at the wholesale level;
- we are not aware of prospective wholesale entrants who would impose a significant constraint on KCOM, barriers to entry or expansion remain substantial and telecoms providers have no countervailing buyer power; and
- as in the rest of the UK, the somewhat limited constraint imposed by switching to VoIP and mobile access at present.

4.116 For these reasons, we consider that market structure will not tend towards effective competition in the review period in the Hull Area.

Competition law alone would not adequately address the market failure(s)

4.117 For both the UK excluding the Hull Area and the Hull Area, we consider barriers to entry will persist and the relevant markets will not tend towards effective competition within the relevant time horizon. We also consider that the speed of an intervention based solely on competition law in response to anti-competitive behaviour may not be sufficient to prevent harm in certain circumstances. Further, notwithstanding the developments we have seen in the market which have reduced BT's market power, the greater certainty provided by *ex ante* regulation is still necessary over the forward look of this market review. *Ex ante* regulation allows clear requirements to be imposed on BT which give it and other market participants certainty as to the rules BT must follow. This contrasts with competition law which is less prescriptive and in some cases subject to a requirement to establish at least the potential for anti-competitive effects in the downstream market. For these reasons, in this instance, we consider that competition law would not be sufficient by itself to address concerns in these markets and therefore *ex ante* regulation is necessary to maintain effective competition.

Conclusion

4.118 Considering the analysis set out above, we conclude that the three-criteria test set out in the 2014 EC Recommendation is satisfied in relation to the two geographic markets for WFAEL we have identified. It is therefore appropriate to analyse these markets to determine whether any provider holds SMP.

WCO

4.119 WCO is the wholesale service that enables voice calls over a narrowband access connection (i.e. WFAEL, ISDN2 or ISDN30). This involves the conveyance of all signals (including relevant control signals) originating from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another telecoms provider.

4.120 In our assessment, we:

- set out our market definition proposals from the 2016 NMR Consultation for WCO and summarise stakeholder responses to those proposals;
- assess the indirect constraint from the retail level, including the constraint from mobile and VoIP;
- assess the direct constraint from substitution at the wholesale level;
- assess other considerations such as whether different types of calls are in a single market and whether we should segment the market by customer type; and
- assess the relevant geographic market.

2016 NMR Consultation

4.121 In the 2016 NMR Consultation, we proposed a relevant product market for WCO on a fixed narrowband network (including self-supplied services) over FAELs or ISDN lines and separate geographic markets for the UK excluding the Hull Area and the Hull Area.[179]

Stakeholder responses

4.122 Vodafone said the market definition should correspond to the definition it proposed for the WFAEL market (i.e. to include WCO only over the basic focal WFAEL product).[180] BT said the proposed market definition is too narrow.[181]

4.123 [✂] said there are relevant markets for WCO over WFAEL, WCO over ISDN2 from premises where data service quality is at least synchronous 0.25 Mbit/s, ISDN2 from premises where the data service is below that level, WCO over ISDN30 where data service quality is at least synchronous 3.5 Mbit/s and ISDN30 where data service quality is below that level.[182] We

[179] 2016 NMR Consultation, paragraphs 4.188, 4.191 and 4.208. Similarly, we defined the same markets in the 2013 NMR, paragraphs 5.2-5.3.
[180] Vodafone response to 2016 NMR Consultation, part 2, page 22.
[181] BT response to 2016 NMR Consultation, page 16.
[182] [✂]

consider but do not favour this approach to market definition in Section 5, and do not consider it further here.

4.124 Some stakeholders did not present an overall view on our market definition assessment, but rather responded to specific elements of our assessment. Where relevant, we set out stakeholder responses in more detail below.

Retail services

Focal product

4.125 We consider our starting point should be fixed voice call origination on both WFAEL and ISDN lines (i.e. on a fixed narrowband network) as:

- Retail customers interested in making calls are neutral with respect to how call origination over their line is provided to them.
- We would not expect competitive conditions to differ between WCO supplied over WFAEL and ISDN as it is difficult to restrict access to WCO or vary WCO pricing according to the type of line.

Indirect constraint from mobile

4.126 In the 2016 NMR Consultation, we recognised the increasing competitive constraint for calls from mobiles but proposed that mobile calls are not a sufficient indirect constraint to be included in the relevant product market.

Stakeholder responses

4.127 BT said there is scope for including fixed and mobile calls in a single market.[183] It notes increasing fixed-mobile substitution, a falling price differential and a blurring of perceived functional differences. BT said we placed insufficient weight on the downward trend in fixed call volumes.

4.128 Vodafone agreed with our consultation that mobile is not a sufficiently strong indirect constraint on BT's position in the WCO market to warrant inclusion in the market.[184]

4.129 Verizon agreed that mobile and VoIP offer limited substitutability in general, but said we had nonetheless overstated the degree of constraint from mobile due to a lack of consideration of business customers.[185]

Evidence and analysis

4.130 Changes in WCO charges could pass-through to call prices, but due to the existence of bundled minutes and upgradable call allowances, could also pass-through to monthly

[183] BT response to 2016 NMR Consultation, page 23.
[184] Vodafone response to 2016 NMR Consultation, part 2, page 31.
[185] Verizon response to 2016 NMR Consultation, page 10.

subscription charges. This means the indirect constraint from mobile on WCO will depend on the willingness of customers to:

- substitute on a call-by-call basis; and
- give up their bundle of fixed voice access and calls and become reliant on another method for making calls, in particular, becoming mobile-only.[186]

4.131 This complicates the analysis of substitution somewhat as the constraints on a hypothetical monopolist of WCO upstream will depend on how consumers react to a change in the price of landline calls but also their reaction to changes in their total bill. In addition, the nature of that reaction can include making fewer calls, choosing to make no outbound calls from the landline or dropping the landline altogether. We have already considered consumer reactions to changes in the level of the total landline bill in Table 4.1 above, so we present here consumer reactions to changes in the price of landline calls.

4.132 As shown below, 7% of residential landline users state they would switch some of their calls and a further 13% said they would switch all of their calls in response to a 10% increase in landline call prices. Only 12% would give up their landline in response to a 10% increase in landline call prices. A higher share of SMEs would switch some or all their calls or give up their landline, but the share of those willing to give up their landline or switch all their calls remains limited. This suggests a limited willingness to abandon a landline due to higher call prices (in line with the evidence presented above for WFAEL), but greater scope for call-by-call substitution.

Table 4.2: Stated response to a 10% increase in landline call prices

	Residential	SME
Switch all calls from their landline in response to 10% increase in the price of calls	13%	19%
Switch some but not all calls in response to 10% increase in the price of calls	7%	25%
Give up landline in response to 10% increase in the price of calls	12%	19%

Source: 2017 NMR Residential Survey, Q39 and Q41. 2017 NMR Small Business survey, Q23 and Q25. Base reported is those SMEs whose main voice calls method is a landline.

4.133 Evidence on volumes and usage shows fixed call volumes are in decline, and suggests at least some of those volumes have moved to mobile and that this pattern may continue:

[186] Some dual-play offers do not include bundled minutes, as noted earlier in this section (at footnote 31). For customers buying such offers, we expect there would be limited pass-through of changes in WCO charges to line rental, and so call-by-call substitution will be the dominant form of constraint on WCO emerging from these customers.

- as presented in Section 3, there has been a marked decline in the volume of voice calls originated on FAELs and an increase in calls originated on mobiles by both residential customers and businesses;
- 36% of residential survey respondents with a mobile reported already making all their calls at home via mobile, and 71% report that over the last 12 months they have used their mobile a few times a week or daily when they could have used their landline instead;[187] and
- 53% of SMEs say the percentage of calls they make over landlines and mobile has remained quite similar over the last three years and 54% expect it to remain quite similar over the next three years. However, 39% say the percentage of calls made over mobile has increased and 40% expect it to increase over the next three years.[188]

4.134 In Section 3 (Figure 3.8) we showed the majority of calls to mobiles are from other mobiles whereas most calls to landlines are from other landlines. For example, in 2016, 55% of calls terminating on FAELs originated from a FAEL whereas only 6% of calls terminating on a mobile device originated from a FAEL.

4.135 A similar picture emerges from the survey data set out below in Figure 4.1, which shows landlines are used more heavily for calls to other landlines, calls to Freephone numbers and calls to non-geographic numbers. Mobile phones are used more heavily for calls to other mobiles. While the percentage of residential consumers using mobiles generally and for calls to landlines has increased, the changes in the pattern of usage since the time of the previous review appears limited, although the 2015 survey was conducted around two years ago.

Figure 4.1: Services used at home and calling patterns by residential landline users

% of respondents	Landline		Mobile		VOIP	
	2012	2015	2012	2015	2012	2015
Have at home	100%	100%	93%	93%	22%	27%
Use weekly or more	79%	75%	64%	72%	9%	8%
Using for calls to:						
Local Landline	68%	66%	34%	42%	7%	11%
National Landline	50%	41%	21%	27%	10%	9%
Freephone	46%	39%	7%	7%	2%	2%
Non geographic	43%	20%	8%	6%	4%	2%
International	23%	18%	6%	8%	54%	44%
Premium	18%	10%	3%	3%	1%	0%
Mobile	11%	8%	58%	57%	2%	7%

Source: 2013 Jigsaw Residential survey; 2015 Jigsaw Residential survey (waves 1 and 2).

4.136 This survey and operator data suggests that fixed and mobile phones are more typically used for different types of calls, with mobile perceived as a better substitute for some calls than others.

[187] 2017 NMR Residential survey, Q27 and Q35. Note, these individuals may still nonetheless value their FAEL for the ability to receive calls or broadband services. Note also, all survey respondents have a landline. 70% of residential survey respondents report receiving calls weekly or more often on their home landline. (2017 NMR Residential survey, Q13).
[188] 2017 NMR Small Business survey, Q5 and Q6.

4.137 The relative price of fixed and mobile prices can depend on the type of call, time of the call, and a customer's remaining call allowances and bundles for both their FAEL and mobile device. Overall, mobile call prices have generally decreased relative to fixed voice, but mobile is still more expensive in some contexts. As shown in Figure 3.17 in section 3, real spend on a basket of mobile services has declined since 2012, yet mobile voice usage has increased. Conversely, real spend on a basket of residential fixed voice services (lines plus calls) has risen (see Table 3.1), and overall fixed call usage has fallen. However, the pence per minute prices of out-of-bundle mobile calls are still materially higher than the price of out-of-bundle fixed calls. For example, BT charges residential customers a 21p set-up fee for each call, and 12p per minute (ppm) for calls to a landline (and 16ppm for calls to a mobile)[189] whereas mobile providers charge a substantially higher price per minute for out-of-bundle calls (35ppm (Three)[190], 55ppm (Vodafone)[191] 50ppm (EE)[192] or 55ppm (O2)[193]).

4.138 The relative prices of fixed and mobile calls vary, and so price considerations can drive both the choice of fixed over mobile or the opposite depending on the context. Survey evidence confirms that price remains a relevant a factor in the choice between fixed and mobile voice calls:

- 32% of residential survey respondents and 20% of SMEs reported reasons related to price for not making all their calls by mobile[194]; and
- 39% of residential survey respondents cited reasons related to price for using a landline over a mobile (or VoIP service) the last time they made a landline call from home.[195]

4.139 The survey evidence in Table 4.3 suggests that some customers continue to view mobile calls as inferior in quality or less reliable, and so perceived differences in these areas may impede substitution between fixed and mobile.

Table 4.3: Quality/reliability as reasons for not relying on mobile calls

	Residential	SME
"Quality of service (net)" as a reason for not making all their calls at home/office with a mobile	28%	67%
"Reliability of connection" as a reason why they would not be willing to give up their ability to make and receive calls from a landline	35%	25%

[189] BT, 2017. *Consumer Price Guide (effective from 18 July 2017)*. http://www.productsandservices.bt.com/assets/pdf/BT_PhoneTariff_Residential.pdf [accessed 15 September 2017].
[190] Three. *Consumer Price Guide*. http://www.three.co.uk/Three_price_guide [accessed 15 September 2017].
[191] Vodafone. Vodafone UK call charges. https://www.vodafone.co.uk/explore/costs/call-charges/ [accessed 15 September 2017].
[192] EE. *EE Monthly Price Plans*. http://ee.co.uk/content/dam/ee-help/help-pdfs/ee-pay-monthly-price-plans-may-2017.pdf [accessed 15 September 2017].
[193] 02. *Pricing*. http://www.o2.co.uk/prices [accessed 15 September 2017].
[194] 2017 NMR Residential survey, Q35. 2017 NMR Small Business survey, Q18.
[195] 2017 NMR Residential survey, Q29. The base is those who have used the household landline phone to make calls in the last 12 months.

	Residential	SME
"Quality of lines/calls" as a reason why they would not be willing to give up their ability to make and receive calls from a landline	n/a	13%

Source: 2017 NMR Residential Survey, Q34 and Q35. 2017 NMR Small Business survey, Q76 and Q18.

Note: "Quality of service (net)" aggregates a number coded response options relating to quality and reliability of connection. Quality of lines/calls was not listed as a response category for Q35 of the 2017 NMR Residential survey. The base of the first row is all landline users with a mobile phone. For the other results, the base is those who disagree they willing to give up their ability to make and receive calls from a landline.

4.140 Nevertheless, mobile is perceived by many as the main alternative to calls over a landline. as shown in Table 4.4, for both residential customers and SMEs, mobile was by far the most common alternative among those survey respondents who would switch some or all their calls away from their landline in response to a 10% increase in their landline call prices.

Table 4.4: To which alternative(s) would calls be switched to in response to a 10% increase in landline call prices

	Residential	SME
Switch to Mobile	75%	82%
Switch to SMS/Instant Messaging	29%	56%
Switch to VoIP	28%	39%
Switch to Email	18%	58%

Source: 2017 NMR Residential Survey, Q40. 2017 NMR Small Business survey, Q24. The base is those who would switch some or all calls in response to a 10% in call prices.

Note: Multiple response permitted, so columns may sum to over 100%.

4.141 As with WFAEL, we recognise that mobile (or VoIP) may not be as well suited to certain functions or services used more heavily by businesses. While we expect these differences between fixed and mobile to diminish over time, we agree that mobile (or VoIP) will not substitute as effectively for call origination over FAELs in some instances.

Conclusion

4.142 We consider that, from a forward-looking perspective, the evidence on the strength of fixed-to-mobile substitutability is mixed. As set out above, fixed call volumes are in decline, and at least some of those volumes will have diverted to mobiles. However, the constraint from mobile calls depends on the willingness of customers to both substitute on a call-by-call basis and give up the ability to make calls entirely from their fixed line. In respect of the latter, the survey evidence indicates a similarly low switching rate for all calls as it does for willingness to abandon a landline. Price is a relevant factor in customers' decision-making and although average mobile prices may have fallen, there are still instances in which it will be cheaper to make fixed calls. This is also reflected in customer behaviour as there remain differences between the call types for which mobile and fixed devices are used. Perceived quality differences (including lack of certain functions and unsuitability for certain legacy uses which transmit data via calls) may also limit substitutability to mobile calls in certain cases. Balancing the above evidence, we consider that mobile calls are not a sufficient indirect constraint on fixed calls to widen the product market at this time. However, by the time of the next review period this could change, and in this review, we recognise the increasing competitive constraint for calls in our assessment of market power and remedies.

Indirect constraint from VoIP

4.143 In the 2016 NMR Consultation, we said neither managed nor unmanaged VoIP is likely to exercise a sufficient indirect constraint over the review period on WCO to be included in the relevant product market.

Stakeholder responses

4.144 [✂] said the uptake of VoIP by small businesses is hindered by the quality of the available broadband service and said VoIP usage will be lower among certain demographic groups such as elderly people.[196] Vodafone agreed with our proposed exclusion of VoIP from the relevant market.[197]

Evidence and analysis

4.145 Survey evidence suggests that in 2017, 39% of residential landline users have access to VoIP services at home, 34% of residential landline consumers actively use VoIP services such as Skype through the internet including on a mobile phone, and 19% of SMEs reported using VoIP in the last month.[198] We noted an overall upward trend in VoIP usage in Section 3. Additionally, data from several providers of unmanaged VoIP show those volumes growing at an annualised rate of 40% per year.[199] 83% of residential VoIP users said they have used VoIP on at least one occasion when they could have used a landline and half reported doing so weekly.[200] This suggests an increasing use of VoIP, including when a landline could have been used as an alternative.

4.146 However, as set out in Table 4.4, survey evidence indicates VoIP lags significantly behind mobile (and SMS/text messaging and email) as an alternative to landline calls for both residential customers and SMEs. 2015 Residential survey data, set out in Figure 4.1, indicates only 8% of residential landline users used VoIP in the previous week, although the

[196] [✂]
[197] Vodafone response to 2016 NMR Consultation, part 2, page 22.
[198] 2017 NMR Residential survey, S5; 2017 NMR Small Business survey, Q1. *Ofcom. Technology Tracker H1 2017*, QD28A and Q25A.
[199] Responses to NMR s.135 notice. Volumes refer to minutes of voice calls (including video calls) over the Internet using a device such as a PC, tablet, smartphone or other device in the year to Q4 2016/17. This data does not cover all telecoms providers in the market, but does include Skype, Google, Vonage and Facebook (including WhatsApp), and so we consider this data is likely to be indicative of the overall trend in OTT volumes.
[200] 2017 NMR Residential survey, Q28.

share of users and the services used may have changed since 2015. This compares with 60% of residential landline users making calls weekly or more often and 70% receiving calls weekly or more often.[201] The 2015 survey also indicates VoIP is most often used for international calls (which are typically excluded from allowances of inclusive minutes in fixed line (and mobile) tariffs, and so are relatively expensive). VoIP is used much less frequently for other types of calls. This suggests VoIP may be fulfilling different needs to the majority of fixed voice calls and the scope for substitution may be limited (however, we again recognise the range of usage could have increased somewhat since 2015).

4.147 When asked why they do not use VoIP for all their calls at home, the most common reasons given by residential survey respondents were that VoIP was not suitable for certain types of conversations (27%) and that it was difficult to use (14%).[202] When asked why they do not use VoIP for all their calls 53% of SMEs cited reliability of connection and 23% cited quality of line/calls.[203]

Conclusion

4.148 While both residential and business customers are making increasing volumes of VoIP calls, many do not use VoIP. We consider that substitutability from fixed calls to VoIP is relatively limited at present, particularly among residential customers, even if it is used increasingly for certain call types (although we recognise these distinctions may be weaker for managed VoIP services, particularly in the form used by businesses with multi-user systems). Overall, VoIP is unlikely to exercise a sufficient indirect constraint on WCO over the review period to widen the product market.

Indirect demand constraint from text-based messaging, email and social media

4.149 In the 2016 NMR Consultation, we said that text-based forms of communication are outside the relevant product market.[204]

4.150 In its consultation response, BT said, “the high level of customer choice around how to communicate places significant competitive constraints on the provision of fixed voice services at the retail and wholesale level”.[205] In response to BT, we consider that the existence of an alternative is not sufficient for it to be a competitive constraint.

4.151 As fixed voice calls have fallen, there have been mixed trends among alternative modes of communication, with OTT messaging appearing to displace SMS, and to some extent email.

- The share of residential customers using instant messaging rose by 15% to 43% between 2014 and 2016;

[201] 2017 NMR Residential survey, Q12 and Q13.
[202] 2017 NMR Residential survey, Q36.
[203] 2017 NMR Small Business survey, Q19. The Residential survey suggests VoIP is chosen over a landline for individual calls because individuals want to use video, because it cheaper and for convenience, while landlines are chosen over for VoIP for price and convenience (2017 NMR Residential survey, Q31).
[204] 2016 NMR Consultation, paragraphs 4.169-4.174.
[205] BT response to 2016 NMR Consultation, page 13.

- The share of adults using mobile messaging rose slightly from about 80% of adults in 2012 to about 83% in 2016 but the number of outgoing SMS and MMS fell from its peak of 151 billion in 2012 to 101 billion in 2015 and the number of minutes spent texting per day fell by 14 minutes (40%) between 2014 and 2016.
- The share of residential customers using email weekly fell from 77% to 70% between 2014 and 2016 and the share using SMS weekly fell from 71% to 63% in the same period.[206]

4.152 Substitutability with fixed voice calls is likely to be limited as some customers prefer using fixed voice services over text based forms of communication due to the inherent differences between these services. For example, SMEs cited reasons related to convenience (64% of respondents) and unsuitability/image/impression (48% of respondents) for not using email, text messaging and instant messaging more often.[207] When residential survey respondents were asked why they do not use SMS/Email/Instant Messaging often at home, instead of making calls on their landline, 22% of respondents said they prefer to talk to the other person and 13% said they are not suitable for certain types of conversation.[208]

4.153 We also note that the combined volume of calls over fixed and mobile have been relatively stable since the last review (i.e. in the last three years – see Figure 3.2), although there was a steady decline in total calls in the period up to the last review. This suggests that despite the growth in text-based forms of communication, they appear to be an imperfect substitute for voice calls based on recent trends.

Conclusion

4.154 Based on the above, there appears to be limited prospect of switching to text-based messaging, email and social media acting as a constraint on fixed call origination. We do not consider that retail switching to text-based messaging (including SMS via a mobile device, instant messaging and OTT-based messaging services), email and social media would be sufficient to make a price increase in c all origination unprofitable. We therefore consider that such services are outside the relevant product market.

Conclusion on indirect constraints for WCO

4.155 Overall, we do not consider that mobile, VoIP or text-based messaging, email and social media are sufficient to constrain a hypothetical monopolist in WCO and so exclude them from the relevant wholesale market definition. However, we recognise the increasing significance of mobile (and to a lesser extent VoIP) calls at the retail level today, and expect these to grow in future.

---

[206] Figures in these bullets from 2016 CMR, page 16. https://www.ofcom.org.uk/__data/assets/pdf_file/0024/26826/cmr_uk_2016.pdf; 2012 CMR, Figure 5.18. https://www.ofcom.org.uk/__data/assets/pdf_file/0013/20218/cmr_uk_2012.pdf; 2016 CMR, Figure 4.36; 2016 CMR, Figure 4.1.
[207] 2017 NMR Small Business survey, Q20.
[208] 2015 Jigsaw Residential survey (wave 1, Q13).

Wholesale product market

4.156 In the 2016 NMR Consultation, we did not consider the prospect of direct demand-side substitution to broadband or supply-side substitution at the wholesale level were sufficient to widen the market beyond WCO over a narrowband access connection. We said demand-side substitution to a VoIP offering was feasible, but likely to be costly and may suffer from quality of service issues if it is an unmanaged service. We also noted that supply-side substitution at the wholesale level would not be a relevant competitive constraint because WCO can only be provided by the wholesale provider which controls the access line – and there are barriers to supply-side substitution in relation to wholesale lines.[209]

4.157 Vodafone[210], [✂][211], Verizon[212] and UKCTA[213] say we have not adequately considered the impact of BT's wholesale end-to-end calls product in the market, including that we have not taken account of its existence in the market definition.

4.158 In relation to BT's wholesale calls, we start our assessment from the narrowest possible product. An end-to-end wholesale calls product (such as BT's Wholesale Calls) relies on a number of components, such as call origination, termination, conveyance and interconnection. Competitive conditions between these components vary, suggesting analysing them all within a single market would not be appropriate. In this review we have focussed on the areas of outstanding or enduring market power which suggests an end-to-end calls market is not appropriate. We recognise that market power in WCO and other markets could be leveraged into a wholesale end-to-end calls service, but we have decided not to define such an end-to-end calls service as a market susceptible to ex-ante regulation.

Conclusion on the product market

4.159 We assessed the indirect constraints at the retail level from mobile, VoIP, text-based messaging, email and social media; and direct constraints at the wholesale level from broadband. While the competitive constraints on WCO are increasing, especially from mobile and to a lesser extent from VoIP, we maintain that a SSNIP is likely to remain profitable for a hypothetical monopolist of WCO.

4.160 Supply to the groups of customers identified as being more reliant on WLR will also be more reliant on WCO.[214] Customers more reliant on WLR (e.g. residential fixed voice-only, split purchasers, off-net and business analogue lines) account for up to 25% of FAELS and we expect they would account for a similar share of WCO volumes, and will similarly be collectively large enough to influence WCO pricing. ISDN users will further add to the

---

[209] 2016 NMR Consultation, paragraphs 4.176-4.182.
[210] Vodafone response to 2016 NMR Consultation, part 2, pages 2, 23 and 44.
[211] [✂]
[212] Verizon response to 2016 NMR Consultation, page 2.
[213] UKCTA response to 2016 NMR Consultation, page 4.
[214] In addition, customers using WCO over ISDN lines are also likely to be relatively reliant on those services.

volume of WCO minutes accounted for by wholesale lines where alternative infrastructure competition has historically been more limited.

4.161 Based on these considerations, we define a single market for WCO including all customer segments encompassing both business and residential customers – even if there may be some variation in competitive conditions operating at the downstream level for different segments.

4.162 In summary, we define WCO as the wholesale service that enables voice calls over a fixed narrowband network (i.e. WFAEL, ISDN2 or ISDN30). This involves the conveyance of all signals (including relevant control signals) originating from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another telecoms provider.

Geographic market

4.163 In the 2016 NMR Consultation, we proposed two geographic markets:

- the UK excluding the Hull Area; and
- the Hull Area.[215]

4.164 We consider our assessment of geographic market definition for WFAEL is also relevant for WCO. Regarding the UK excluding the Hull area, uniform pricing at the retail level is likely to extend to pricing at the wholesale level and supports a single market. Competitive conditions vary in the Hull Area compared to the rest of the UK and there is a separate USC requiring uniform retail pricing – which we also expect to translate into uniform wholesale pricing in the Hull Area.

4.165 Therefore, we define two separate geographic markets:

- the UK excluding the Hull Area; and
- the Hull Area.

Three-criteria test for WCO

4.166 The market for WCO was removed from the EC's list of product and services markets identified as being susceptible to *ex ante* regulation in the 2014 EC Recommendation (which replaced the 2007 EC Recommendation). At the time of the NMR 2013 Statement, the 2007 EC Recommendation identified WCO on the public telephone network provided at a fixed location at the wholesale level as a service market susceptible to *ex ante* regulation.[216]

4.167 The 2014 Recommendation provides that NRAs should apply the three-criteria test to those markets listed in the 2007 Recommendation if they are currently regulated

[215] Stakeholder comments with relation to geographic markets are covered in our discussion of WFAEL. There were no WCO-specific stakeholder comments on geographic market definition.
[216] For further detail on the three-criteria test, see the discussion within the section for the three-criteria test WFAEL.

considering national circumstances, to assess whether, based on such national circumstances, such markets are still susceptible to *ex ante* regulation.[217]

Stakeholder comments

4.168 Some stakeholders made comments relating to the three-criteria test which restated points expressed elsewhere in relation to the market definition or SMP assessment (e.g. strength of various constraints and market power).[218]

Presence of high and non-transitory barriers to entry

2014 EC Recommendation

4.169 We recognise that the 2014 EC Recommendation found WCO is no longer susceptible to *ex ante* regulation. The Explanatory Note to the 2014 EC Recommendation said that WCO is "no longer considered as being characterised by significant barriers to entry on a Union level from a forward-looking perspective".[219] It supported this by citing market developments including fixed-mobile substitution, operators producing their own VoIP services, and the availability of wholesale access products.

4.170 We consider the market circumstances are sufficiently different in the UK to employ a different approach. As discussed in our assessment of market definition above, we do not consider that the indirect constraints from mobile or VoIP[220] are yet sufficiently strong to include them in the product market definition.

UK excluding the Hull Area

4.171 The same factors considered in the SMP analysis for WCO in Section 6 (and set out in our assessment of the three criteria for WFAEL) are also relevant here, including:

- the high costs of building a sufficiently large direct access network;
- the historical reliance by telecoms providers on WLR and WCO to supply voice services to certain types of customers (e.g. business, fixed voice only, off-net) which suggests it has not been cost effective or feasible to use MPF or cable to supply these customers; and
- although there may be scope for a greater role for rivals to provide a competitive alternative for these, substitution of this type is not of sufficient likelihood and scale to eliminate the high barriers to entry.

4.172 For these reasons, we consider that barriers to entry are likely to remain high and non-transitory over the period of this review in the UK excluding the Hull Area.

---

[217] 2014 Recommendation, Recital 22.

[218] Where we have responded to such comments in our market definition or SMP assessment, we do not repeat those responses here. We also do not restate any points discussed in relation to the three criteria test for WFAEL which also apply to WCO.

[219] Explanatory Note accompanying the 2014 EC Recommendation, page 26.

[220] In particular, managed VoIP is not used widely among residential customers and we do not anticipate this changing during the review period.

Hull Area

4.173 The same factors considered in the SMP analysis of WCO in Section 6 (and as part of our WFAEL assessment of the three criteria test) are also relevant here. In particular:

- the significant investment required to either build alternative networks, particularly when combined with the relatively small population over which the fixed costs of entry could be spread; and
- the absence of entry in the Hull Area to date, except for fixed wireless access providers, who emphasis their broadband services and only some of whom offer voice services.

4.174 For these reasons, we consider that barriers to entry are likely to remain high and non-transitory over the period of this review in the Hull Area.

A market structure which does not tend towards effective competition

2014 EC Recommendation

4.175 We recognise that the 2014 EC Recommendation found WCO "tends towards effective competition from a forward-looking perspective".[221] In support of this it cited competitive pressure from mobile and OTT services, self-supply of WCO via LLU or other alternative infrastructure, and the absence of high and persistent barriers to entry.

4.176 We consider the market circumstances are sufficiently different in the UK to employ a different approach. As discussed above, we consider barriers to entry remain high and persistent. While mobile, VoIP and OTT services are likely to offering increasing competitive pressure compared to when the WFAEL and WCO markets were previously reviewed, we consider they do not yet offer a sufficient constraint on WCO during the review period. A significant number of consumers are served by telecoms providers reliant on BT's WCO at present, which is likely to remain the case during the review period.

UK excluding the Hull Area

4.177 We have assessed competition in WCO in the UK excluding the Hull Area as part of our SMP analysis in Section 6. In particular:

- BT's high market share which although declining was still high (48% in Q4 2016/17);
- the low likelihood of telecoms providers switching in sufficient volumes from BT's WCO to alternative wholesale services to generate effective competition in certain market segments;
- although there is increasing substitution from fixed to mobile and VoIP by some types of users for some types of calls, the overall constraint imposed by such switching remains insufficient at present;
- BT has been charging at the regulated cap for WCO, which is consistent with there being a limited constraint from competition;
- there are barriers to entry and expansion as discussed above; and

---

[221] Explanatory Note accompanying the 2014 EC Recommendation, page 27.

- countervailing buyer power is likely to be insufficient.

4.178 For these reasons, we consider that the market structure will not tend towards effective competition in the review period in the UK excluding the Hull Area.

Hull Area

4.179 We have assessed competition in WCO in the Hull Area as part of our SMP analysis in Section 6. In particular:

- KCOM's market share remains nearly 100% at the wholesale level;
- the absence of likely wholesale entrants and barriers to entry or expansion remain substantial;
- Retail providers have no countervailing buyer power; and
- as in the rest of the UK, switching to mobile and VoIP remains insufficient at present.

4.180 For these reasons, we consider that the market structure will not tend towards effective competition in the review period in the Hull Area.

Competition law alone would not adequately address the market failure(s)

4.181 For WCO in both the UK excluding the Hull Area and the Hull Area, we consider barriers to entry will persist and the relevant markets will not tend towards competition within the relevant time horizon. We also consider that the speed of an intervention based solely on competition law in response to anti-competitive behaviour may not be sufficient to prevent harm in certain circumstances. Further, notwithstanding the developments we have seen in the market which have reduced BT's market power, the greater certainty provided by *ex ante* regulation is still necessary over the forward look of this market review. *Ex ante* regulation allows clear requirements to be imposed on BT which give it and other market participants certainty as to the rules BT must follow. This contrasts with competition law which is less prescriptive and in some cases subject to a requirement to establish at least the potential for anti-competitive effects in the downstream market. For these reasons, in this instance, we consider that competition law would not be sufficient, by itself, to address concerns in these markets and therefore *ex ante* regulation is necessary to maintain effective competition.

Conclusion

4.182 Considering the analysis set out above, we conclude that the three-criteria test set out in the 2014 EC Recommendation is satisfied in relation to the two geographic WCO markets we have identified and that it is appropriate to analyse these markets to determine whether any provider holds SMP.

Conclusion on market definition and the three criteria tests

4.183 We identify the following markets for the purposes of making a market power determination:

- a market for WFAEL services in the United Kingdom excluding the Hull Area;
- a market for WFAEL services in the Hull Area;
- a market for WCO on a fixed narrowband network in the United Kingdom excluding the Hull Area; and
- a market for WCO on a fixed narrowband network in the Hull Area.

5. Market definition and three criteria test: ISDN30 and ISDN2

5.1 This section sets out our conclusions on product and geographic markets for ISDN30 and ISDN2 and applies the three-criteria test to these markets. In defining markets, we follow the analytical framework set out in Annex 7.

Summary

5.2 Based on an assessment of indirect constraints at the retail level and direct constraints at the wholesale level, we define separate product markets for each of ISDN30 exchange lines and ISDN2 exchange lines. We define geographic markets for the UK excluding the Hull Area and separately the Hull Area.

5.3 ISDN30 and ISDN2 are narrowband access services, most commonly used by businesses to provide multiple lines for calls. ISDN2 services are appropriate for business sites requiring fewer than eight voice channels, whereas ISDN30 services are more appropriate when a larger number of channels are required. We conclude that ISDN30 and ISDN2 services are in separate product markets, which is consistent with our decision in the 2014 FAMR.

5.4 We have considered the competitive constraints imposed on ISDN30 and ISDN2 by IP-based services, and whether such services warrant a widening of the product markets. Although we recognise the growth in IP-based services we consider that, overall, they do not pose a sufficiently strong constraint on the supply of ISDN30 and ISDN2 to warrant widening the relevant markets. Nevertheless, we consider that IP-based services are likely to increasingly provide some level of competitive constraint in the future, particularly for new line connections, and have taken this into account in our market power analysis (Section 6) and design of remedies (Sections 7 and 8).

5.5 In relation to the three-criteria test, we conclude that *ex ante* regulation of wholesale ISDN30 and wholesale ISDN2 exchange line services continues to be appropriate.

5.6 We first discuss ISDN30 then consider ISDN2. For each service, we discuss our reasoning in relation to market definition, taking account of consultation responses by stakeholders, survey evidence and reports provided by Cavell Group.[222]

ISDN30 market definition

2016 NMR Consultation

5.7 In light of our analysis of possible indirect constraints from the retail level, we considered that the relevant focal product was wholesale ISDN30 exchange line services. We did not

[222] Cavell Group, 2017. *Hosted VoIP Report and Forecast (2016-2021)*. Cavell Group, 2017. *UK SIP Trunking Report and Forecast (2017-2021)*.

consider that other types of wholesale exchange line would provide an effective demand-side substitute, because a retailer of ISDN30 exchange lines needs to purchase wholesale ISDN30 in order to supply retail customers with its ISDN30. We did not consider that supply-side substitution, through upgrades to an access network to provide ISDN30 access, was likely.

5.8 We concluded that a wholesale market definition based on ISDN30 only was appropriate.

5.9 We proposed two separate geographic wholesale markets: the UK excluding the Hull Area, and the Hull Area.

Stakeholder responses

5.10 Four stakeholders commented on our proposed market definition for ISDN30. Verizon[223] and Vodafone[224] agreed with our proposed market definition.

5.11 Vodafone noted that ISDN services are valued by customers and have a reputation for reliability and ease of use. In Vodafone's view, a significant volume of customers will continue to use ISDN30 for some time, and that the adoption of alternatives will vary across the market depending on the particular needs and priorities of users. It highlighted cost and IT compatibility issues for some users. It considered that a considerable number of ISDN30 users have no desire to shift away from the service.[225]

5.12 Openreach broadly agreed with our market definition for ISDN30, but believed we understated the degree of substitution and impact of IP-based services. In particular, it argued that the vast majority of users see IP-based alternatives as direct substitutes and once customers become aware of them many make plans to switch. It added that awareness would continue to grow with hosted VoIP and SIP trunking, and that any significant price increase would influence at least half of customers to switch – based on our 2015 survey evidence that 51% would definitely or be more likely to switch in response to a SSNIP. It also noted our 2015 survey evidence showed that new businesses see IP-based alternatives as the standard service to fulfil ISDN30-type requirements.[226]

5.13 One respondent [✂][227] disagreed with some of our statements about barriers to migration from ISDN30 to IP-based services. It disputed our proposed findings on the security and reliability of SIP services, given significant growth in the SIP trunking market and adoption by some of its major financial and public sector customers, who are more likely to value those qualities. It saw SIP trunking as a modern and more cost-effective replacement for ISDN channels. [✂] also questioned the reported costs of migration from ISDN services to SIP, noting the data was skewed by a few respondents with very high migration costs and highlighting the relatively low-cost adoption of SIP for a significant number of business users.

[223] Verizon response to 2016 NMR Consultation, paragraph 49.
[224] Vodafone response to 2016 NMR Consultation, part 1, section 6.
[225] Vodafone response to 2016 NMR Consultation, part 1, paragraph 5.8-5.16.
[226] Openreach response to 2016 NMR Consultation, section 3.
[227] [✂] response to 2016 NMR Consultation, pages 16-21.

5.14 [✂] suggested that we should define two separate markets for ISDN30. According to [✂], if premises are not able to achieve a minimum specified data service quality, IP-based alternatives do not provide a constraint on ISDN pricing and ISDN services are the only viable business grade services. Whereas for premises which are able to achieve sufficient data service quality, alternatives are available. It argued that separate markets for ISDN30 should be defined dependent on whether available data service quality is or is not at least synchronous 3.5 Mbit/s.

5.15 KCOM agreed with our market assessment for ISDN30 in the Hull Area; no other stakeholders commented on this issue.[228]

Our decision and reasoning

Retail services

5.16 As with the 2016 NMR Consultation, we start by considering retail services and the indirect constraints they may place on wholesale services.

ISDN30 users

5.17 ISDN30 is a narrowband access service designed to cater for large business sites. ISDN30 supports up to 30 channels of 64kb/s each and is most commonly used to provide multiple telephone lines to private branch exchanges (PBXs). Data gathered under our formal powers prior to our consultation showed that, on average, customers used 18 channels of their ISDN30 lines (out of a possible maximum of 30).

5.18 We commissioned a further survey of retail users of ISDN30 services[229] and asked them to list what they used them for. As in our 2015 survey, the most frequently mentioned uses were incoming calls (66%), outgoing calls (62%) and internet services (62%).[230]

Starting point

5.19 As the starting point for the product market definition, we have taken ISDN30 exchange line services as the focal product. Looking at the demand-side, we consider whether the supply of ISDN30 exchange lines is constrained by the provision of:

- IP-based services
- leased lines;
- analogue exchange lines and ISDN2 exchange lines; and
- mobile access.

[228] KCOM response to 2016 NMR Consultation, paragraph 2.8.
[229] 2017 NMR ISDN survey, Saville Rossiter-Base, 2017. Narrowband Market Review 2017 – Chart Pack
[230] 2017 NMR ISDN survey, QA2b. Base reported is those using ISDN30 (and mostly using an ISDN service).

IP-based services as a substitute for ISDN30

5.20 Survey evidence suggests that IP-based services are perceived as the best substitute for ISDN30. When asked what they considered would be the best replacement for ISDN30, 56% of respondents mentioned an IP-based alternative.[231]

5.21 In considering a SSNIP by a hypothetical monopolist, we want to identify the demand response to a price rise from a starting point of competitive prices. This includes isolating the response due to the SSNIP from the counterfactual of no price rise. In other words, we want to identify customers who would switch to an alternative in response to a SSNIP, but would not have switched if prices had not changed.

5.22 Our market research shows that a large majority (62%) of ISDN30 users are already considering switching away from ISDN30 at current prices.[232] Respondents were also asked to what extent a SSNIP would influence their decision to continue or stop using ISDN30 and 40% of respondents said that they would 'definitely' switch away from ISDN30 in response to a 10% increase in price.[233] This percentage is noticeably higher than the equivalent reported in our 2015 survey (when 11% stated they would 'definitely' switch) however these results cannot be compared directly as we changed the way the SSNIP questions were asked.[234]

5.23 For the purposes of market definition, we are interested only in those that would switch away from ISDN30 because of a SSNIP. Those customers that are likely to migrate anyway don't form part of the demand response that determines the profitability of a SSNIP by a hypothetical monopolist. It is difficult in practice to determine the incremental effect of the price rise (against a counterfactual of a declining market due to migration for non-price reasons) but we note that 62% of those who mostly use ISDN30 are already considering migrating away from the service.[235] We have also considered the response of those who were not already considering migrating, though to achieve a sufficient sample size we have combined ISDN30 and ISDN2 users. This evidence indicates that across both ISDN services only 12% of these users said they would definitely switch in response to a price rise.[236]

5.24 In addition, ISDN30 retail list prices appear to be increasing (see Table 3.3, section 3) even though wholesale prices have been capped on a flat nominal basis since 2014 (and on a reducing cap before then). This could also affect the context in which survey respondents considered the SSNIP, as they would have been considering a 10% increase in prices that were already potentially higher than the competitive level. This may mean that respondents considered alternative products to be more attractive substitutes than they would if a SSNIP was applied from the competitive price level.

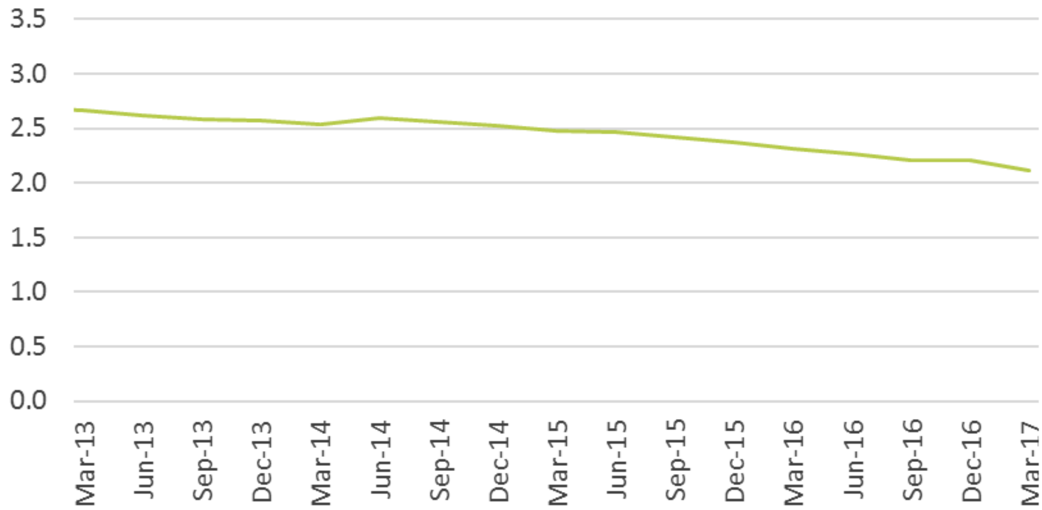
[231] 2017 NMR ISDN survey, QB14b. Base reported is those using ISDN30 (and mostly using an ISDN service).
[232] 2017 NMR ISDN survey, QB6. Base reported is those who mostly use ISDN30. Caution: base under 100 (94).
[233] In the 2017 NMR ISDN survey, a further 41% reported that they would be "likely" to switch away and 14% said it would have no impact. NMR 2017 ISDN Survey, QB10. Base is those who mostly use ISDN30. Caution: base under 100 (94).
[234] In particular the 2017 survey asked about customer reactions to a SSNIP described in terms of a cash amount.
[235] 2017 NMR ISDN survey, QB6. Base is those who mostly use ISDN30. Caution: base under 100 (94).
[236] 2017 NMR ISDN survey, QB10. Base is those using ISDN2/30 as a main service. Caution: base under 100 (55).

Volume trends for ISDN30 and IP-based services

5.25 ISDN30 volumes have been declining gradually, as shown in Figure 5.1 below. Data from providers suggests that ISDN30 volumes have declined quite significantly over the last few years. Over the period from March 2013 to March 2017, the total volume of ISDN30 channels fell by a compound annual rate of 6%. We also note that the overall rate of decline appears to have increased somewhat, though we do not yet know if this represents a permanent shift in the long-term trend. In 2016/17, the number of ISDN30 channels fell by 9%, in contrast to 7% in 2015/16.

5.26 The rate of decline is faster for channels which BT supplies on its network, with the rate of decline increasing from 9% in 2015/16 to 12% in 2016/17. Over the last four years, BT's own retail ISDN30 volumes have been falling at a faster rate than those it sells on a wholesale basis by BT to other providers. The compound annual decline (2013-2017) for BT's retail ISDN30 was 13%, in comparison to 5% for external ISDN30.[237]

Figure 5.1: Historical wholesale ISDN30 volumes (millions of channels)



Source: Data until December 2013 from FAMR Statement, Figure 4.1. Data from January 2014 onwards from BT, Colt, KCOM, Verizon, Virgin Media and Vodafone in response to the s.135 notices of August 2015, July 2016 and May/June 2017.

5.27 We have also collected data on the number of new ISDN connections (lines and channels) from telecoms providers. As well as connections made by new customers these volumes include new connections which arise as the result of a customer switching wholesale provider, for example.[238] They may also include new channel connections made by existing customers who are expanding capacity on their existing ISDN line. As discussed below, we estimate that the average number of channels on an ISDN30 line is 18, which suggests that there is significant capacity for customers to increase the number of channels on existing lines. Our data shows some new connections; on average 15,000 channels were connected

[237] Based on data received from BT, Colt, EE, TalkTalk, Verizon, Virgin Media and Vodafone in response to the s.135 notices of May/June 2017.

[238] New connections do not include transfers i.e. customers who switch on the Openreach network.

by BT each quarter in 2016/17, including those retailed by providers other than BT. However, these are less than 1% of current ISDN30 channels, and more than outweighed by the number of channels disconnected.

5.28 In the 2015 survey we asked customers about their future plans for using ISDN services. 54% of survey respondents indicated that they planned to stop using ISDN30 before September 2017.[239] Such a decline does not appear to be reflected in the data shown (unless users who have given up ISDN30 had far fewer ISDN30 channels than average and/or the cessation of ISDN30 is skewed to the final few months of the period for which we do not have data). Our 2017 survey evidence asked similar questions about future plans for using ISDN30. A significant minority (34%) of ISDN30 users envisage continuing to use ISDN for four years or more.[240] While 57% of ISDN30 users plan to move some services to IP in the next four years, only 36% of ISDN30 users plan to move all their ISDN services to IP in that timeframe.[241] Migration from ISDN appears to be event-driven: 73% of customers who use IP-based solutions reported “part of a general upgrade” or “switch replacement” as a trigger for moving to IP from ISDN.[242]

5.29 In response to our 2017 survey 26% of customers indicated that they planned to stop using ISDN30 in the next year.[243] However, these results should be treated with caution because they are stated preferences in response to a survey rather than necessarily committed plans. Given the apparent difference between planned and actual use in response to the 2015 survey, a significant proportion of this group may not migrate by 2018.

5.30 Nevertheless, data from providers suggests that the volumes of IP-based services are increasing. Over the period from June 2010 to December 2016, roughly the same time period as shown for ISDN30 channel volumes in Figure 5.1 above, the number of hosted VoIP seats increased from approximately [✂]m to [✂]m, and the volume of SIP trunks increased from approximately [✂]m to [✂]m.

5.31 As discussed in Section 3, further data from Cavell Group also suggests that the volumes of hosted VoIP seats and SIP trunks have grown in recent years.[244] This growth is forecast to continue during the period of this market review. The historical growth reported is greater in absolute terms than the decline in ISDN30 channels. This could be at least partly explained by several factors:

- Given that hosted VoIP seats are not analogous to ISDN channels, it is likely that a business migrating from ISDN30 to hosted VoIP would need a larger number of hosted VoIP seats than the existing number of ISDN30 channels.

239 2015 Jigsaw market research report, Figure 98.
240 2017 NMR ISDN survey, QB12B. Base is those who use ISDN30 (and mostly use an ISDN service).
241 2017 NMR ISDN survey, QC2A. Base is those mostly using ISDN30, who are aware of but not using IP-based alternatives. Caution: low base (46).
242 2017 NMR ISDN survey, QD5. Base is those who use IP-based alternatives.
243 2017 NMR ISDN survey QB12b. Base is those who use ISDN30 (and mostly us an ISDN service).
244 Cavell Group, 2017.

- Not all new IP connections are migrations from ISDN30 services. New businesses in particular may find IP-based services more attractive than ISDN30 as they do not face migration challenges, so an increase in the number of businesses could explain some of the disparity between the decline in ISDN30 volumes and the increase in IP-based volumes. Between 2013 and 2016, the number of private sector businesses in the UK rose from 4.9 million to 5.5 million, a 12% increase.[245]
- Some businesses that were using ISDN30 may migrate to IP-based services but continue to use ISDN30 as well, although we might expect that they would reduce their ISDN30 volumes as part of the process. Among businesses that reported using both ISDN30 and IP-based services, 69% reported that IP-based services were their primary service.[246]

5.32 In summary, ISDN30 volumes are in decline and further decline is likely. In contrast, volumes for IP-based services have continued to grow and this is forecast to continue.

Awareness of IP-based services

5.33 Our updated survey evidence suggests that awareness of IP-based alternatives is higher than results from previous research implied. Just 18% of those who mostly used ISDN30 services (and did not use IP-based alternatives) said they had never heard of IP-based alternatives,[247] compared to 46% in our 2015 survey. Smaller businesses were more likely to be unaware; 26% of ISDN users (both ISDN30 and ISDN2) with less than 250 employees were unaware.[248] Therefore, for most ISDN users, a lack of awareness of alternatives is unlikely to act as a barrier to migration or switching. But a minority of users do appear to be unaware.

Costs of migrating from ISDN30 to IP-based services

5.34 For businesses wishing to migrate or switch from ISDN30 to IP-based services, there are likely to be equipment and to a lesser extent staff training costs, as well as the possibility of being currently tied into long-term contracts, which may incur charges for early cancellation.[249]

5.35 Migration costs could include PBXs (although some businesses may already have IP-enabled PBXs), upgrades to IP-enabled handsets and other upgrades such as to office networks. It could also include operational costs such as installation and training. Our survey evidence shows that 71% of respondents that had migrated to IP-based services

---

[245] HMG, 2016. *Business population estimates 2016*. https://www.gov.uk/government/statistics/business-population-estimates-2016 [accessed 12 October 2017].
[246] 2017 NMR ISDN survey, QD10. Base is those who use ISDN30 and IP-based services. Caution: base under 100 (84).
[247] 2017 NMR ISDN survey, QC1. Base is those who mostly use ISDN30 and do not use IP-based alternatives. Caution base under 100 (61).
[248] 2017 NMR ISDN survey, QC1. Base is those who use ISDN2/30 and do not use IP-based alternatives. Caution: base under 100 (61).
[249] While businesses may face early termination charges, Ofcom has put in place protections to ensure that conditions or procedures for contract termination do not act as a disincentive to switching: General Condition 9.3 https://www.ofcom.org.uk/advice-for-businesses/knowing-your-rights/gen-conditions.

required new investment to do so. The simple average reported cost was around £750k,[250] though we treat this with caution as there were large differences in the costs reported by respondents. This may mean the average is skewed by a small number of very high responses. A significant minority did report substantial costs from migrating to IP. 27% said that migrating to IP-based services cost in excess of £250k, and only 28% reported costs of under £20k.

5.36 Our survey evidence suggests that migration costs are higher than was suggested by our 2015 market research (where 18% of respondents reported costs in excess of £250k).[251] This may imply that those with the lowest migration costs have migrated first, and that the remaining ISDN30 users tend to be those with higher migration costs, though it could reflect differences in sample profile, and the skewed distribution of costs. High costs could, nevertheless, act as a barrier to migration or switching.

5.37 Further, the business case for migrating to IP-based services can be 'event driven': it can be economic to migrate when existing equipment has reached the end of its life or when businesses consolidate or move premises. Our survey evidence showed that, of those that had adopted IP-based services, 94% reported the main trigger for moving from ISDN services as related to an upgrade or change of supplier. Across all triggers mentioned, 58% of respondents cited "part of a general upgrade", 38% when changing supplier and 35% switch replacement.[252] This suggests that a response to a price change may take time and may form only a small part of a wider decision to re-arrange communications services.

5.38 Existing ISDN30 users are likely to be tied into a contract with their telecoms provider for the provision of their service. There are two reasons why this could delay migration to IP-based services. First, businesses may not look for alternative voice and data solutions during their contract period, instead choosing to wait until the end of the contract before comparing other services or considering switching telecoms provider. Second, even if a business wanted to migrate or switch to IP-based services before their ISDN30 contract had finished, they could face early cancellation charges which would make it less attractive.

Concerns about quality, security and reliability

5.39 ISDN users that were aware of IP-based services but do not currently use them were asked if they had any concerns about moving to IP-based services.[253] The most cited concern was reliability (49% of respondents), with other responses including: quality of service (42%), security (31%) and resilience (31%). This latest survey shows a similar incidence of these concerns as in our 2015 market research.[254] Contrary to the assertions of one respondent

[250] 2017 NMR ISDN survey, QE2: base is those who use IP-based alternatives. QE3B: base is those who use IP-based alternatives where implementation required investment in new equipment.
[251] 2016 NMR Consultation, paragraph 5.35.
[252] 2017 NMR ISDN survey, QD5. Base is those who use IP-based alternatives.
[253] 2017 NMR ISDN survey, QC5A. Base is ISDN2 or ISDN30 users aware of but not using IP-based alternatives. Caution: base under 100 (72).
[254] Paragraph 5.41 of our 2016 Narrowband Consultation mistakenly quoted the incidence of 1st ranked concerns, here we cite all concerns mentioned by respondents. The equivalent figures from our 2015 market research are "reliability" (48%), "quality of service" (38%), security (28%) and "resilience" (26%).

[✂], this suggests these concerns remain significant, and could act as a potential barrier for some ISDN30 users in migrating to IP-based alternatives.

Conclusion on IP-based services

5.40 Evidence from our survey suggests that IP-based services can offer the same functionality as ISDN30 (and in some cases additional features) and stated switching rates now appear high. As such IP-based services may act as a substitute to ISDN30 services for many customers, particularly for new connections which require the installation of a line to a new business or new sites.

5.41 However, for at least some existing ISDN30 users, IP-based services may be a less effective substitute. Migration costs could be significant for some businesses, and as noted above it may be that the remaining ISDN30 users tend to be those that face the highest migration costs. In addition, a significant number of ISDN30 customers have concerns over the reliability and quality of IP-based services.

5.42 ISDN30 volumes are in decline and this decline is likely to continue. In contrast, volumes for IP-based services have grown significantly and this is forecast to continue. However, not all of the increase in IP-based volumes is a result of businesses migrating from ISDN30; it also partly reflects new or expanding businesses connecting to IP-based services. In addition, current market trends do not suggest that IP-based alternatives are providing a strong constraint on retail ISDN30 prices. As discussed in Section 3, retail ISDN30 prices have increased since 2013, whilst the price of IP-based alternatives has fallen or remained flat.

5.43 Therefore, while we recognise that there is increasing migration to IP-based services, on balance we do not consider that the constraint from IP-based services is sufficiently strong within the period of this review to widen the relevant product market. In other words, there is likely to be a group of customers for which a hypothetical monopolist of ISDN30 could profitably increase prices without those customers being protected by customers that would switch to IP alternatives.

5.44 Based on this we disagree with [✂]'s proposal to define two separate ISDN30 markets based on available data service quality. It argued that separate markets for ISDN30 should be defined dependent on whether available data service quality is or is not at least synchronous 3.5 Mbit/s. Based on the reasoning above, we do not believe IP-based products to be an effective constraint on ISDN, regardless of the speed the premise can achieve while using IP. We would also expect the number of premises using ISDN30 which are in locations that would receive speeds of less than 3.5 Mbit/s when using IP-based products to be low. We estimate that 89% of premises in the UK are able to receive a predicted download speed of at least 30 Mbit/s (which would support [✂]'s proposed speed).[255]

[255] Ofcom, 2016. *Connected Nations 2016,* page 4. https://www.ofcom.org.uk/__data/assets/pdf_file/0035/95876/CN-Report-2016.pdf.

Leased lines

5.45 Our survey evidence suggests that the vast majority of ISDN30 users do not perceive leased lines to be a viable retail substitute for ISDN30. When ISDN30 users were asked what they were planning to use when they stopped using ISDN30, 15% of respondents mentioned leased lines but only 6% ranked leased lines as the best alternative to ISDN30.[256]

5.46 It is technically possible for a wholesale provider to use a leased line as the bearer over which it could provide ISDN30 services to an end user, rather than buying a wholesale ISDN30 line. To replicate the capacity of an ISDN30 line, a user could buy a 2 Mbit/s leased line at a cost of approximately £2,700 per year.[257] This could initially appear cheaper than ISDN30 if the ISDN30 line in question has 10 or more channels (based on BT's list price at £26.40 per channel per month).

5.47 However, there are fundamental differences in the characteristics of ISDN30 and leased line services. An ISDN30 service consists of two components – a bearer service that connects the customer premise to the exchange, and the call control/switching functions provided by the exchange. In contrast, a leased line only consists of the bearer service and would require additional equipment to gain the functionality of ISDN30 services, including the capability for voice calls, which is a key use of ISDN30.

5.48 No respondents disagreed with our provisional views on leased lines. As a result of our survey evidence, wholesale pricing information and the technical differences between ISDN30 and leased lines, we maintain our position from the consultation that leased lines are not likely to constrain retail or wholesale ISDN30 prices.

Analogue exchange lines and ISDN2

5.49 From a technical perspective, analogue and ISDN2 exchange lines would allow users to make and receive calls in the same way as they would over an ISDN30 line. Therefore, for a user that only made and received calls, analogue, ISDN30 and ISDN2 exchange lines might in principle provide the required functionality.

5.50 However, because a single ISDN30 line can support up to 30 channels, it would need to be replaced by multiple analogue or ISDN2 lines to achieve the same capacity and functionality. Based on a simple analysis of retail prices, BT Business charges a similar price for an ISDN30 channel and an ISDN2 channel. However, a customer that wished to stop using ISDN30 and start using ISDN2 lines instead would need to pay to install these new lines. Based on the information available on the BT Business website, installation charges are up to £375 for each new ISDN2 line. Our evidence suggests that an average ISDN30 line uses 18 channels, so it would need to be replaced with nine ISDN2 lines.

5.51 For analogue lines, the retail price for a standard line with an equivalent care level is slightly lower than for ISDN. BT's Value Line product is cheaper, but has a lower care level than ISDN30 as standard. In addition, there is a connection charge of at least £125 for a

[256] 2017 NMR ISDN survey, QB13B, Q14B. Base is those who use ISDN30 (and mostly use an ISDN service).
[257] BT, *BTnet leased line.* https://business.bt.com/products/broadband/bt-leased-lines/ [Accessed 23 October 2017].

new analogue line (and there may be a charge for each new analogue line).[258] To replace an ISDN30 line with average channel utilisation would require the connection of 18 analogue lines.

5.52 When ISDN30 users were asked in our survey what they are planning to use if they had to stop using ISDN30, no respondents mentioned analogue exchange lines and only 25% of respondents mentioned ISDN2.[259] This evidence suggests that the majority of ISDN30 users do not perceive analogue exchange lines or ISDN2 to be viable substitutes for ISDN30.

5.53 No respondents disagreed with our consultation position on the substitutability of analogue exchange lines and ISDN2 for ISDN30. We maintain our position from the consultation that substitution to analogue or ISDN2 exchange lines is unlikely to constrain a hypothetical monopolist raising the retail price of ISDN30 above the competitive level.

Mobile access

5.54 As discussed above, a large proportion of ISDN30 users stated that they use it for incoming and outgoing calls. While call services are clearly provided by mobiles, our analysis of WFAEL in section 4 explained that few businesses saw mobiles as a substitute for fixed access. We consider that for much the same reasons, mobiles are unlikely to provide a sufficient substitute for many ISDN30 customers. Moreover, our survey evidence also shows that ISDN30 is used for several purposes which mobile phone access may not replicate, such as fax services (used by 46% of ISDN30 respondents), security/alarm systems (58%) and videoconferencing (43%).[260]

5.55 Our survey evidence suggests that among businesses that use ISDN30, 73% also have mobile phones.[261] This appears to indicate that businesses value having mobiles in addition to ISDN30, rather than instead of ISDN30.

5.56 No consultation respondents disagreed with our provisional view on mobile access. We maintain our position from the consultation that mobile access is not likely to provide an effective indirect constraint on the provision of ISDN30.

Conclusion on indirect constraints

5.57 Overall, we conclude that, for the period of this market review, there remains a narrow market for wholesale ISDN30, although we recognise the growing indirect constraints at the retail level from IP-based services. We anticipate that these IP-based services are likely to increasingly provide a competitive constraint in future, particularly for new customers or lines. We have taken this into account in our market power analysis (Section 6) and the design of remedies (Sections 7 and 8).

[258] For example, a BT business Value Line is £19.20 per month and a standard line £23.70 per month. For ISDN2 the price is £27 per channel per month and ISDN30 £26.40 per channel per month (all prices are 12-month contracts). Sources: BT Website: https://business.bt.com/products/voice/phone-lines/ [accessed 18 October 2017] BT price list: https://business.bt.com/products/voice/isdn/ [accessed 18 October 2017].

[259] 2017 NMR ISDN survey, QB13B. Base is those who use ISDN30 (and mostly use an ISDN service).

[260] 2017 NMR ISDN survey, QA2B. Base is those who use ISDN30 (and mostly use an ISDN service).

[261] 2017 NMR ISDN survey, QS6B. Base is those who use ISDN30.

Wholesale product market definition

Focal product

5.58 As discussed above and in light of our analysis of possible indirect constraints from the retail level, we consider that the relevant focal product is wholesale ISDN30 exchange line services.

Demand-side substitution

5.59 From the point of view of wholesale demand, we do not consider that other types of wholesale exchange lines, such as ISDN2, leased lines and IP-based services, provide an effective direct demand-side substitute. This is because a retailer of ISDN30 exchange lines needs to purchase wholesale ISDN30 inputs in order to supply its ISDN30 retail customers.

Supply-side substitution

5.60 To warrant inclusion in the relevant market, supply-side substitution from an alternative product needs to be both technically feasible and economically likely. In principle, any form of access network could be upgraded to provide ISDN30 access. However, we do not consider this to be likely. The main reason for this is that it is unlikely to be economically viable to invest in network upgrades when ISDN30 is in decline, reducing the period over which to recover these costs.

Conclusion on wholesale product market definition

5.61 In light of the factors discussed above, we conclude that, for the period of this market review, a wholesale market definition confined to ISDN30 is appropriate. This product market definition is the same as that adopted in our last review of these markets (FAMR 2014).

Wholesale geographic market definition

5.62 BT's wholesale prices for ISDN30 exchange line services are uniform across the UK excluding the Hull Area, although we note that a national charge control applies to BT's pricing. Whilst it might be that a hypothetical monopolist of ISDN30 might price differently in different areas absent regulation, we consider that conditions of competition outside the Hull Area are likely to be sufficiently homogenous, such that a single geographic market definition is appropriate.

5.63 We consider that the Hull Area is distinct from the rest of the UK due to KCOM facing little competition in the supply of ISDN30 and BT is not present in the Hull Area.

5.64 We therefore define two separate geographic wholesale markets:

- UK excluding the Hull Area; and
- Hull Area.

5.65 These geographic markets are the same as those adopted in our last review of these markets (the 2014 FAMR).

Three criteria test for ISDN30

5.66 The ISDN30 market is not listed in the 2014 EC Recommendation. Therefore, taking due account of the 2014 EC Recommendation, we have applied the three-criteria test to assess whether *ex ante* regulation is warranted.[262]

Our consultation position

5.67 Taking each criterion in turn, in the UK excluding the Hull Area, we proposed that (i) barriers to entry and expansion were likely to remain high and non-transitory; (ii) the market was not expected to tend towards effective competition and (iii) competition law would not be sufficient, by itself, to address competition concerns in this market.

5.68 Similarly, in the Hull Area, we proposed that (i) barriers to entry and expansion were likely to remain high and non-transitory, (ii) the market was not expected to tend towards effective competition, (iii) competition law would not be sufficient, by itself, to address competition concerns in this market.

5.69 We therefore considered that the three-criteria test was satisfied in relation to the markets we proposed to define.

Stakeholder responses

5.70 Three stakeholders commented on our provisional assessment of the three criteria test for ISDN30. Vodafone agreed with our assessment of the three criteria test for ISDN30.[263] KCOM agreed with our competition assessment for ISDN30 in the Hull Area.[264]

5.71 Openreach accepted that new entry was unlikely for ISDN30 given the infrastructure required, but that more competitive entry was certain in the form of IP-based alternatives. It argued that a high market share in a terminally declining product could be viewed as a condition that often exists in a competitive market.[265]

[262] See description of the three criteria test in 4.103.
[263] Vodafone response to 2016 NMR Consultation, section 6.
[264] KCOM response to 2016 NMR Consultation, paragraph 2.8.
[265] Openreach response to 2016 NMR Consultation, section 3.

Our decision and reasoning

Presence of high and non-transitory barriers to entry

UK excluding the Hull Area

5.72 We consider barriers to entry and expansion in our SMP analysis in Section 6. As set out there, barriers to entry and expansion are high due to the large sunk costs that would need to be incurred to establish the infrastructure required to provide an ISDN30 exchange line, and the fact that these costs would need to be recovered in a declining market.

5.73 For these reasons, we consider that barriers to entry remain high and non-transitory over the period of this review in the UK excluding the Hull Area.

Hull Area

5.74 We consider that significant barriers to entry remain. Any potential new entrant wishing to enter the market would need to invest considerably in rival infrastructure to KCOM, and given the small geographic area and declining ISDN30 volumes, would likely have a limited customer base and limited time period over which to recover these costs.

5.75 For these reasons, we consider that barriers to entry remain high and non-transitory over the period of this review in the Hull Area.

A market structure which does not tend towards effective competition

UK excluding the Hull Area

5.76 We assess the state of competition in detail in our SMP analysis in Section 6. Notwithstanding the growth in IP-based services, as set out there, our conclusion is that the wholesale ISDN30 market does not display a tendency towards effective competition in this review period. There are some indications that the constraint from IP-based services may increase, but not to a sufficient extent over this review period. BT has maintained a high market share over time (62% as of March 2017, although this has reduced since the last review), and barriers to entry and expansion remain. ISDN30 channel volumes have continued to decline (making entry unattractive) and BT is currently pricing at the cap imposed by the charge control and earning returns above the cost of capital (see Section 6).

5.77 For these reasons, we consider that the market structure will not tend towards effective competition in the review period in the UK excluding the Hull Area.

Hull Area

5.78 Our conclusion is that the wholesale ISDN30 market in the Hull Area does not display a tendency towards effective competition in the review period. KCOM has virtually a 100% share of the relevant market, barriers to entry and expansion remain, ISDN30 channel volumes have continued to decline (making entry unattractive) and there is no effective countervailing buyer power.

5.79 For these reasons, we consider that the market structure will not tend towards effective competition in the review period in the Hull Area.

Competition law alone would not adequately address the market failure(s)

5.80 For both the UK excluding the Hull Area and the Hull Area, we consider barriers to entry will persist and the relevant markets will not tend towards competition within the relevant time horizon. We also consider that the speed of an intervention based solely on competition law in response to anti-competitive behaviour may not be sufficient to prevent harm in certain circumstances. Further, the greater certainty provided by *ex ante* regulation is still necessary over the forward look of this market review. *Ex ante* regulation allows clear requirements to be imposed on BT which give it and other market participants certainty as to the rules BT must follow. This contrasts with competition law which is less prescriptive and in some cases subject to a requirement to establish at least the potential for anti-competitive effects in the downstream market. For these reasons, in this instance, we consider that competition law would not be sufficient, by itself, to address concerns in this market and therefore *ex ante* regulation is necessary to maintain effective competition.

Conclusion on the three-criteria test for ISDN30

5.81 Based on the above, we consider that the criteria set out in the 2014 EC Recommendation are satisfied in relation to the markets we have defined and that it is therefore appropriate to analyse these markets to determine whether any provider holds SMP.

ISDN2 market definition

2016 NMR Consultation

5.82 In light of our analysis of possible indirect constraints from the retail level, we considered that the relevant focal product was wholesale ISDN2 exchange line services. We did not consider that other types of wholesale exchange line would provide an effective direct demand-side substitute, because a retailer of ISDN2 exchange lines needs to purchase wholesale ISDN2 inputs in order to supply ISDN2 retail customers. We did not consider that supply-side substitution, through upgrades to an access network to provide ISDN2 access, was likely.

5.83 We therefore proposed that a wholesale market definition based on ISDN2 only was appropriate.

5.84 We proposed to find two separate geographic wholesale markets: the UK excluding the Hull Area, and the Hull Area.

Stakeholder responses

5.85 Four respondents commented on our market definition for ISDN2. Verizon[266] and Vodafone[267] agreed with our market definition. Vodafone noted that ISDN services are valued by customers and have a reputation for reliability and ease of use. In Vodafone's view, a significant volume of customers will continue to use ISDN2 for some time, and that the adoption of alternatives will vary across the market depending on the particular needs and priorities of users. It highlighted cost and IT compatibility issues for some users. It considered that ISDN2 remains a sizable market where it continues to see strong demand at the retail level.[268]

5.86 Openreach[269] and [✂][270] made very similar arguments in relation to ISDN30 and ISDN2. In relation to small users with ISDN2 specifically, [✂] argued that VoIP, subject to data service quality, starts to become a viable competitive alternative. It noted challenges in the VoIP market for small SMEs (who might be ISDN2 users). This respondent suggested take-up of VoIP amongst small SMEs was partly due to variable quality of service for unmanaged VoIP services, exacerbated where available broadband quality was low.

5.87 [✂] suggested that we should define two separate markets for ISDN2. According to [✂], if premises are not able to achieve a minimum specified data service quality, IP-based alternatives do not provide a constraint on ISDN pricing and ISDN services are the only viable business grade services. Whereas for premises which are able to achieve sufficient data service quality, alternatives are available. It argued that separate markets for ISDN2 should be defined dependent on whether available data service quality is or is not at least synchronous 0.25 Mbit/s.

5.88 KCOM agreed with our market assessment for ISDN2 in the Hull Area; no other respondents commented on this issue.[271]

Our decision and reasoning

Retail services

5.89 As with the 2016 NMR Consultation, we start by considering retail services and the indirect constraints they may place on wholesale services.

ISDN2 users

5.90 ISDN2 is a narrowband access service that provides two channels of 64 kbit/s each. We commissioned a further survey of retail users of ISDN2 services and asked them to list what

[266] Verizon response to 2016 NMR Consultation, paragraph 49.
[267] Vodafone response to 2016 NMR Consultation, part 2, section 6.
[268] Vodafone response to 2016 NMR Consultation, part2, paragraph 5.8-5.16.
[269] Openreach response to 2016 NMR Consultation, section 3.
[270] [✂] response to 2016 NMR Consultation, pages 16-21.
[271] KCOM response to 2016 NMR Consultation, paragraph 2.8.

they used them for. As in our 2015 survey, the most frequently mentioned uses were outgoing calls (mentioned by 75% of respondents) and incoming calls (70%).[272]

Starting point

5.91 As the starting point for the product market definition exercise, we have taken ISDN2 exchange line services as the focal product. Looking at the demand-side, we consider whether the supply of ISDN2 exchange lines is constrained by the provision of:

- IP-based services;
- leased lines;
- analogue exchange lines;
- ISDN30 exchange lines; and
- mobile access.

IP-based services as a substitute for ISDN2

5.92 Survey evidence suggests that IP-based services are perceived as the best substitute for ISDN2. When asked what they considered would be the best replacement for ISDN2, 53% of respondents mentioned an IP-based alternative.[273]

5.93 As discussed in the context of ISDN30, in considering a SSNIP by a hypothetical monopolist, we want to identify the demand response to a price rise from a starting point of competitive prices. This includes isolating the response due to the SSNIP from the counterfactual of no price rise. In other words, we want to identify customers who would switch to an alternative in response to a SSNIP, but would not have switched if prices had not changed.

5.94 As for ISDN30, our market research shows that a large majority (64%) of ISDN2 users are already considering switching away from ISDN2 at current prices.[274] Respondents were also asked to what extent a SSNIP would influence their decision to continue or stop using ISDN2 and 41% of respondents said that they would ‘definitely’ switch away from ISDN2 in response to a 10% increase in price.[275] This percentage is noticeably higher than the equivalent reported in our 2015 survey (when 18% stated they would definitely switch), however the results cannot be compared directly as we changed the way the SSNIP questions were asked.[276]

5.95 For the purposes of market definition, we are interested only in those that would switch away from ISDN2 because of a SSNIP. Those customers that are likely to migrate anyway don’t form part of the demand response that determines the profitability of a SSNIP by a hypothetical monopolist. It is difficult in practice to determine the incremental effect of the price rise (against a counterfactual of a declining market for non-price reasons) but we

[272] 2017 NMR ISDN survey. QA2A. Base is those who use ISDN2 (and mostly use an ISDN service).
[273] 2017 NMR ISDN survey, QB14A. Base is those who mostly use ISDN2 (and mostly use an ISDN service).
[274] 2017 NMR ISDN survey, QB6. Base is those who mostly use ISDN2.
[275] In addition, a further 42% reported that they would be “likely” to switch away and 14% said it would have no impact. 2017 NMR ISDN survey, QB10. Base is those who mostly use ISDN2.
[276] In particular, the 2017 survey asked about customer reactions to a SSNIP described in terms of a cash amount.

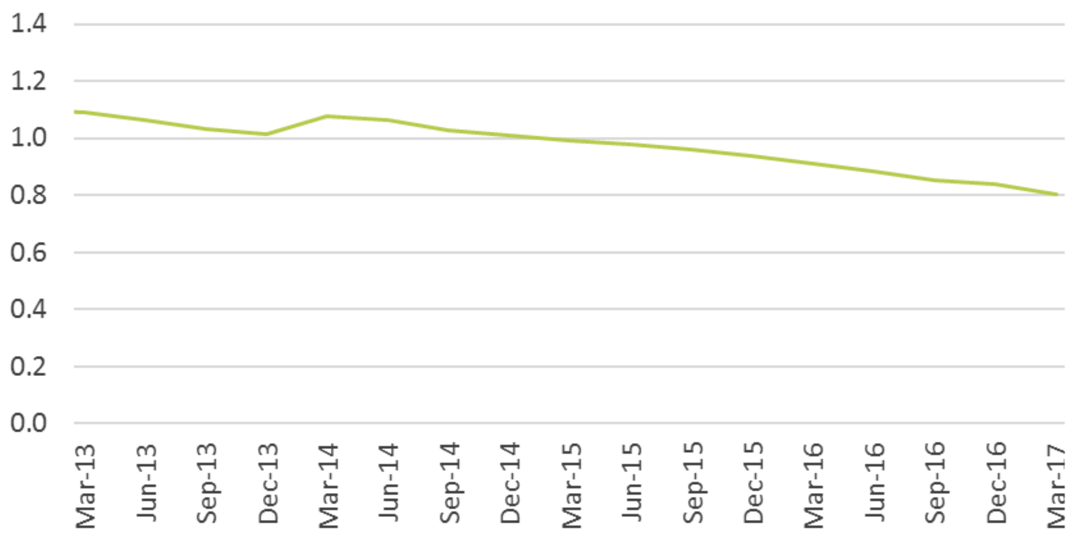
note that 64% of those who mostly use ISDN2 are already considering switching away from the service. We have also considered the response of those who were not already considering migrating, though to achieve a sufficient sample size we have combined ISDN30 and ISDN2 users. This evidence indicates that across both ISDN services only 12% of these users said they would definitely switch in response to a price rise.[277]

5.96 In addition, ISDN2 retail list prices appear to be increasing (see Table 3.3 in section 3) even though wholesale prices have been capped on a flat nominal basis since 2014. This could also affect the context in which survey respondents considered the SSNIP, as they would have been considering a 10% increase in prices that were already potentially higher than the competitive benchmark for a SSNIP test. This may mean that respondents considered alternative products to be more attractive substitutes than they would if a SSNIP was applied to the competitive price level.

Volume trends for ISDN2 and IP-based services

5.97 ISDN2 volumes have been declining gradually, as shown in Figure 5.2 below. Over the period from March 2013 to March 2017, the total volume of ISDN2 channels fell by a compound annual growth rate of around 7%, though we do not yet know if this represents a shift in the long-term trend. As for ISDN30, over the last four years, BT's own retail ISDN2 volumes have been falling at a faster rate (around 12%) than those it sells on a wholesale basis to other providers (around 7%).

Figure 5.2: Historic wholesale ISDN2 volumes (millions of channels)



Source: Data until December 2013 from FAMR Statement, Figure 4.1. Data from January 2014 onwards from BT, Colt, KCOM, Verizon, Virgin Media and Vodafone in response to the s.135 notices of August 2015, July 2016 and May/June 2017.

5.98 The number of new ISDN2 connections is relatively low (an average of 5,600 channels, less than 2% of current ISDN2 lines, were connected by BT each quarter), and these are more

[277] 2017 NMR ISDN survey, QB10. Base is those using ISDN2/30 as a main service. Caution: base under 100 (55).

than outweighed by disconnections. This suggests that very small numbers of new consumers are migrating to ISDN2.

5.99 In the 2015 survey, we asked customers about their future plans for using ISDN services. 57% of respondents indicated that they would stop using ISDN2 before September 2017.[278] As for ISDN30, such a decline does not appear to be reflected in the data shown (unless users who have given up ISDN2 had fewer ISDN2 channels than average and/or the cessation of ISDN2 is skewed to the final few months of the period for which we do not have data). Our 2017 survey asked similar questions about future plans for using ISDN2. 20% of ISDN2 users envisage continuing to use ISDN for four years or more.[279] While 74% of ISDN2 users plan to move some services, only 15% of ISDN2 users plan to move all their ISDN services to IP in the next four years.[280] As for ISDN30, migration from ISDN2 appears to be event-driven: 77% of customers who use both ISDN2 and IP-based solutions report "part of a general upgrade" or "switch replacement" as a trigger for moving from ISDN2 to IP.[281]

5.100 In response to our 2017 survey 39% of customers indicated that they planned to stop using ISDN2 in the next year.[282] However, these results should be treated with caution because they are stated preferences in response to a survey rather than necessarily committed plans. Given the apparent difference between planned and actual use in response to the 2015 survey, a significant proportion of this group may not migrate by 2018.

5.101 As discussed above in relation to ISDN30, volumes of IP-based alternatives have grown, and this is expected to continue. For the same reasons as discussed for ISDN30, not all the increase in IP-based volumes is a result of businesses migrating from ISDN2.

Awareness of IP-based services

5.102 Our updated survey evidence suggests that awareness of IP-based alternatives is higher than previous research implied. Just 23% of those who mostly used ISDN2 (and did not use IP-based alternatives) said they had never heard of IP-based alternatives, compared to 49% in our 2015 survey.[283] Smaller businesses were slightly more likely to be unaware; 26% of ISDN users (both ISDN30 and ISDN2) with less than 250 employees were unaware.[284] Therefore, for most users, awareness of alternatives does not appear to be likely to act as a barrier to migration. But a minority of users do appear to be unaware.

---

[278] 2016 NMR Consultation, paragraph 5.94.

[279] 2017 NMR ISDN survey, QB12A. Base is those who use ISDN2 (and mostly use an ISDN service).

[280] 2017 NMR ISDN survey, QC2A. Base is those who mostly use ISDN2 and are aware of, but not using IP-based alternatives. Caution base under 100 (53).

[281] 2017 NMR ISDN survey, QD5. Base is ISDN2 users who use both ISDN2 and IP-based alternatives. Caution: base under 100 (91).

[282] 2017 NMR ISDN survey, QB12A. Base is those who use ISDN2 (and mostly use an ISDN service).

[283] 2017 NMR ISDN survey. QC1. Base is those who mostly use ISDN2 and do not use IP-based alternatives. Caution: base under 100 (71).

[284] 2017 NMR ISDN survey. QC1. Base is those who use ISDN2 or ISDN30 and do not use IP-based alternatives. Caution low base (61).

Costs of switching from ISDN2 to IP-based services

5.103 For businesses wishing to migrate or switch from ISDN2 to IP-based services, there are likely to be equipment and to a lesser extent staff training costs, as well as the possibility of being tied into long-term contracts, which may incur charges for early cancellation.[285]

5.104 As discussed for ISDN30 (paragraph 5.35), migration costs to IP-based services could be significant, and our survey evidence suggests that migration costs may be higher than was suggested by our 2015 market research. This may imply that those with lowest migration costs have migrated first, and that the remaining ISDN users tend to be those with higher migration costs. This could reflect differences in sample profile, and the skewed distribution of costs. High costs could, nevertheless, act as a barrier to migration or switching.

5.105 Further, our discussion on ISDN30 highlighted that the business case for migrating to IP-based services can be 'event driven', meaning that a response to a price change may take time and may form only a small part of a wider decision to re-arrange communication services. Existing ISDN2 users are likely to be tied into a contract with their telecoms provider for the provision of their service, which could delay migration or switching for the same reasons discussed for ISDN30.

Concerns about quality, security and reliability

5.106 As discussed above, in the context of ISDN30, the results from our 2017 survey indicate that some ISDN users still have concerns about migrating to IP-based services for reasons of reliability, resilience, security and quality. This suggests these concerns remain significant, and could act as a potential barrier for some ISDN2 users in migrating to IP-based alternatives.

Conclusion on IP-based services

5.107 Evidence from our survey suggests that IP-based services can offer the same functionality as ISDN2 (and in some cases additional features), and stated switching rates now appear high. As such, IP-based services may act as substitutes to ISDN2 services, particularly for new connections which require the installation of a line to a new business or new sites.

5.108 However, for at least some existing ISDN2 users, IP-based services may be a less effective substitute. Migration costs can be significant for some businesses, and as noted above it may be that the remaining ISDN2 users tend to be those that face the highest migration costs. In addition, some ISDN2 customers have concerns over the reliability and quality of IP-based services.

5.109 ISDN2 volumes are in decline and this decline is likely to continue. In contrast, volumes for IP-based services have grown significantly and this is forecast to continue. However, not all

[285] While businesses may face early termination charges, Ofcom has put in place protections to ensure that conditions or procedures for contract termination do not act as a disincentive to switch. General Condition 9.3: https://www.ofcom.org.uk/advice-for-businesses/knowing-your-rights/gen-conditions

of the increase in IP-based volumes is a result of businesses migrating from ISDN2; it also partly reflects new or expanding businesses connecting to IP-based services.

5.110 In addition, current market trends do not suggest that IP-based alternatives are providing a strong constraint on retail ISDN2 prices. As discussed in Section 3, ISDN2 retail prices have increased since 2013, whilst the price of IP-based alternatives has fallen or remained flat.

5.111 Therefore, while we recognise that there is increasing substitutability with IP-based services, on balance we do not consider that the constraint from IP-based services is sufficiently strong within the period of this review to widen the relevant product market.

5.112 As discussed above, we do not agree with [✄]'s argument that separate ISDN markets should be defined based on speed. The evidence suggests that IP-based products do not provide an effective constraint for ISDN2, regardless of the speed the premise can achieve while using IP. We would expect the number of premises using ISDN2 which are in locations that receive speeds of less than 0.25 Mbit/s when using IP-based products to be low. 0.25 Mbit/s upload and download speeds can be achieved using ADSL broadband, and we estimate BT's national ADSL coverage to be approximately 99%.

Leased lines

5.113 Based on our survey evidence, only a minority of ISDN2 users (6%) considered leased lines would be the best replacement if they had to replace ISDN2.[286]

5.114 We consider that providing ISDN2 services over a leased line is uneconomic. Even if a wholesale provider has its own core network (so that it would not incur any distance-related leased line charges), the wholesale rental for a leased line that would provide the same capacity as an ISDN2 line is significantly above the wholesale charge of an ISDN2 line.

5.115 BT no longer advertises leased lines with bandwidth below 2 Mbit/s. Therefore, to replicate the capacity of an ISDN2 line, a user would have to buy a 2 Mbit/s leased line at a cost of approximately £2,700 per year.[287] This is significantly more expensive than the ISDN2 retail prices (which are £27.00 per channel per month – i.e. £648 per year). As would be the case for ISDN30, additional equipment and an associated cost would also be required for a leased line to gain the functionality of an ISDN2 service, including the capability for voice calls.

5.116 No respondents disagreed with our provisional views on leased lines. As a result of our survey evidence, wholesale pricing information, the technical differences between ISDN2 and leased lines and BT's announcement about wholesale low-bandwidth leased lines, we do not consider leased lines are likely to constrain retail or wholesale ISDN2 prices from either a demand- or supply-side perspective.

Analogue exchange lines

5.117 From a technical perspective, analogue and ISDN2 exchange lines would allow users to make and receive calls in the same way. Therefore, for a user that only made and received

[286] 2017 NMR ISDN survey, QB14A. Base is those who use ISDN2 (and mostly use an ISDN service).
[287] BT price list: https://business.bt.com/products/broadband/bt-leased-lines/ [accessed 23 October 2017].

calls, analogue and ISDN2 exchange lines might in principle provide the required functionality.

5.118 We have considered the retail price differential between analogue and ISDN2 exchange lines. An analogue line that can be connected to a phone system remains more than half the price of an ISDN2 line. Given that two analogue lines would be required to provide a service equivalent to an ISDN2 line, there would not be a potential saving on line rental. Switching to an analogue line would also incur a connection charge which is at least £125 for a new analogue business line (and there may be a charge for each new analogue line in a multiple line order).[288]

5.119 ISDN2 also supports a wider range of supplementary services such as DDI (direct dial in), which is needed to allocate extension numbers to different phone handsets.

5.120 In addition, ISDN2 is used for several niche purposes. In BT's 2015 submission, it stated that ISDN2 is used for a number of critical operations, including line resiliency, back-up services, ATMs that only require very low bandwidth but need 24-hour reliability, and public locations such as traffic lights, train stations and bus stops that display live information.[289]

5.121 This is supported by our survey evidence. When ISDN2 users were asked what they would use if they had to stop using ISDN2, no respondents mentioned analogue lines.

5.122 No respondents disagreed with our consultation position on the substitutability of analogue exchange lines. Therefore, in light of our survey evidence, retail pricing analysis and the uses of ISDN2, we consider that substitution to analogue exchange lines would not prevent a hypothetical monopolist raising the retail price of ISDN2 above the competitive level by a small but significant amount.

ISDN30

5.123 ISDN30 and ISDN2 are functionally similar services but offered with differing numbers of channels. BT offers ISDN30 services with 8 to 30 channels, while each ISDN2 line comes with two channels.

5.124 Given the entry level of channels for ISDN30, ISDN2 services are more likely to be appropriate for sites requiring fewer than eight voice channels. For such sites, ISDN30 would not be cost effective because some channels would be unused. In addition, an ISDN2 user wishing to switch to ISDN30 would need to pay for at least one ISDN30 line (with minimum of 8 channels) to be installed and would need to have a PBX that supported both ISDN30 and ISDN2 services, or invest in a replacement. Based on the information

---

[288] BT Business website: https://business.bt.com/products/voice/phone-lines/ [accessed 18 September 2017].
[289] Published here: https://www.ofcom.org.uk/__data/assets/pdf_file/0036/94797/Openreach-Summary-of-Market-and-Customer-Insight-on-the-ISDN2-and-ISDN30-Services.pdf.

available on the BT Business website, BT charges up to £160 per channel to connect the first 15 channels of an ISDN30 line.[290]

5.125 These considerations may explain why a limited number of survey respondents considered ISDN30 to be a substitute to ISDN2. When ISDN2 users were asked what they are planning to use when they stop using ISDN2, 32% of respondents mentioned ISDN30.[291]

5.126 No consultation respondents disagreed with our position on the substitutability of ISDN30 for ISDN2. We do not consider that ISDN30 exchange line services are likely to provide an effective indirect constraint on wholesale ISDN2 exchange lines.

Mobile access

5.127 As discussed above, a large proportion of ISDN2 users stated that they use it for incoming and outgoing calls. While call services are clearly provided by mobiles, our analysis of WFAEL explained that few businesses saw mobiles as a substitute for fixed access. We consider that for much the same reasons, mobiles are unlikely to provide a sufficient substitute for many ISDN2 customers. Moreover, our survey evidence also shows that ISDN2 is used for several purposes which mobile phone access could not replicate, such as fax services (used by 62% of ISDN2 respondents), security/alarm systems (44%) and video conferencing (43%).[292]

5.128 Our survey evidence suggests that among businesses that use ISDN2, 77% also have mobile phones.[293] This is not consistent with mobile access being a good substitute for ISDN2 access, and appears to indicate that businesses value having mobiles in addition to ISDN2.

5.129 No consultation respondents disagreed with our provisional view on mobile access. We do not consider that mobile services are likely to provide an effective indirect constraint to ISDN2.

Conclusion on indirect constraints

5.130 Overall, we conclude that, for the period of this market review, there remains a narrow market for wholesale ISDN2, although we recognise the growing indirect constraint at the retail level from IP-based services. We anticipate that these, IP-based services are likely to increasingly provide a competitive constraint in future, particularly for new customers or lines. We have taken this into account in our market power analysis (Section 6) and the design of remedies (Sections 7 and 8).

[290] BT, *Price List – Section1: Exchange Lines.* http://www.bt.co.uk/pricing/current/Exch_Lines_boo/0011_d0e5.htm#0011-d0e5 [accessed 18 September 2017].
[291] 2017 NMR ISDN survey, QB13A. Base is those who use ISDN2 (and mostly use an ISDN service).
[292] 2017 NMR ISDN survey, QA2A. Base is those who use ISDN2 (and mostly use an ISDN service).
[293] 2017 NMR ISDN survey, QS6B. Base is those who use ISDN2.

Wholesale product market definition

Focal product

5.131 As discussed above and in light of our analysis of possible indirect constraints from the retail level, we consider that the relevant focal product is wholesale ISDN2 exchange line services.

Demand-side substitution

5.132 From the point of view of wholesale demand, we do not consider that other types of wholesale exchange lines, such as ISDN2, leased lines and IP-based services, provide an effective direct demand-side substitute. This is because a retailer of ISDN2 exchange lines needs to purchase wholesale ISDN2 inputs in order to supply its ISDN2 retail customers.

Supply-side substitution

5.133 To warrant inclusion in the relevant market, supply-side substitution to an alternative product needs to be both technically feasible and economically viable. In principle, any form of access network could be upgraded to provide ISDN2 access. However, we do not consider this to be likely. The main reason for this is that it is unlikely to be economically viable to invest in network upgrades when ISDN2 is in decline, reducing the period over which to recover these costs.

Conclusion on wholesale product market definition

5.134 In light of the factors discussed above, we conclude that, for the period of this market review, a wholesale market definition confined to ISDN2 is appropriate. This market definition is the same as that adopted in our last review of these markets (the FAMR 2014).

Wholesale geographic market definition

5.135 BT's wholesale prices for ISDN2 exchange line services are uniform across the UK excluding the Hull Area, although we note that a national charge control applies to BT's pricing. Whilst it might be that a hypothetical monopolist of ISDN2 might price differently in different areas absent regulation, we consider that conditions of competition outside the Hull Area are likely to be sufficiently homogenous, such that a single geographic market definition is appropriate.

5.136 We consider that the Hull Area is distinct from the rest of the UK as BT is not present in the Hull Area.

5.137 We therefore define two separate geographic wholesale markets:

- The UK excluding the Hull Area; and
- The Hull Area.

5.138 These geographic markets are the same as those adopted in our last review of these markets (the FAMR 2014).

Three criteria test for ISDN2

5.139 The ISDN2 market is not listed in the 2014 EC Recommendation. Therefore, taking due account of the 2014 EC Recommendation, we have applied the three-criteria test to assess whether *ex ante* regulation is warranted.[294]

Our consultation position

5.140 Taking each criterion in turn, in the UK excluding the Hull Area, we proposed that (i) barriers to entry and expansion were likely to remain high and non-transitory; (ii) The market was not expected to tend towards effective competition and (iii) competition law would not be sufficient, by itself, to address competition concerns in this market.

5.141 Similarly, in the Hull Area, we proposed that (i) barriers to entry and expansion were likely to remain high and non-transitory; (ii) the market was not expected to tend towards effective competition; and (ii) competition law would not be sufficient, by itself, to address competition concerns in this market.

5.142 We therefore considered that the three-criteria test was satisfied in relation to the markets we proposed to define.

Stakeholder responses

5.143 Three respondents commented on our provisional assessment of the three criteria test for ISDN2. Vodafone agreed with our assessment of the three criteria test for ISDN2.[295] KCOM agreed with our competition assessment for ISDN2 in the Hull Area.[296]

5.144 Openreach accepted that new entry was unlikely for ISDN2 given the infrastructure required, but that more competitive entry was certain in the form of IP-based alternatives. It argued that whilst it is evident Openreach would maintain a 100% share in wholesale ISDN2 services, this did not indicate a lack of countervailing buyer power given the ready availability of superior IP-based alternatives. Openreach said it understood our viewpoint in relation to the three-criteria test, but it considered the competitive constraints are stronger than we suggested. Openreach considered that the outcome of the three criteria test will change during the subsequent market review period to this review.[297]

[294] See description of the three criteria test in Section 4.
[295] Vodafone response to 2016 NMR Consultation, part 1, section 6.
[296] KCOM response to 2016 NMR Consultation, paragraph 2.8.
[297] Openreach response to 2016 NMR Consultation, section 3

Our decision and reasoning

Presence of high and non-transitory barriers to entry

UK excluding the Hull Area

5.145 We consider barriers to entry and expansion in our SMP analysis in Section 6. As set out there, barriers to entry and expansion are high due to the large sunk costs that would need to be incurred to establish the infrastructure required to provide an ISDN2 exchange line, and the fact that these costs would need to be recovered in a declining market.

5.146 For these reasons, we consider that barriers to entry remain high and non-transitory over the period of this review in the UK excluding the Hull Area.

Hull Area

5.147 We consider that significant barriers to entry remain. Any potential new entrant wishing to enter the market would need to invest considerably in rival infrastructure to KCOM, and given the small geographic area and declining ISDN2 volumes, would likely have a limited customer base and limited time period over which to recover these costs.

5.148 For these reasons, we consider that barriers to entry remain high and non-transitory over the period of this review in the Hull Area.

A market structure which does not tend towards effective competition

UK excluding the Hull Area

5.149 We assess the state of competition in detail in our SMP analysis in Section 6. Notwithstanding the growth in IP-based services, as set out there, our conclusion is that the wholesale ISDN2 market does not display a tendency towards effective competition in this review period. There are some indications that the constraint from IP-based services may increase, but not to a sufficient extent over this review period. BT has maintained a near 100% market share over time, barriers to entry and expansion remain, ISDN30 channel volumes have continued to decline (making entry unattractive) and BT is currently pricing at the cap imposed by the charge control and earning returns above the cost of capital (see Section 6).

5.150 For these reasons, we consider that the market structure will not tend towards effective competition in the review period in the UK excluding the Hull Area.

Hull Area

5.151 Our conclusion is that the wholesale ISDN2 market in the Hull Area does not display a tendency towards effective competition. KCOM has virtually a 100% share of the relevant market, barriers to entry and expansion remain, ISDN2 channel volumes have continued to decline (making entry unattractive) and there is no effective countervailing buyer power.

5.152 For these reasons, we consider that the market structure will not tend towards effective competition in the review period in the Hull Area.

Competition law alone would not adequately address the market failure(s)

5.153 For both the UK excluding the Hull Area and the Hull Area, we consider barriers to entry will persist and the relevant markets will not tend towards competition within the relevant time horizon. We also consider that the speed of an intervention based solely on competition law in response to anti-competitive behaviour may not be sufficient to prevent harm in certain circumstances. Further, the greater certainty provided by *ex ante* regulation is still necessary over the forward look of this market review. *Ex ante* regulation allows clear requirements to be imposed on BT which give it and other market participants certainty as to the rules BT must follow. This contrasts with competition law which is less prescriptive and in some cases subject to a requirement to establish at least the potential for anti-competitive effects in the downstream market. For these reasons, in this instance, we consider that competition law would not be sufficient, by itself, to address concerns in this market and therefore *ex ante* regulation is necessary to promote effective competition.

Conclusion on the three-criteria test for ISDN2

5.154 Based on the above, we consider that the criteria set out in the 2014 EC Recommendation are satisfied in relation to the markets we have defined and that it is therefore appropriate to analyse these markets to determine whether any provider holds SMP.

Conclusions on market definition

5.155 In light of the analysis set out in this section and having applied the three-criteria test, we have identified the following markets[298] for the purposes of making a market power determination:

- a market for wholesale ISDN30 exchange line services in the United Kingdom excluding the Hull Area;
- a market for wholesale ISDN30 exchange line services in the Hull Area;
- a market for wholesale ISDN2 exchange line services in the United Kingdom excluding the Hull Area; and
- a market for wholesale ISDN2 exchange line services in the Hull Area.

[298] In this Statement we refer to these wholesale markets as 'ISDN30' and 'ISDN2' markets.

6. SMP analysis: WFAEL, WCO, ISDN30 and ISDN2

6.1 In this section, we assess whether any operator has SMP in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area and the Hull Area. In Annex 7, we set out the process for assessing market power. We have assessed SMP on a forward-looking basis over the review period according to the following criteria:

- Market shares;
- Constraints from other competing services at retail and wholesale levels;
- Pricing and Profitability;
- Barriers to entry and expansion; and
- Countervailing buyer power.

Summary of findings

6.2 Based on the analysis set out in this section we conclude that:

- in relation to WFAEL, BT has SMP in the UK excluding the Hull Area and KCOM has SMP in the Hull Area;
- in relation to WCO, BT has SMP in the UK excluding the Hull Area and KCOM has SMP in the Hull Area;
- in relation to ISDN30, BT has SMP in the UK excluding the Hull Area and KCOM has SMP in the Hull Area; and
- in relation to ISDN2, BT has SMP in the UK excluding the Hull Area and KCOM has SMP in the Hull Area.

WFAEL – UK excluding the Hull Area

Consultation proposal

6.3 In the 2016 NMR Consultation, we proposed that BT has SMP in WFAEL in the UK excluding the Hull Area.

Stakeholder responses[299]

6.4 Vodafone agreed with our view that BT holds SMP but also said that we overstated the constraint from MPF, and that BT's market power is not declining.[300] Sky,[301] Verizon,[302]

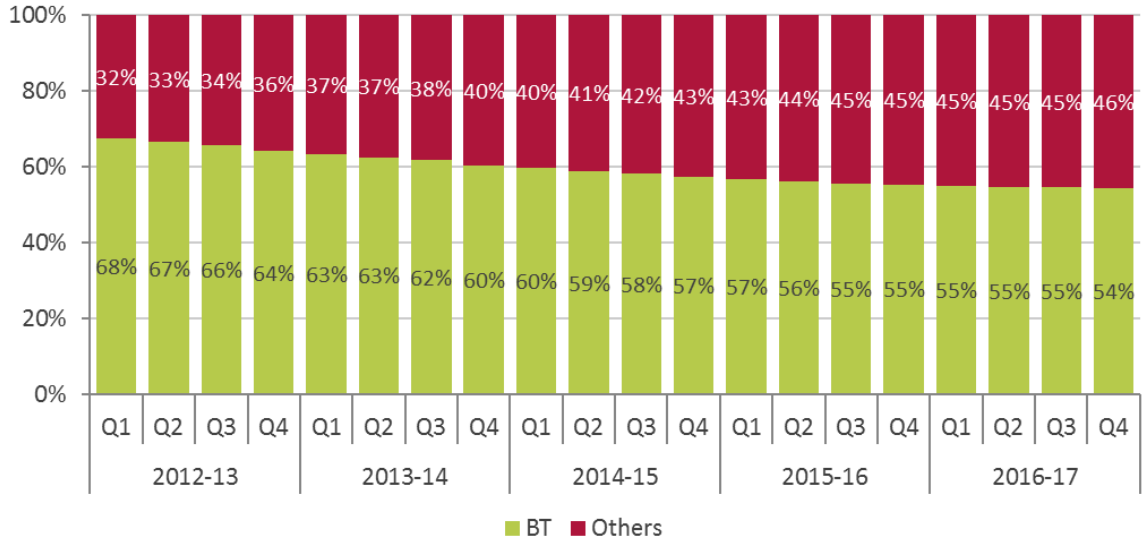
[299] Where stakeholders' comments relating to the constraints on WFAEL are set out and discussed in Section 4 we do not address them again here.
[300] Vodafone response to 2016 NMR Consultation, part 2, page 23.
[301] Sky response to 2016 NMR Consultation, pages 3-4.
[302] Verizon response to 2016 NMR Consultation, page 5.

Colt,[303] SSE[304] and UKCTA[305] similarly agreed with our SMP proposal but said that BT's market power is not declining. BT disagreed with our SMP proposal and said the constraints on it have strengthened since the last review.[306]

Market shares

6.5 Figure 6.1 includes market shares from 2012/13 to 2016/17. BT's market share has declined from 68% to 54% between Q1 2012/13 and Q4 2016/17. BT's share, while declining, is still over 50%, which gives rise to a presumption of SMP.

Figure 6.1: Shares of WFAEL[307]



Source: Ofcom analysis of s.135 data and BT Regulatory Financial Statements.

6.6 The decline in BT's market share was mainly driven by the growth of TalkTalk and Sky via their MPF-based services. Virgin Media's share was relatively stable over the period in the chart above, but it could increase its share over the forthcoming review period due to its planned network expansion.

6.7 BT retains a stronger position among some groups of customers (and a weaker position among others):

---

[303] Colt response to 2016 NMR Consultation, pages 2-4.
[304] SSE response to 2016 NMR Consultation, pages 1-2.
[305] UKCTA response to 2016 NMR Consultation, page 6.
[306] Openreach response to 2016 NMR Consultation, page 13.
[307] We note the shares for 2012-13 and 2013-14 are higher than reported in 2014 FAMR statement (Table 3.3) which showed BT having a share of 57% for Q4 2013. We consider the difference is due to our use of BT's Regulatory Financial Statements which includes volumes which were not previously captured and respondents to s.135 notices revisiting their previous estimates.

- In the 2017 Standalone Landline Consultation, we said BT held a retail market share of 79% among residential standalone fixed voice customers in 2016.[308] This includes both fixed voice only customers and split-supplier customers.[309] 79% is a lower bound on BT's wholesale supply to these customers, and the actual figure is somewhat higher as other telecoms providers such as SSE also use WLR to serve business customers.[310]
- MPF and cable are less commonly used to supply analogue lines to business customers. Sky does not offer business-specific contracts, and data from TalkTalk shows about [✂]% of its retail business lines are supplied using WLR (this compares with about [✂]% among residential customers) in Q4 2016-17.[311] Survey results imply that BT holds a share of over 80% of wholesale lines used to supply SMEs.[312]
- BT will have a 100% share in off-net areas by definition.[313]

Constraints from competing services at the retail and wholesale levels

6.8 Vodafone said we overstated the constraint from MPF as:[314]

- usage has peaked and will be less of a constraint as telecoms providers move to FTTC based services;
- it is coming to the end of its life cycle, which may impact on future investment and lead to withdrawal;
- it may suffer from capacity constraints;
- there is a lack of any functioning merchant (i.e. resale) market for MPF (which would provide a substitute for WLR); and
- it cannot be used to supply certain customers.

6.9 Sky said the potential for increased competition from LLU operators in the future is limited as there will be little further roll-out of LLU, and due to the transition to superfast broadband.[315] BT emphasised the constraints offered by WLA regulation such as the availability of MPF as an alternative to WLR.[316]

Switching to MPF or Cable-based services

6.10 In response to Vodafone:

---

[308] Ofcom, 2017. *The review of the market for standalone telephone services – provisional conclusions*, Figure 4.1. https://www.ofcom.org.uk/__data/assets/pdf_file/0030/97806/Consultation-Review-of-the-market-for-standalone-landline-telephone-services.pdf

[309] BT has a 100% share of WFAEL used to supply split supplier customers (both residential and business) because the separate supply of voice and broadband over a single line requires WLR for voice services.

[310] SSE response to 2016 NMR Consultation, page 1.

[311] Sky response dated 12 June 2017 to the 6th NMR s.135 notice; TalkTalk response dated 28 June 2017 to the 8th NMR s.135 notice.

[312] Based on the simplifying assumption that cable or MPF-based competitors (i.e. Virgin Media, Sky and TalkTalk) do not use any WLR. To the extent that they do, BT's wholesale market share will be understated. Source: 2017 NMR Small Business survey, Q7B.

[313] Sky response to 2016 NMR Consultation, page 3.

[314] Vodafone response to 2016 NMR Consultation, part 2, pages 10-13 and 23-24.

[315] Sky response to 2016 NMR Consultation, page 3.

[316] BT response to 2016 NMR Consultation, paragraph 4.5; Openreach response to 2016 NMR Consultation, page 13.

- The existence of a merchant market is neither necessary nor sufficient for alternative infrastructure to impose a constraint. If MPF (or cable) acts as a constraint at the retail level, due to self-supply, that is relevant to our assessment of SMP.
- While there may be factors which limit capacity at some exchanges, we have seen no evidence that indicates capacity constraints are materially affecting the competitive constraint from MPF at the market level.

6.11 In response to BT, we recognise that MPF roll-out is now very significant, accounting for around [✂]% of analogue lines in the UK excluding the Hull Area. The volume of MPF lines grew slightly to 8.97m in the year ending 31 March 2017 from 8.79m in the year ending 31 March 2016 (and from 4.93m in 31 March 2012).[317] Sky and TalkTalk generally use MPF rather than WLR alongside GEA.[318] This also suggests that the emergence of fibre-based superfast broadband (which now accounts for 26% of broadband connections[319]) has not lessened MPF's role in the supply of fixed voice services. However, we do not expect significant further roll-out of LLU during this review period.

6.12 Although Sky, TalkTalk or Virgin Media could supply retailers who currently use WLR (and WCO), MPF and cable are mainly used for self-supply at present. Sky and Virgin Media do not provide wholesale services. 79% of TalkTalk's own MPF-based access connections are used for self-supply, with the remainder being used for wholesale.[320] These wholesale sales account for about 3% of the overall WFAEL market.

6.13 However, MPF and cable have not generally been used to supply the groups of interest, which have tended to be served mainly using regulated WLR (and WCO), i.e. fixed voice only, business analogue, off-net and split purchasers. Post Office use WLR for their voice only lines even though it also buys MPF from TalkTalk for their dual-play customers.[321] However, we note that TalkTalk [✂].[322] As noted in Section 4, these groups of interest still constitute a significant proportion of customers (up to around one-quarter of WFAEL lines).

6.14 While MPF is not commonly used to supply these segments at present there may be scope for more switching to MPF, and further erosion of BT's market share, if the charges for WLR and WCO were to rise. This could be through providers such as Sky and TalkTalk using their MPF networks to provide lines to customers currently supplied by providers using WLR or via a merchant arrangement whereby Sky or TalkTalk used MPF to supply a WLR equivalent to retail providers that do not have their own MPF based networks.

---

[317] Volumes refer to non-BT MPF line volumes. We note the fall in the number of non-BT SMPF lines was greater than growth in non-BT MPF line between 2016 and 2017, but we did not consider SMPF to be a source of constraint for WFAEL or WCO as it cannot carry (analogue) voice services. Data from BT Regulatory Financial Statements which are available at http://btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm

[318] Responses to NMR s.135 notices.

[319] Ofcom, 2017. *Communications Market Report 2017*, Figure 4.12. https://www.ofcom.org.uk/__data/assets/pdf_file/0017/105074/cmr-2017-uk.pdf

[320] TalkTalk also [✂]. [✂] and [✂] account for [✂]% and [✂]% respectively of TalkTalk's wholesale volumes over their own access connections, with the remainder being accounted for by over 250 smaller telecoms providers. Figures based on Q4 2016-17 data from responses to NMR s.135 notices.

[321] Post Office email to Ofcom, 12 September 2017.

[322] TalkTalk said [✂].

6.15 As shown in Annex 3, on an ongoing basis (i.e. once connected in an already unbundled exchange), MPF is more cost effective than WLR and WCO. While converting an existing analogue line to MPF incurs a one-off connection charge, given that average customer lifetimes are likely to be at least a few years, this one-off charge would not appear to be prohibitive. MPF (instead of WLR and WCO) would appear to be cost effective in already unbundled exchanges following relatively modest increases in the charges for WLR and WCO. For example, based on current prices and a two-year customer lifetime it would be cost effective to switch to MPF following a 5% increase in the price of WLR and WCO. Based on a three-year customer lifetime, switching to MPF would be cost effective without any increase in the price of WLR and WCO from current prices.[323] However, merchant sales would incur additional costs including management, contracting and legal costs for the wholesaler and purchaser.

Retail switching to mobile, broadband access or other constraints outside the market

6.16 Despite declining fixed voice usage, mobile and broadband access are likely to offer a limited constraint on FAELs for the period of this review, for the reasons set out in Section 4. The reasons include[324]:

- The degree of constraint will depend on the willingness of customers to abandon their FAEL and at present this will typically require them to give up their fixed broadband if they want to avoid a price increase for a FAEL. Survey data indicates SMEs and residential customers have a low willingness to give up their FAEL because they want to keep their fixed broadband, they value the reliability of a FAEL connection and prefer making certain calls from FAELs.
- Volumes have remained stable despite increasing retail line rental prices.
- VoIP usage remains relatively low amongst the mass-market of residential FAEL customers.
- SOGEA, which may enable providers to offer retail broadband-only, is not yet available and pricing has not been finalised. Therefore, retail services based on SOGEA are unlikely to impose a significant constraint during much of this review period.

Pricing

6.17 As set out in the 2016 NMR Consultation[325], we consider evidence of BT's pricing behaviour in the presence of regulation is relevant and supports our conclusion that BT has SMP in the supply of WFAEL. In this context, we note:

- BT's WLR charges have generally been at the maximum allowed by the regulated cap over the most recent charge control period and returns have been above the cost of

[323] See Annex 3 for further detail, including the assumptions underlying this calculation.
[324] See the discussion of indirect constraints in Section 4 for further detail.
[325] 2016 NMR Consultation, paragraphs 6.20 to 6.22.

capital in WFAEL in recent years (implying that the cap has not constrained pricing to below a proxy for the competitive level).[326]

- BT's retail residential line rental prices have been increasing in real terms by an average of about 4% annually over the last 5 years.[327] As this price is unconstrained by regulation, it could provide an indication of BT's potential pricing power in WFAEL, although we recognise that retail customers may be less responsive to line rental changes than telecoms providers would be at the wholesale level.

Barriers to entry and expansion

6.18 Vodafone said that investment in new MPF infrastructure has become less attractive and so barriers have increased since the last review.[328]

6.19 There has been large scale entry into the WFAEL market by Sky and TalkTalk, whose MPF networks extend to over 95% of exchanges, as well as Virgin Media whose network now covers half of premises at present and which plans to increase its network coverage to 60% of premises.[329] However, despite that, BT retains a high market share which is indicative of SMP.

6.20 We consider that a significant reduction in the areas where only BT has WFAEL connections is unlikely.[330] However, as discussed above, expansion by rivals within the existing on-net footprint could be possible in response to price rises by BT, which would further erode BT's market share.

6.21 We said above that for some retail segments MPF and cable have not played a material role in providing a competitive alternative to BT in WFAEL to date, which suggests the incentive to use MPF or entry by cable-based providers to supply these segments has not been sufficiently strong, or that other retail-level barriers have militated against retail-level expansion or entry in these segments. While there may be scope for rivals to expand their share of supply within their network coverage footprints, particularly for residential customers taking broadband, we do not think that entry by alternative providers at the wholesale level is of sufficient likelihood and scale to affect our finding that BT has SMP in this review period.

[326] For example, WLR transfer charges increased to the cap in each year. WLR rentals and conversion charges were priced to the cap in 2015/16 and 2016/17, although BT reduced prices by more than required in 2014/15. Return on Capital Employed was 9.9% in 2014 (as reported in the 2014/15 Regulatory Financial Statements (RFS)), 11.5% in 2015 (as reported in the 2015/16 RFS), 12.7% in 2016 and 13.6% in 2017 (2016 and 2017 as reported in the 2016/17 RFS). Source: BT Regulatory Financial Statements. The relevant cost of capital for comparison (Openreach copper access) was less than 9% pre-tax nominal in each of these years.

[327] See Figure 3.16.

[328] Vodafone response to 2016 NMR Consultation, part 2, page 43.

[329] See discussion of alternative forms of fixed telecoms network infrastructure in Section 4.

[330] That is, we do not expect much MPF roll-out beyond the existing areas covered and we expect Virgin Media's expansion will be largely limed to areas already served by MPF.

Countervailing buyer power

6.22 There are limited alternatives to BT's WLR service for telecoms providers in some retail segments, which reduces the outside options for retailers when negotiating wholesale access with BT. The alternatives require significant network investment by telecoms providers (either using MPF or an alternative access network) or other barriers which limit the effectiveness of entry using MPF or alternative networks. We also note that merchant sales of WFAEL (by established MPF or cable-based providers) have to date been low. That said, providers with existing MPF infrastructure may be able to exert some degree of countervailing buyer power in relation to their own use of WLR.

Conclusion

6.23 As noted above BT retains a market share of 54% in WFAEL which is above the level that establishes a presumption of SMP. In addition, for some groups of customers, supply using MPF or cable is less common and existing suppliers are more reliant on WLR from BT. The strength of out-of-market constraints on BT from mobile and VoIP may have grown since the last review, but remain more limited in relation to access than in relation to usage (i.e. calls). BT's pricing behaviour is also consistent with it holding SMP; WLR has been largely priced at the maximum level allowed by the cap, and BT has made returns in excess of its cost of capital since 2014. Entry, expansion or countervailing buyer power are unlikely to prevent BT from exercising market power over this review period.

6.24 We recognise that the competitive constraints faced by BT in the WFAEL market have grown since our last review and we expect these constraints to continue to grow over the review period. BT's market share has fallen from 68% to 54%, between Q1 2012/13 and Q4 2016/17, as Sky and TalkTalk have increased their sales using their MPF networks. Although, we do not expect the geographic footprint of current MPF networks to increase significantly over the review period; there remains scope for the share of WFAEL lines supplied over these networks to grow within that footprint. This could be through greater self-supply by Sky and TalkTalk, or through growth in the use of MPF in a 'merchant' market to supply retailers. While merchant sales remain very small indeed, the incentive to expand such sales would be increased if BT were to significantly increase the price of WLR. Virgin Media's cable network also now covers 50% of households and it expects to reach 60% which might lead to further erosion of BT's share of the WFAEL market.[331]

6.25 Out-of-market constraints from mobile access and VoIP (potentially over broadband only lines) also have the potential to grow further. However, we expect the development of these constraints on BT's provision of access lines to remain muted so long as customers maintain a strong attachment to their landline. Therefore, we do not expect such out of market constraints to provide a significant constraint on the provision and pricing of WFAEL by BT for much of this review period.

[331] See Section 4.

6.26 We therefore conclude that BT has SMP in the WFAEL market in the UK excluding the Hull Area and we expect that SMP to persist over the time period covered by this review.

WFAEL – the Hull Area

2016 NMR Consultation proposals

6.27 Based on our assessment of market shares, constraints from competing services at the retail and wholesale levels, pricing, barriers to entry and expansion and countervailing buyer power we proposed that KCOM held SMP in WFAEL in the Hull Area.

Stakeholder responses

6.28 As set out below, KCOM disagreed with some elements of our assessment of constraints in the Hull Area.[332]

Market Shares

6.29 KCOM currently holds nearly a 100% share of the market for WFAEL in the Hull Area. The volume of WFAEL lines supplied by KCOM was stable at about 153,000 between 2014/15 and 2016/17.[333]

6.30 To date, we are not aware of any request to KCOM by telecoms providers interested in deploying MPF in the Hull Area.[334] There also has been no cable-based entry in the Hull Area.

Constraints from competing services at the retail and wholesale levels

6.31 In its 2016 NMR Consultation response, KCOM said there is evidence of market entry based on competing end-to-end deployments via fixed-wireless and FTTP and that infrastructure provision could change over the review period.[335]

6.32 Specifically, we are aware that KCOM is rolling out a fibre network and has now rolled this out to 137,000 homes and business premises in the Hull Area. This is expected to reach 150,000 premises by December 2017.[336]

---

[332] KCOM response to 2016 NMR Consultation, page 4.

[333] In the 2016 Consultation, paragraph 6.34, we said the overall number of FAELs supplied had fallen by 18% from 2014-15 to 2015-16. However, further information from KCOM indicated this apparent difference arose due to a now resolved inconsistency in the underlying data.

[334] Note, in the 2017 WLA & WBA Hull Consultation (paragraph 2.24) we do not propose requiring KCOM to offer a specific access product (such as LLU or Virtual Unbundled Local Access (VULA)). Source: Ofcom, 2017. *Wholesale Local Access and Wholesale Broadband Access Market Reviews Review of Competition in the Hull Area.* https://www.ofcom.org.uk/__data/assets/pdf_file/0009/103203/wla-wba-hull-consultation.pdf

[335] KCOM response to 2016 NMR Consultation, pages 2-4.

[336] KCOM, *2017. Unaudited preliminary results for year ended 31 March 2017,* http://www.kcomplc.com/media/1622/kcom-preliminary-results-rns-fy17-final.pdf.

6.33 The 2017 WLA & WBA Hull Consultation sets out details of FTTP and fixed-wireless networks and providers in the Hull Area.[337] Voice services could be provided over these networks via broadband access or FTTP using an ATA, although only the latter would be included in the relevant market.[338] In the 2017 WLA & WBA Hull Consultation we explained that "despite the deployment of rival infrastructure in the Hull Area, KCOM currently holds a near 100% share of the WLA market" and "… its market share is likely to remain at a sufficiently high level to be indicative of KCOM holding SMP for the duration of the period covered by this market review".[339] This strong upstream position in WLA combined with the absence of MPF or cable deployment means KCOM is unlikely to be constrained by competition from entrants in the WFAEL market over the review period, although we note the higher penetration of fixed wireless access in the Hull Area (with 80% coverage, although take-up remains modest at around [✂]%).[340]

6.34 As in the rest of the UK, despite the growing using of mobile and VoIP calls, we consider that switching to mobile or broadband access is likely to impose a limited constraint on WFAEL in the Hull Area during the review period of this review.

Barriers to entry and expansion

6.35 To enter the market in the Hull Area in any significant way, a telecoms provider would need either to build its own access network or provide voice services over a wholesale fibre product supplied by KCOM. These solutions would either require a telecoms provider to make a significant investment, or in the case of voice over broadband, offer a less managed voice solution to the end user.

6.36 In this respect, we note that the Hull Area has a relatively small population from which an infrastructure provider can recover systems integration costs and the large outlay in infrastructure that would be required to enter the market. Additionally, in competition with an established incumbent, another telecoms provider is likely to find it challenging to gain market share rapidly – at least within the period of a single market review. The absence of cable or LLU-based entry in the Hull Area, in contrast to the rest of the UK, would be consistent with such barriers to entry.

Countervailing buyer power

6.37 There is no established alternative to WLR provided by KCOM in the Hull area (for example, MPF). We also do not consider that a telecoms provider is likely to be able to leverage the threat of alternative supply when negotiating with KCOM, given the currently limited extent of competing infrastructure providers and the barriers to establishing self-supply (at scale) of WFAEL in the Hull Area.

---

[337] 2017 WLA & WBA Hull Consultation, paragraphs 2.18-2.22, 3.13-3.19 and 3.29-3.35.
[338] For further discussion of FTTP using an ATA in the context of the WFAEL market, see Section 2 and 4.
[339] 2017 WLA & WBA Hull Consultation, paragraph 3.35.
[340] 2017 WLA & WBA Hull Consultation, paragraphs 2.21 and 3.18.

Conclusion

6.38 Based on the above, we consider that:

- KCOM's market share (nearly a 100% share) leads to a presumption of SMP;
- constraints from outside the market including mobile and broadband access (via FTTP or fixed-wireless networks) will not be strong enough to constrain KCOM's market power in WFAEL during the period of this review;
- entry, expansion or countervailing buyer power are unlikely to prevent the exercise of market power by KCOM; and
- we do not envisage material changes in the WFAEL market that would undermine KCOM's SMP during the period of this review.

6.39 For these reasons, we conclude that KCOM has SMP in the Hull Area in the WFAEL market.

WCO – UK excluding the Hull Area

2016 NMR Consultation proposals

6.40 In the 2016 NMR Consultation, we proposed that BT has SMP in WCO in the UK excluding the Hull Area.

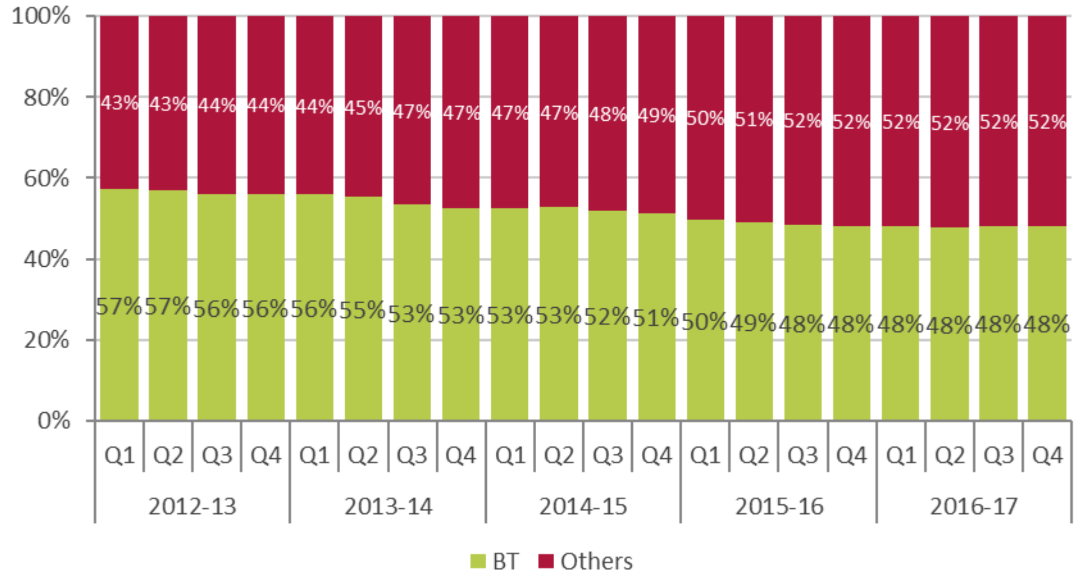
Stakeholder responses[341]

6.41 BT disagreed with our view that it holds SMP in the WCO market. As with WFAEL, certain stakeholders (e.g. Vodafone[342], Verizon[343], UKCTA[344]) agreed with our proposal that BT has SMP but did not consider that its market power was declining.

[341] Note that some stakeholders' comments relating to the constraints on WCO are set out and discussed in the Section 4.
[342] Vodafone response to 2016 NMR Consultation, part 2, page 23.
[343] Verizon response to 2016 NMR Consultation, page 10.
[344] UKCTA response to 2016 NMR Consultation, page 4.

Market shares

Figure 6.2: Share of WCO



Source: Ofcom analysis of s.135 data.

6.42 Figure 6.2 shows market shares from 2012/13 to 2016/17.[345] BT's market share declined from 57% to 48% between Q1 2012/13 and Q4 2016/17, just below the level which creates a presumption of SMP.[346] As with WFAEL, BT retains a stronger position among certain customer groups that are more reliant on WCO (and a weaker position among other groups). We also consider BT's wholesale share of WCO minutes over ISDN is likely to be high (i.e. similar to BT's wholesale share of channels in the ISDN30 and ISDN2 markets, discussed in Section 5 and below).

Constraints from competing services at the retail and wholesale levels

6.43 BT said that mobile and increasing use of other means of direct communication will provide increasingly strong constraints on it and wholesale customers can move to alternative offerings such as MPF.[347] In particular, it emphasised the opposing trends in mobile and fixed call volumes.

6.44 Sky said constraints from infrastructure-based competition and indirect constraints from mobile/IP are insufficient to curtail BT's incentives and scope to distort competition.[348]

---

[345] The market shares include a restatement of volumes from some respondents to our s.135 notices. The estimated shares for BT are about 1% lower than reported in the Consultation as a result.

[346] Our product market includes WCO provided over all types of analogue and digital (ISDN) exchange lines including self-supply. Volumes accounted for by BT's CPS and Wholesale Calls are included within their market share.

[347] BT response to 2016 NMR Consultation, page 24.

[348] Sky response to 2016 NMR Consultation, pages 7-8.

Switching to MPF or Cable-based services

6.45 Each access line provider is the only provider of WCO on its lines, and so both lines and calls must be bought together at a wholesale level. A decision to switch to MPF or cable would therefore be calculated based on the total cost of WCO and WLR (or ISDN), as the customer would need to switch from both in order to avoid a price increase in WCO (noting that in most cases, WCO will account for only a small portion of the overall cost of the bundle[349]). Therefore, the discussion of the constraint from switching to MPF or cable-based services in the WFAEL and ISDN SMP assessments are relevant here.

6.46 Most retail customers could now switch to a telecoms provider that uses alternatives to BT's WLR (and WCO) to provide retail voice services. However, there remain groups of customers, which collectively account for a significant proportion of fixed line connections, for which some telecoms providers may rely on WCO.[350]

6.47 WCO over MPF and Virgin Media's networks are potential alternatives to BT's WCO and WFAEL at the wholesale level. However, of those with MPF or cable networks, TalkTalk is the only telecoms provider which uses its own access connections to offer WCO to third parties, and it has a small share of overall WCO volumes.[351] We also note that Sky, TalkTalk and, to a very limited extent, Virgin Media still use WCO supplied by BT for a proportion of their retail call services, which suggests that no telecoms provider is fully independent of BT at the wholesale level.[352]

6.48 However, as set out in the WFAEL SMP assessment, using MPF instead of WLR and WCO for self-supply would appear to be viable following a relatively modest increase in the charges for WLR and WCO. The increase would need to be larger to induce more merchant sales of MPF as management, contracting, legal costs and a wholesale margin would need to be accounted for. While MPF is not commonly used to supply some segments at present there may be scope for more switching to MPF, and further erosion of BT's market share, if the charges for WLR and WCO were to rise substantially above current levels.

Retail switching to mobile or VoIP

6.49 We assessed the competitive constraint from mobile in Section 4. The same factors set out there are relevant for the SMP assessment. These include[353]:

---

[349] BT reported external WCO revenues of £44.6m compared to external WLR revenue of £357.5m for the year ending 31 March 2017. Source: 2017 BT Regulatory Financial Statements.

[350] These include off-net customers, but also a significant proportion of on-net customers including residential fixed voice-only, split purchasers, businesses, and ISDN customers.

[351] Retail sales account for [✂]% of TalkTalk's WCO volumes over their own access connections. Of the remaining [✂]%, [✂] and [✂] account for [✂]% and [✂]% respectively of TalkTalk's wholesale volumes over their own access connections, with the remaining [✂]% being accounted for by over 250 telecoms providers. This accounts for about 2% of the total WCO volumes in the market. As set out below in our assessment of ISDN30, a number of providers have their own ISDN30 access networks, but BT is the only provider that supplies a material amount of wholesale ISDN30 services (and thus WCO over ISDN30) to providers other than its own downstream arm. Similarly, BT is the only telecoms provider that supplies wholesale ISDN2 services to telecoms providers other than its own retail business.

[352] This amounts to [✂]% of Sky's retail calls, [✂]% of Talk Talk's retail calls and [✂]% of Virgin Media's calls. Source: Data provided in response to NMR s.135 notices.

[353] See our discussion of the indirect constraint from mobile on WCO in Section 4.

- fixed call volumes are in decline while mobile call volumes are rising;
- call volume and survey data suggests that mobile and fixed telephones are used to make different types of calls;
- the relative price of fixed and mobile calls is situation dependent (e.g. time of day, whether bundled call minutes remain on mobile, out of bundle call charges, etc.), and thus call-by-call substitution will not always be straightforward;
- survey data indicates that some customers continue to view mobile calls as inferior in quality or less reliable and have a limited willingness to abandon their landline (i.e. access and calls); and
- mobile may not be well suited to certain functions more heavily used by businesses and may not be able to accommodate certain legacy services which require call origination over a FAEL.

6.50 We also assessed the constraint from VoIP in Section 4, and again the same factors set out there are relevant for the SMP assessment. These include[354]:

- increasing VoIP usage rates among residential customers;
- residential VoIP usage continues to be via unmanaged OTT services rather than managed VoIP;
- VoIP lags mobile (and SMS/Instant Messaging and email) as a favoured alternative to fixed calls, suggesting it may not be a strong constraint; and
- survey evidence suggests the degree of substitution from fixed calls to VoIP will be restrained by quality or other differences, which may depend on the type and context of the call being made.

6.51 Mobile alternatives have a stronger constraint on WCO than WFAEL because of the prospect of call by call substitution. However, despite falling volumes the constraint is more limited for certain types of customers and calls. The constraint from mobile is not yet sufficient to prevent BT from having SMP considering other evidence about competitive conditions during the review period. Similarly, VoIP is a stronger constraint on WCO than broadband-based access is on WFAEL. However, it is not perceived to be as good a substitute as mobile and usage remains modest across customers as a whole, and so the constraint from VoIP is too weak to prevent BT from having SMP.[355]

Pricing

6.52 As with WFAEL, BT's WCO charges have been at the maximum allowed by the regulated cap over the most recent review period, implying that BT's pricing appears to have been constrained by regulation rather than competition to date.

[354] See our discussion of the indirect constraint from VoIP on WCO in Section 4.
[355] We also do not consider the combined constraints from mobile and VoIP is strong enough to prevent BT from having SMP.

Barriers to entry and expansion

6.53 The supply of WCO requires an access line (or a telecoms provider willing to offer indirect access) and the same factors as considered under our analysis of WFAEL above are relevant for our assessment of barriers to entry and expansion for WCO. In addition, WCO is a smaller item of wholesale expenditure than WLR, meaning larger price rises would be required to encourage entry.[356] Together, these considerations suggest that:

- the decision to unbundle additional exchanges is unlikely to be much affected by an increase in the price of WCO alone;
- although we recognise there may be greater scope for use of MPF to supply customers which historically relied on WLR and WCO, this is unlikely be to sufficient to prevent BT from exercising market power; and
- in the longer term, there may be further entry at the downstream level through managed VoIP provided directly to customers. However, this has yet to become a significant offering for residential customers and many SMEs.

Countervailing buyer power

6.54 At present, there are limited alternatives to BT's WCO (and WFAEL) used in supplying a number of retail customer segments with voice calls. Collectively these groups account for a significant share of all customers and WCO volumes.[357] Telecoms providers with their own MPF networks may be able to exercise buyer power, but even they will rely on WLR and WCO to supply off-net areas. However, off-net areas have diminished in scale since the last review, and for many retail segments it will be more difficult for BT to discriminate on the basis of the retail customer being served.

6.55 Therefore, while we consider that countervailing buyer power may be greater than at the time of the last review, the over-arching considerations in the negotiation of WFAEL (and ISDN) access are likely to be relevant in the context of negotiating WCO. Consequently, we do not believe that telecoms providers are likely to hold sufficient countervailing buyer power during the review period to prevent BT from exercising SMP.

BT Wholesale Calls

6.56 Vodafone said "no account has been taken of the existence of BT's Wholesale end to end calls product which has a significant share of the wholesale market" and the "consultation fails to take account of the scale or importance of BT's Wholesale Calls product in the market".[358] Vodafone also noted our previous Competition Act investigations related to BT Wholesale Calls and illustrated some of the differences between BT Wholesale Calls and

[356] BT 2017 Regulatory Financial Statements list external WCO revenue in 2016-17 as £44.6m (Section 8) compared to £357m for WFAEL (Section 3).
[357] See Sections 3 and 4.
[358] BT response to 2016 NMR Consultation, page 2 and paragraph 2.24.

BT's Carrier Pre-Select, with the latter essentially being a standalone WCO product.[359] Other stakeholders have also raised concerns regarding our treatment of BT Wholesale Calls.[360]

6.57 In Section 4, we set out why we have not defined a separate market for Wholesale Calls. In our SMP assessment, we assess BT's market power absent regulation of WCO. As both CPS and BT Wholesale Calls would be unregulated in this setting, it is not clear to us why there would be significant differences between the competitive conditions underlying the services. We have included volumes from both CPS and BT Wholesale Calls in our market share calculations and these volumes therefore form part of our SMP assessment for the WCO market. As Vodafone notes, we have conducted two Competition Act investigations in the past in relation to these products, and can investigate again if it is warranted.

Conclusion

6.58 Based on the above, we observe that:

- BT's market share has been falling, and is now just below 50%. While this would not lead to a presumption of SMP per se, it is consistent with a finding of SMP, particularly when it is recognised that WCO represents demand for a service that cannot be avoided when a customer purchases WLR or ISDN (where BT's share is well over 50%).
- There is evidence of increasing substitution to mobile and VoIP, but also evidence that there are situations when fixed calls will be preferred for price, quality or other reasons. This, coupled with the extent to which WCO usage is tied to the line on which it is used (WFAEL or ISDN2 or ISDN30), and the reluctance of customers to give up their fixed line, means we do not consider that mobile and VoIP calls are sufficiently strong constraints in this review period.
- We recognise there is scope for more use of MPF or cable to supply customers that currently use WLR and WCO, but at present such use is mainly confined to self-supply by providers who, themselves, have a much smaller retail presence compared to BT in the groups of interest.
- BT's pricing is consistent with it having market power in the WCO market.

6.59 For these reasons, we find that BT has SMP in the market for WCO on a fixed narrowband network in the UK excluding the Hull Area.

WCO – the Hull Area

2016 NMR Consultation proposal

6.60 Based on our assessment of market shares, constraints from competing services at the retail and wholesale levels, pricing, barriers to entry and expansion and countervailing buyer power we proposed that KCOM has SMP in WCO in the Hull Area.

[359] Vodafone response to 2016 NMR Consultation, part 2, pages 2 and 14-15.
[360] See Section 4.

Stakeholder responses

6.61 KCOM said the points they raised regarding alternative infrastructure for WFAEL are also relevant for WCO.[361]

Market shares

6.62 We are not aware of any alternative network across which WCO could be provided in the Hull area. KCOM has nearly a 100% share of access connections in the Hull Area and so has a similar share of WCO.

6.63 We consider that KCOM's market share is likely to remain very high during the period covered by this market review, which creates a clear presumption of SMP.

Other considerations

6.64 As in the rest of the UK, we consider switching to mobile and VoIP is likely to impose an increasing constraint during the review period, but at present is unlikely to be sufficient to undermine SMP for the reasons set out in Section 4.

6.65 For the same reasons set out in the analysis of SMP for WFAEL in the Hull Area, we expect that:

- The constraint from alternative FTTP and fixed wireless networks is likely to be limited over the review period and to substitute for WCO would require widespread take-up of VoIP or sole reliance on mobiles for making and receiving calls (which we have not seen to any significant extent to date).
- Barriers to entry and expansion remain significant and telecoms providers will not have countervailing buyer power in negotiating access to WCO from KCOM over the review period.

Conclusion

6.66 Overall, we consider that KCOM's market share is strongly suggestive of SMP and that there are no features of the market that would negate that presumption of SMP. We do not consider entry, expansion or countervailing buyer power are likely to undermine KCOM's SMP. For these reasons, we conclude that KCOM has SMP in the market for WCO on a fixed narrowband network in the Hull Area.

[361] KCOM response to 2016 NMR Consultation, page 4.

ISDN30 – UK excluding the Hull Area

2016 NMR Consultation proposal

6.67 Based on our assessment of market shares, constraints from competing services at the retail and wholesale levels, pricing, barriers to entry and expansion and countervailing buyer power, we proposed that BT has SMP in ISDN30 in the UK excluding the Hull Area.

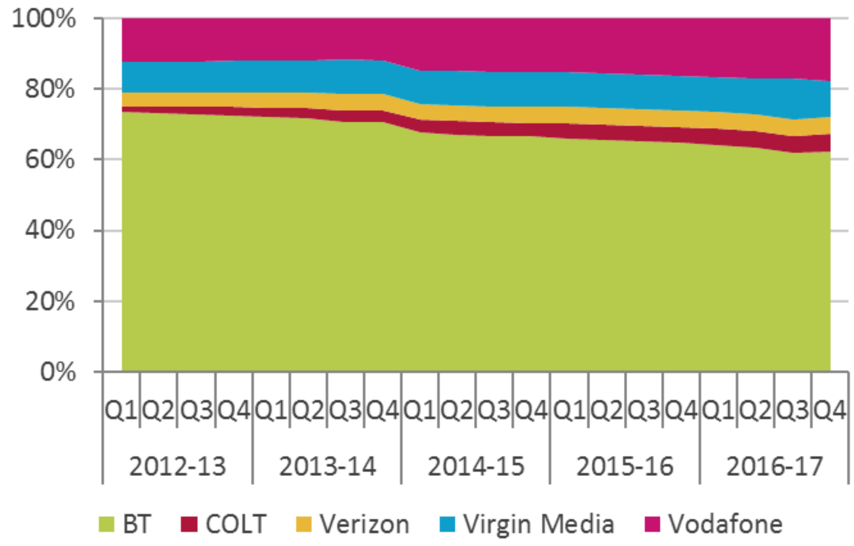
Stakeholder responses

6.68 [✂][362], BT[363], UKCTA[364], Verizon[365] and Vodafone[366] all broadly agreed with our provisional conclusion that BT has SMP in ISDN30.

Market Shares

6.69 As discussed in Section 5, the total volume of ISDN30 channels has been falling gradually. Figure 6.3 below shows the wholesale market shares of various telecoms providers. BT's market share of ISDN30 channels has been decreasing, albeit slowly: it has fallen from 73% to 62% over the past four financial years.

Figure 6.3: ISDN30 wholesale market shares (by channel)



Source: Data from BT, Colt, Verizon, Virgin Media and Vodafone in responses to NMR s.135 notices of August 2015, July 2016 and May/June 2017.

6.70 As discussed in Section 5, we accept that there is an increasing degree of substitutability with IP-based services but do not consider that it is sufficiently strong to widen the

---

[362] [✂]
[363] Openreach response to 2016 NMR Consultation, paragraph 37.
[364] UKCTA response to 2016 NMR Consultation, paragraph 21.
[365] Verizon response to 2016 NMR Consultation, page 14.
[366] Vodafone response to 2016 NMR Consultation, page 44.

relevant product market for the period covered by this review. Nonetheless, for the purpose of assessing an upper bound for the extent of the constraint that IP-based services may exert, estimated the impact on market shares if we were to include SIP trunking and hosted VoIP (the likely closest substitutes for ISDN30) in the relevant market.

6.71 Based on information gathered under our formal powers, if we include SIP trunking and hosted VoIP in addition to ISDN30, we estimate that BT had a high share of supply of 59%.[367] However, we note that reports by the Cavell Group suggest our analysis may underestimate SIP trunking and hosted VoIP volumes, such that BT's notional share may be lower.

6.72 For the period covered by this review, we consider that SIP trunking and hosted VoIP lie outside the relevant market, so we would expect the constraint from these alternative access technologies to be lower than from ISDN30 networks operated by rival telecoms providers.

6.73 BT's share of the supply of ISDN30, SIP trunking and hosted VoIP may decline as the number of ISDN30 connections continues to fall and use of IP-based services continues to grow (as discussed in Section 3), as we estimate BT's share of supply in SIP trunking and hosted VoIP is smaller than its ISDN30 market share. Nonetheless, BT appears well placed to convert its current ISDN30 customers to SIP trunking or hosted VoIP as it currently has a large wholesale and retail ISDN30 customer base at which it can directly target marketing of IP-based services.

Constraints from competing services at the retail and wholesale levels

Retail switching

6.74 As discussed in Section 5, we consider that IP-based services will provide an increasing constraint on ISDN30. However, it appears that BT also may have a strong position in IP-based alternatives. This may act to limit the constraint exerted by IP-based alternatives on BT's ISDN30 pricing to some degree, as BT would expect to retain many users who switch from ISDN30 to IP-based alternatives.

6.75 In addition, we consider that retail customers without an existing ISDN30 service are more likely to find IP-based services an attractive option than established ISDN30 users. While customers with an existing ISDN30 service may face financial and non-financial barriers to switching to IP-based services, customers looking for a new voice and/or data solution would not face migration costs in taking an IP-based service.

6.76 The fact that customers without existing ISDN30 services, or (to a lesser extent) those with existing ISDN30 services looking to connect new sites, can more easily switch to IP-based services should provide a greater constraint on wholesale ISDN30 prices for new connections.

[367] Based on data received from BT, Colt, EE, TalkTalk, Verizon, Virgin Media and Vodafone in response to the s.135 notices of May/June 2017. This market share is calculated using channel volumes for ISDN30, hosted VoIP and SIP trunking.

Suppliers of substitute wholesale services

6.77 Providers who have their own ISDN30 network may either self-supply, or provide wholesale services to other providers. These providers may also purchase wholesale ISDN30 services from other providers to supply their own retail customers or for resale to another telecoms provider.

6.78 As discussed in above, BT is the only provider that supplies a material amount of wholesale ISDN30 services to providers other than its own downstream arm. While Verizon, Colt, Virgin Media and Vodafone also have their own wholesale ISDN30 networks, of these, only Colt[368] appears to use its own network to provide wholesale services to other retail providers. Verizon, Virgin Media and Vodafone's wholesale volumes appear to be used for self-supply.[369]

6.79 Nearly all wholesale providers who self-supply continue to purchase additional wholesale ISDN30 services from other providers. Virgin Media, Verizon and Vodafone all purchase wholesale ISDN30 services from BT to supplement their own wholesale ISDN30 services provided over their own networks. This only constitutes a small proportion of Virgin Media and Verizon's retail ISDN30 channels (5% and 11% respectively) and 14% of Vodafone's combined retail and wholesale ISDN30 channels.[370] Colt appears to be the only provider which provides all its retail ISDN30 services over its own network.[371]

Pricing and profitability

6.80 Since we imposed a charge control on wholesale ISDN30 prices for the first time in the 2012 ISDN30 Charge Control Statement, BT has set its ISDN30 prices at or close to the maximum level permitted under the charge control. BT's pricing of these services appears to be determined significantly by the regulatory controls imposed on it, rather than competition. We expect this to continue to be the case over the period covered by this market review.

6.81 BT's returns on wholesale ISDN30 are also indicative of SMP. As shown in Table 6.1 below while ISDN30 returns have fallen since we introduced the charge controls in 2012 (when ROCE was around 78%)[372], BT's ROCE in 2016/17 was 51%, which compares to a cost of capital of less than 10% for this line of business in that year.[373]

---

368 Colt response dated 06 July 2017 to the 7th NMR s.135 notice.

369 Verizon response dated 18 July 2017 to the 7th NMR s.135 notice; Virgin Media response dated 14 June 2017 to the 7th NMR s.135 notice; Vodafone response dated 26 June 2017 to the 7th NMR s.135 notice.

370 Verizon response dated 18 July 2017 to the 7th NMR s.135 notice; Virgin Media response dated 14 June 2017 to the 7th NMR s.135 notice; Vodafone response dated 26 June 2017 to the 7th NMR s.135 notice.

371 Colt response dated 06 July 2017 to the 7th NMR s.135 notice.

372 Based on BT. *Current Cost Financial Statements 2013 including Openreach Undertakings*. http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2013/CurrentCostFinancialStatements2013.pdf.

373 The benchmark cost of capital would be that for "other UK Telecoms" in the 2016 BCMR Statement, Annex 30, at 9.8% pre-tax nominal.

6.82 A large factor in BT's high returns for ISDN30 is that its asset base is heavily depreciated. In our 2012 ISDN30 Charge Control Statement, we considered that an appropriate way of setting the ISDN30 charge control was to uplift the heavily depreciated ISDN30 assets (i.e. to base the controls on a hypothetical ongoing network (HON) in a steady state). This was designed to protect customers from excessive prices on legacy services, while not distorting investment, innovation and take-up of IP-based services.

6.83 However, even after uplifting the ISDN30 asset values, BT's ROCE would be in excess of its cost of capital. As shown in section 9 (Figure 9.1) We estimate that BT's ROCE for 2016/17 would fall to around 30% on a HON basis, although we would expect this to decline further if volumes continue to fall over the review period as we anticipate.

Table 6.1: BT's income from ISDN30

	2012	2013	2014	2015	2016	2017
Sales (£m) (internal and external)	305	277	230	213	196	176
Operating costs (£m)	123	93	75	85	77	71
Operating profit (£m)	182	184	155	128	119	105
Capital employed (£m)	235	221	223	215	219	209
Return on capital employed	77%	83%	70%	60%	55%	51%

Source: BT Current Cost Financial Statements:
http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm.

Barriers to entry and expansion

6.84 Barriers to entry and expansion in ISDN30 are high due to the large sunk costs that would need to be incurred to establish the infrastructure required to provide an ISDN30 exchange line and because customers are expected to migrate away from ISDN30 in the coming years. We expect that volumes will continue to decline, reducing the time and customer volumes over which these sunk costs could be recovered. This has the effect of increasing barriers to entry and expansion for ISDN30. Nevertheless, we note the growing take-up of IP-based alternatives, where barriers to entry may be lower (and particularly so into the future as alternative providers increase their use of alternative wholesale infrastructure).

Countervailing buyer power

6.85 We do not consider that conditions for buyers in the wholesale ISDN30 market have changed materially since the 2014 FAMR Statement, and therefore retailers continue to have a limited choice of wholesaler. Virgin Media does not appear to sell access to other retail telecoms providers and, while Verizon and Vodafone indicate that they do sell wholesale access to other telecoms providers, we understand these volumes are provided over a third party's access connections, i.e. not over their own networks.[374] While providers with their own infrastructure may have better options to use wholesale access other than BTs, and thus stronger leverage in negotiations, the reach of their networks is far less than BT's, meaning that BT is still likely to be in a stronger negotiating position (as evidenced by its significant wholesale market share). As a result, we conclude that retailers will have insufficient countervailing buyer power over this review period, although if IP-based services grow at the rate expected, their negotiating position would be expected to strengthen through time, especially for new connections.

Conclusion

6.86 We conclude that:

- BT accounts for a high, but gradually declining share of wholesale ISDN30 channels;
- it appears that it is the charge control rather than competition that drives the pricing of ISDN30 and BT makes returns well in excess of the cost of capital in ISDN30 (meaning the control is unlikely to have been set below the competitive level);
- for customers who do not already have ISDN30 services, we consider that the availability of IP-based alternatives is likely to limit the extent of BT's market power in ISDN30. While taking these indirect constraints into account may mean that BT's market power diminishes over time, we anticipate that BT is likely to continue to enjoy a strong market position for the period of this review; and
- there remain barriers to entry, insufficient countervailing buyer power and the potential for BT to charge high prices to its customers absent regulation.

6.87 Our conclusion is therefore that BT has SMP in the supply of wholesale ISDN30 exchange lines in the UK excluding the Hull Area.

ISDN30 – the Hull Area

2016 NMR Consultation proposal

6.88 We proposed that KCOM has SMP in ISDN30 in the Hull Area.

Stakeholder responses

6.89 KCOM agreed with our provisional competition assessment for ISDN30.[375] No other respondents commented on our assessment of SMP in the Hull Area.

Conclusion

6.90 KCOM has a market share of nearly 100% for wholesale ISDN30 lines in the Hull Area. In the 2016 NMR Consultation, we noted that MS3 was active in the Hull area, but did not

[374] Verizon response dated 18 July 2017 to the 7th NMR s.135 notice. Virgin Media response dated 14 June 2017 to the 7th NMR s.135 notice. Vodafone response dated 26 June 2017 to the 7th NMR s.135 notice.

[375] KCOM response to 2016 NMR Consultation, page 5.

offer a wholesale ISDN30 product. We therefore consider that KCOM will continue to have a very strong market position in the Hull Area.

6.91 Barriers to entry in this market are elevated by the fact that ISDN30 in the Hull Area is a very small market. Any new entrant wishing to enter would need to invest considerably in rival infrastructure to KCOM, and given the small geographic area and declining ISDN30 volumes, would likely have a limited customer base and limited time period over which to recover these costs. As with the rest of the UK, IP-based alternatives are likely to provide a competitive alternative in the longer term, particularly for new customers or new connections, but this is unlikely to undermine KCOM's significant market power in this review period.

6.92 Countervailing buyer power is unlikely given KCOM is the only wholesale supplier of ISDN30 in the Hull Area. Our conclusion is therefore that KCOM has SMP in the wholesale supply of ISDN30 exchange line services in the Hull Area.

ISDN2 – UK excluding the Hull Area

Consultation proposal

6.93 Based on our assessment of market shares, constraints from competing services at the retail and wholesale levels, pricing, barriers to entry and expansion and countervailing buyer power we proposed that BT has SMP in ISDN2 in the UK excluding the Hull Area.

Stakeholder responses

6.94 [✂][376], BT[377], UKCTA[378], Verizon[379] and Vodafone[380] all agreed with our provisional conclusion that BT has SMP in ISDN2.

Market shares

6.95 As of May 2017, BT had a market share of nearly 100% for wholesale ISDN2 exchange lines. From this, we would normally presume that such a firm held a position of SMP.

Constraints from competing services at the retail and wholesale levels

Retail switching

6.96 As discussed in Section 5, we consider that IP-based services will provide an increasing constraint on ISDN2, albeit a constraint that is not sufficiently strong to widen the product market definition for this review period.

---

376 [✂]
377 Openreach response to 2016 NMR Consultation, page 14.
378 UKCTA response to 2016 NMR Consultation, page 5.
379 Verizon response to 2016 NMR Consultation, page 14.
380 Vodafone response to 2016 NMR Consultation, page 45.

6.97 New customers without ISDN2 services are more likely to find IP-based services an attractive option, whereas customers with existing ISDN2 services can face barriers to switching to IP-based services.

6.98 The fact that customers without existing ISDN2 services or (to a lesser extent) those with existing ISDN2 services looking to connect new sites, can more easily switch to IP-based services, should provide a greater constraint on wholesale ISDN2 prices for new connections.

Suppliers of substitute wholesale services

6.99 BT is the only telecoms provider that supplies wholesale ISDN2 services to telecoms providers other than its own retail business. Retail telecoms providers are therefore wholly reliant on BT's wholesale ISDN2 services to offer retail services.

Pricing and profitability

6.100 We first imposed a charge control on wholesale ISDN2 prices in the 2014 FAMR Statement. Since then, BT has set its ISDN2 prices at the maximum level permitted under the charge control. BT's pricing of these services appears to be determined significantly by the regulatory controls imposed on it, rather than competition.

6.101 As shown in Table 6.2 below, BT's returns (as reported in the RFS) from selling wholesale ISDN2 services have been high, with ROCE being well over 30% from 2013/14 to date. This is in excess of the benchmark cost of capital for this line of business, which was less than 11% pre-tax nominal during this period.[381]

6.102 As with ISDN30, a large factor in BT's high ROCE for ISDN2 is that its asset base is heavily depreciated. If we were to adjust BT's ISDN2 returns on the basis of a hypothetical ongoing network, using the same methodology as for ISDN30, this would significantly reduce its returns. We estimate returns would fall from nearly 40% to around 10% in 2016/17 (see Section 9, Figure 9.3).

Table 6.2: BT's income from ISDN2

	2012	2013	2014	2015	2016	2017
Sales (£m) (internal and external)	134	132	123	112	105	95
Operating costs (£m)	66	64	55	53	39	38
Operating profit (£m)	68	68	68	59	66	57
Capital employed (£m)	245	234	194	175	161	145
Return on capital employed	28%	29%	35%	34%	41%	39%

Source: BT Regulatory Financial Statements

[381] For 2014/15 to 2015/2016 the benchmark cost of capital would be that for the "Rest of BT" at 10.8% pre-tax nominal (see Annex 14 of the 2014 FAMR Statement) and for 2016/17 would be that for "other UK telecoms" at 9.8% (see Annex 30 of the 2016 BCMR Statement).

Barriers to entry and expansion

6.103 We consider that barriers to entry are similar to those identified for wholesale ISDN30. Barriers to entry and expansion are high due to the large sunk costs that would need to be incurred to establish the infrastructure required to provide an ISDN2 exchange line. Given the limited market size and forecast decline in ISDN2 volumes, there is a limited time period within which to recover this investment. Nevertheless, we note the growing take-up of IP-based alternatives, where barriers to entry may be lower (and particularly so into the future as alternative providers increase their use of alternative wholesale infrastructure).

Countervailing buyer power

6.104 Purchasers of BT's wholesale ISDN2 service are highly unlikely to possess sufficient countervailing buyer power to undermine BT's market power during this review period, although if IP-based services grow at the rate expected, the negotiating power of buyers would be expected to strengthen through time, especially for new connections.

Conclusion

6.105 In summary we find that:

- BT's market share remains at nearly 100% and it would appear that it is the charge control, rather than competition which is driving current prices for ISDN2;
- for customers who do not already have ISDN2 services, the availability of IP-based alternatives is likely to limit the extent of BT's market power in ISDN2. While taking the constraint exerted by these 'out-of-market' products into account may mean that BT's market power diminishes over time, we anticipate that BT is likely to continue to enjoy a strong market position for the period of this review; and
- there remain barriers to entry, insufficient countervailing buyer power and the opportunity for BT to charge high prices to customers absent regulation.

6.106 Our conclusion is therefore that BT has SMP in the supply of wholesale ISDN2 exchange lines in the UK excluding the Hull Area.

ISDN2 – the Hull Area

2016 NMR Consultation proposal

6.107 We proposed that KCOM held SMP in ISDN2 in the Hull Area.

Stakeholder responses

6.108 KCOM agreed with our provisional competition assessment for ISDN2. No other respondents commented on our assessment of SMP in the Hull Area.[382]

[382] KCOM response to 2016 NMR Consultation, page 5.

Conclusion

6.109 KCOM has a market share of nearly 100% for wholesale ISDN2 lines in the Hull Area. In the 2016 NMR Consultation, we noted that MS3 was active in the Hull Area, but did not offer a wholesale ISDN2 product. We therefore consider that KCOM will continue to have a very strong market position in the Hull Area.

6.110 Barriers to entry in this market are elevated by the fact that ISDN2 in the Hull Area is a very small market. Any new entrant wishing to enter the market would need to invest considerably in infrastructure, and given the small geographic area and declining ISDN2 volumes, would likely have a limited customer base and limited time period over which to recover these costs. As with the rest of the UK, IP-based alternatives are likely to provide a competitive alternative in the longer-term, particularly for new customers or new connections, but this is unlikely to undermine KCOM's significant market power in this review period.

6.111 Countervailing buyer power is unlikely given KCOM is the only wholesale supplier of ISDN2 in the Hull Area. Our conclusion is therefore that KCOM has SMP in the wholesale supply of ISDN2 exchange line services in the Hull Area.

7. Approach to remedies

7.1 In Sections 8-11 we explain each of the remedies we are imposing given our conclusions that BT and KCOM have SMP in the WFAEL, WCO, ISDN30 and ISDN2 markets, in the UK excluding the Hull Area, and in the Hull Area, respectively.

7.2 In this section we outline our strategic approach to regulation in these markets[383], setting out:

- the competition concerns that we are seeking to address in this review;
- how we have designed our remedies to address those competition concerns; and
- our response to stakeholder comments on these matters.

7.3 We also explain how the decisions in this review reflect our long-term strategy for digital communications and address the implications for this review of our reforms to Openreach.

Strategic Review of Digital Communications

7.4 When considering the structure and form of our remedies, we have taken account of our approach in previous reviews, together with recent and expected market developments. Our remedies also reflect our long-term vision for ensuring the quality and availability of communication services in the UK, as set out in our Strategic Review of Digital Communications[384] (Strategic Review).

7.5 In the Strategic Review, we said the NMR would consider how far we can deregulate the traditional fixed voice markets, given the development of other options for making calls, including mobile networks and VoIP services. We stressed, however, that we would maintain important protections for vulnerable users and people who depend on their traditional landline.

7.6 As we outline further in this section, we have found that increasing competitive constraints on BT's provision of landline services, when bundled with broadband and other services in the retail market, and the development of mobile and VoIP voice services for residential and business consumers, has allowed us to take significant steps in reducing regulation in narrowband wholesale markets.

7.7 We are, however, imposing regulations where they are necessary. This includes retaining our requirements on BT to provide WLR and WCO products and in the wholesale ISDN markets we are maintaining protections for existing users.

7.8 Separately, we also consulted on a proposal to introduce a new cap on retail prices for people who use landline-only telephone services. BT has now announced that it will cut

---

[383] We set out our general competition concerns in the WCT markets in Section 13 and expand on the pricing concerns in Section 14 (where we also explain our approach to price regulation in these markets). We explain our approach to the regulation of interconnection in Section 17.

[384] Ofcom, 2016. *Making Communications Work for Everyone Initial Conclusions from the Strategic Review of Digital Communications.* https://www.ofcom.org.uk/__data/assets/pdf_file/0016/50416/dcr-statement.pdf.

line rental prices for voice-only consumers. In light of BT's commitment to reduce prices in this way and to introduce some consumer engagement measures, we have decided not to introduce a retail price control.

7.9 Other aspects of our Strategic Review have informed our approach to remedies in this review including:

- Our plan to deliver a step change in quality of service including tougher minimum standards on Openreach for repairs and provisioning (see Section 10 where we explain our decisions on QoS remedies in this review, which support our wider review of QoS regulation for fixed access markets);
- Our commitment to consider the scope for deregulation in each of the markets covered in this review. (In Sections 8, 9 and 11 we explain where we are removing a number of remedies in the narrowband markets).

7.10 In our Strategic Review, we also explained our strategic shift towards encouraging network investment and exposing more of the value chain to competition as a means of offering new services and choices to consumers. We anticipate that such network investment will result in greater competition, including in the supply of voice services to consumers, and thus further supports our deregulatory approach for traditional fixed narrowband markets.

Competition concerns in narrowband access markets and WCO

7.11 In Section 6 we set out our conclusion that BT and KCOM have SMP in WCO and narrowband access markets (in the UK excluding Hull and in the Hull Area, respectively). As vertically integrated providers, in the absence of regulation there are behaviours that BT and KCOM could engage in which could distort downstream competition.

7.12 In the 2016 NMR Consultation[385], we identified the following competition concerns:

- in the WCO and three narrowband access markets (WFAEL, ISDN30 and ISDN2), BT and KCOM may refuse to supply access and thus restrict competition in the provision of products and services in the relevant downstream markets;
- in the WCO and three narrowband access markets, BT and KCOM may set charges that, in combination with downstream prices, amount to a price squeeze (also referred to as "margin squeeze")[386];
- in the three narrowband access markets, BT and KCOM may provide access on less favourable terms compared to those obtained by their own downstream businesses, e.g. for provision and repair;
- in the three narrowband access markets, BT may not have sufficient incentives to continuously deliver an adequate level of service quality in relation to network access; and

[385] 2016 NMR Consultation, paragraphs 7.9-7.11 and 9.41-9.42.
[386] By which we mean BT or KCOM imposing a price squeeze, so as to have adverse consequences for end-users of public electronic communications services.

- in relation to existing ISDN30 and ISDN2 lines, BT and KCOM may set excessive wholesale charges.[387]

Stakeholder responses to the identified competition concerns

7.13 Vodafone[388] and Sky[389] argued that, rather than price squeeze, the main competition concern in the WFAEL and WCO is excessive wholesale pricing. Vodafone claimed that it was not possible to have a price squeeze without excessive wholesale pricing. It considers excess wholesale pricing is the root cause of price squeeze and therefore the primary problem. Furthermore, excessive wholesale pricing without a price squeeze is a competition concern.

7.14 Vodafone said consumers and competition are vulnerable to the consequences of excessive wholesale pricing. It argued that BT's pricing to the WLR and WCO price caps is an indicator that these prices will rise if the caps are removed. It added it was difficult to rationalise Ofcom's position that BT has SMP in the WFAEL and WCO markets, with our view that an increase in wholesale prices would not be passed on at the retail level.

7.15 Sky also considers there is a risk that BT will increase the prices of WLR and WCO and argued this would feed through to higher retail prices for consumers who are dependent on WLR and WCO enabled competition. Verizon raised similar concerns about excessive wholesale pricing and argued this would particularly hit business customers.[390]

7.16 Vodafone said there was a risk that BT would engage in both non-price and price discrimination in the WCO market, that would undermine the effectiveness of competition, hence Vodafone considered that this should be an additional competition concern in the WCO market.[391] [✂] agreed, stating that BT actively favours its own downstream divisions if it is able to do so a result of deregulation, and, like Vodafone, claimed there is evidence of existing margin squeeze behaviour in relation to BT's Wholesale Calls products.[392]

7.17 Meanwhile, BT disputed that it had the ability or incentive to use the supply of WLR and WCO to distort competition in downstream markets. It said it is subject to significant commercial constraints in the provision of fixed voice services at both the wholesale and retail levels. BT stressed that consumer choice in voice services is driven by WLA regulation and said we had overstated the concerns in relation to certain groups of interest.[393] BT said its provision of WLR and WCO is shaped by a commercial desire to maximise the uses of existing network assets, in the face of risks that volumes will divert onto mobile networks, MPF-based providers, Virgin Media and/or onto other means of direct communication

---

387 By which we mean BT fixing or maintaining some of all of its prices at an excessively high level so as to have adverse consequences for end-users of public electronic communications services.
388 Vodafone response to 2016 NMR Consultation, part 2, pages 28-31.
389 Sky response to 2016 NMR Consultation, paragraphs 5-13 and 23-31.
390 Verizon response to 2016 NMR Consultation, paragraphs 21-23 and 34-35.
391 Vodafone Part 2 response to 2016 NMR Consultation, paragraph 4.5.
392 [✂]; Vodafone response to 2016 NMR Consultation, part 2, paragraph 2.40.
393 BT response to 2016 NMR Consultation, paragraph 4.5-4.25.

between individuals. It also questioned whether Openreach has the ability and incentive to distort downstream competition by refusing to supply WLR to other telecoms providers, or by supplying on charges that amount to a margin squeeze or on less favourable commercial terms.[394]

7.18 More generally, BT argued that our competition concerns in the WCO and narrowband access markets could be addressed by competition law. It also argued any potential concerns in relation to Openreach using the supply of WLR services to distort downstream competition cannot subsist in light of BT's Section 89C Notification[395], under which Openreach will become a distinct company with greater independence (this is considered at the end of this section).

7.19 We did not receive specific comments regarding the competition concerns we identified in the ISDN markets.

7.20 KCOM observed that our proposed remedies package in the WCO and narrowband access markets in the Hull Area would address the competition concerns we identified.

Our reasoning and conclusions

7.21 Given our conclusions that BT and KCOM have SMP in the WCO and narrowband access markets, there is a significant risk that they would engage in the forms of anti-competitive conduct identified in the 2016 NMR Consultation. As vertically integrated providers, BT and KCOM have the incentive and ability to, for example, refuse supply of WLR and WCO or to restrict downstream competition through a price squeeze. While in principle these forms of conduct are capable of being addressed under competition law, given our assessment of competition in these markets today and our SMP findings, we maintain that competition law remedies are insufficient in the context of these markets to address the competition problems we have identified.

Excessive wholesale pricing

7.22 We considered whether the risk of excessive wholesale pricing is an additional competition concern to be addressed in designing our remedies on BT in the WFAEL and WCO markets.

7.23 BT's market power in WFAEL and WCO appears to be less than when we last reviewed those markets (as evidenced by BT's declining market share – e.g. falling from around two-thirds of WFAEL in 2012/13 to just over half the market today). We observe increased competition within the market from MPF-based competition and the continued roll-out of Virgin Media's cable network. These forms of competition, which do not rely on regulation of the WFAEL and WCO markets, act as a constraint on both wholesale and retail price increases by BT.

---

[394] BT Openreach response to 2016 NMR Consultation, paragraphs 44-45.
[395] On 10 March 2017 BT made a Notification making voluntary commitments regarding the reform of Openreach under section 89C of the Communications Act 2003.
https://www.btplc.com/UKDigitalFuture/Agreed/NotificationtoOfcompursuanttoSection89CCommunicationsAct.pdf

7.24 TalkTalk and Sky have extensive MPF networks (with around 95% national coverage)[396] and so could provide lines to many customers currently supplied by providers using WLR, in response to an increase in the price of WLR and WCO if it triggered a rise in retail prices. Other providers may also be able to turn to Sky or TalkTalk as alternative providers of network services. Such commercial wholesale arrangements are nascent at present but the barriers to further wholesale contracts do not appear prohibitive, particularly if WLR and/or WCO charges were to increase. As discussed in Annex 3, under a reasonable set of assumptions regarding customer lifetimes it might be cost effective to migrate customers from WLR and WCO to MPF in response to relatively modest increases in the price of WLR and WCO.

7.25 For WCO in particular, we also note increased constraints from outside the market from mobile and VoIP services, which we expect to further develop during the market review period.

7.26 Notwithstanding these indirect constraints, we recognise that BT may be able to increase wholesale prices if we do not impose charge controls on WLR and WCO (indeed, this is one of the reasons why we think that at present the relevant market should not be widened to include mobile and VOIP-based services). However, we consider that the constraints identified (both direct and indirect) are likely to become more effective through time such that any significant increase in WLR or WCO charges is likely to hasten migration to alternative providers (e.g. cable and MPF) where available, or to alternative platforms for voice services (e.g. mobile and VoIP).

7.27 While for some customer groups supply based on MPF and cable is common, for other consumer groups WLR-based supply remains a popular choice. So, we have considered, in particular, the impact of wholesale price increases on retail competition and pricing for the following groups of interest.

- Residential standalone fixed voice consumers - consumers in this group are less commonly supplied using MPF or cable.
- Consumers in ‘off-net’ areas (i.e. who are beyond the geographic reach of current MPF or cable networks).
- Business consumers - many smaller telecoms providers currently use WLR/WCO to supply end-user business customers. While Virgin Media and TalkTalk serve some business customers, they have a smaller share of supply than in the residential market.

7.28 Given that a number of retail competitors to BT currently use WLR and WCO wholesale inputs to serve these groups of interest, we wish to protect competition during the review period in order to allow competitive alternatives to develop further (e.g. VoIP or commercial wholesale markets based on MPF or cable). In our 2016 NMR Consultation we proposed to do this by ensuring that BT cannot set wholesale charges which, in

[396] Ofcom modelled estimate based on data provided by BT and Virgin Media for the 2017 WBA Market Review. For more detail, please see Table A8.1 in Annex 8: Ofcom, 2017. *Wholesale Broadband Access Market Review – Consultation on market definition, market power determinations and remedies.* https://www.ofcom.org.uk/__data/assets/pdf_file/0013/103180/wba-consultation.pdf.

combination with downstream prices, amount to a price squeeze. In this section we consider whether we should also regard the risk of "excessive" wholesale prices as a competition concern requiring *ex ante* regulation.

7.29 While we recognise that wholesale price increases are possible, we do not expect such increases to lead to significant and sustained retail price rises for the groups of interest; consequently, we do not expect them to lead to adverse consequences for retail customers. We consider this issue in more detail under the price regulation heading below, but briefly summarise our reasoning here:

- Our retail review proposed to reduce retail prices for residential standalone fixed voice consumers of BT. The outcome of that review is a reduction in retail prices by BT for voice-only customers.
- Consumers in off-net areas are unlikely to face a retail price increase because BT is prevented from geographical retail price variation by its universal service obligation. Therefore, competition in on-net areas constrains its pricing of lines and calls overall.[397]
- Certain businesses are likely to be able to make use of other options for their voice needs and business customers in general are more willing than residential consumers to substitute calls away from fixed analogue voice products to VoIP and mobile.[398] Any significant retail level price increases by BT may therefore prompt switching to alternative suppliers and/or voice platforms.

7.30 Having considered the groups of interest, we do not regard excessive wholesale pricing to be a competition concern in relation to BT's SMP in the WFAEL and WCO markets.

7.31 Nor have we identified excessive wholesale pricing to be a competition concern in relation to KCOM's SMP in the Hull Area in the WFAEL and WCO markets. We consider that there is an increased competitive constraint from mobile and VoIP in these markets.

7.32 We do, however, regard excessive wholesale pricing to be a more likely competition concern in the ISDN markets for both BT and KCOM for the following reasons:

- BT's wholesale market shares are much larger in the ISDN markets (especially ISDN2) than in the WFAEL and WCO markets. KCOM's wholesale market shares in the ISDN markets in the Hull Area are close to 100% (see Section 6).
- While in the WFAEL market (in the UK excluding Hull area) voice services can be supplied using MPF, which is charge controlled, or by Virgin Media over its cable network, no alternative products exist in either ISDN market (although the growth of IP-based services is expected to change this longer term).

---

397 Based on data from providers, we estimate that approximately 5% of customers are off-net customers (see paragraph 3.48 for the NMR definition of off-net customers). This is based on the same data and model used in the WBA market review. For more detail, please see Annex 8 of the 2017 WBA Consultation.

398 For example, larger businesses may be better able to use alternatives such as managed VoIP for some of their voice needs and small businesses may be able to use residential products. Our survey evidence suggests that businesses are more willing than residential consumers to substitute calls away from fixed voice in response to a price rise. For example, 19% of SMEs (vs 13% of residential customers) said that they would switch all calls in response to a 10% increase in landline call prices. 2017 NMR Small Business survey, Q23 and NMR 2017 Residential survey, Q39. Base is those whose main voice calls method is a landline.

- Some ISDN customers and suppliers will have made significant investment in equipment and systems (e.g. PBXs), so there may remain a group of particularly "sticky" retail ISDN customers.
- BT's current wholesale ISDN charges are well above reported costs (and so ROCE is well above the benchmark cost of capital). While returns are lower if we adjust for the heavily depreciated asset base (see Section 6), BT has largely priced to the historical cap for ISDN services and we think there is risk that wholesale prices would rise to excessive levels in the absence of a cap.

7.33 We consider that higher wholesale ISDN charges are more likely to lead to higher retail prices for consumers given the reliance by retailers on wholesale ISDN supply from BT and KCOM.[399] We consider that this risk is most pronounced for existing ISDN lines, as new customers in particular are more likely to consider IP-based solutions (or have these offered by their retail provider) as explained in Sections 5 and 6, and below.

WCO and non-price discrimination

7.34 We have also considered whether there is an additional competition concern in the WCO market, if BT and KCOM provide access on less favourable terms compared to those obtained by their own downstream businesses (as argued by Vodafone).

7.35 We have not identified non-price discrimination in the WCO market that might lead to significant competition concerns (by contrast to the WFAEL market, where new provisions or repairs might be provided on differential terms, for example). While we agree with [✂] that wholesale price discrimination may be possible, we have also concluded that indirect constraints – in particular from mobile and VoIP services – are relatively strong in calls, mitigating the ultimate effects on consumers. In relation to wholesale price discrimination, this is most likely to lead to harm to consumers as a result of a price squeeze in the WCO market. We therefore do not agree that there is a further competition concern such that other regulation, in addition to the fair and reasonable pricing obligation, is necessary. We explain our decision to remove the no undue discrimination remedy in the WCO market in Section 8.

Conclusion on competition concerns in narrowband access markets and WCO

7.36 In conclusion, we maintain that the competition concerns identified in the 2016 NMR Consultation remain:

- in the WCO and three narrowband access markets (i.e. WFAEL, ISDN30 and ISDN2), BT and KCOM may refuse to supply access at the wholesale level and thus restrict competition in the provision of products and services in the relevant downstream markets;
- in the WCO and three narrowband access markets, BT and KCOM may set charges that, in combination with downstream prices, amount to a price squeeze;

[399] External sales made up 61% and 59% of BT's total ISDN2 rentals, and 53% and 52% of its total ISDN30 rentals in 2017 and 2016. In contrast, BT's external sales of WLR made up 21% and 26% of total WLR lines in 2017 and 2016 respectively.

- in the three narrowband access markets, BT and KCOM may provide access on less favourable terms compared to those obtained by their own downstream businesses, e.g. for provision and repair.
- in the three narrowband access markets, BT may not have sufficient incentives to continuously deliver an adequate level of service quality in relation to network access; and
- in relation to existing wholesale ISDN30 and ISDN2 lines, BT and KCOM may set excessive wholesale charges that are more likely to result in end consumer detriment.

7.37 We are therefore imposing *ex ante* regulatory obligations on BT and KCOM in each of the markets in which they hold SMP, in order to address the identified competition concerns.

Approach to price regulation in the WFAEL and WCO markets

7.38 In the 2016 NMR Consultation, we proposed to impose a fair and reasonable charges obligation on BT and KCOM in the WFAEL and WCO markets to address our competition concerns. We considered it was not necessary to impose cost-based charge controls to address these concerns in light of our market analysis, including the increased competitive constraints identified since the last review. In this sub-section, we respond to stakeholder comments regarding our proposal not to impose charge controls in these markets.

Stakeholder responses to the 2016 NMR Consultation

Extent of BT market power

7.39 BT agreed with our proposals to remove the cost-based charge controls for WFAEL[400] and WCO.[401] However, it considered that competitive conditions are such that it would be desirable to remove all *ex ante* regulation from WCO.

7.40 TalkTalk supported our proposals not to impose a charge control on WLR and WCO and instead to impose a fair and reasonable charges obligation, given that BT's market power has diminished.[402]

7.41 Vodafone and Verizon strongly disagreed with our proposal not to impose charge controls in the WFAEL and WCO markets.[403] Vodafone said it was a breach of our legal duties to promote competition, given that the market position has not materially changed since the last review. Furthermore, Vodafone anticipates BT's market share in both WFAEL and WCO will increase in the next market review period. It argued there was a significant risk BT would raise wholesale prices. This would result in an immediate direct financial transfer to

[400] Openreach response to 2016 NMR Consultation, paragraph 54.
[401] BT response to 2016 NMR Consultation, paragraph 5.10.
[402] TalkTalk response to 2016 NMR Consultation, paragraphs 1.1 and 3.1.
[403] Vodafone response to 2016 NMR Consultation, part 2, paragraphs 4.1-4.79; Verizon response to 2016 NMR Consultation, paragraphs 27 and 39.

BT from its competitors, regardless of whether it led to a margin squeeze.[404] SSE also expressed concern with our proposal not to impose charge controls for WLR and WCO.[405]

7.42 Vodafone, Verizon[406], UKCTA[407] and Colt[408] highlighted BT's high market shares in the WFAEL and WCO markets and questioned whether there was a sufficient reduction in BT's market power to justify a significant change in approach to remedies. Verizon and Vodafone noted that BT has been pricing WLR and WCO at the maximum levels permitted under the charge control, arguing that it is only constrained by regulation and not competition.

7.43 Vodafone and Sky argued that only a WLR charge control could address the dual risks of excessive wholesale prices feeding into higher retail prices and a price squeeze. It considered a fair and reasonable charging obligation to be an inadequate safeguard, leading to delay and uncertainty. Sky raised similar concerns in relation to WCO, claiming that any deregulation in the WCO market could negatively impact retail customers' choice and may put upward pressure on the prices they would have to pay for their telephony services. [409]

Mobile and VoIP substitution

7.44 Vodafone doubted that mobile is a sufficiently strong constraint on BT's position in the WCO market to constrain retail pricing. It said out-of-bundle mobile call charges are still significantly higher than calls from a fixed line. It also claimed that consumers have fixed patterns of usage for their mobiles and landlines, driven by factors other than price (e.g. mobiles heavily used for calls to other mobiles, while fixed lines tend to be used to call other fixed lines).

7.45 Verizon specifically questioned whether mobile and VoIP were significant constraints on fixed lines and services for business customers. UKCTA also argued mobile was less likely to be an effective substitute for businesses, noting it lacks features native to a fixed instillation such as group calling and call transfer, and has proportionately higher equipment costs.

Uncertainty of WLR pricing

7.46 Vodafone added that a business entering or operating in a market needs as much regulatory certainty as possible for it to be able to implement its strategy. It contrasted a charge control, where a business can project forward its costs and hence set prices to customers to which it can commit, with a margin squeeze test, where BT is able to raise prices to its competitors, thus removing the ability to make robust future plans.

---

[404] Vodafone response to 2016 NMR Consultation, part 2, paragraphs 4.1-4.79.
[405] SSE response to 2016 NMR Consultation, pages 1-2.
[406] Verizon response to 2016 NMR Consultation, paragraphs 5-48.
[407] UKCTA response to 2016 NMR Consultation, paragraphs 3-16.
[408] Colt response to 2016 NMR Consultation, page 6.
[409] Sky response to 2016 NMR Consultation, paragraphs 5-31.

7.47 SSE also highlighted the uncertainty associated with a fair and reasonable charging obligation, for businesses that rely on regulated wholesale inputs for the provision of retail services. It said our proposals could impair competition to the detriment of consumers, as some telecoms providers might withdraw from markets or increase retail prices to match increasing wholesale prices and compensate for uncertainties.[410] The Federation of Communication Services (FCS) raised similar concerns about the impact of uncertain WLR pricing on smaller competitors to BT.[411]

Voice-only consumers

7.48 Sky stated that a WLR price control was a necessary first step in addressing our concerns about excessive pricing in the retail market for voice-only services because it ensures that wholesale input costs are cost reflective. Verizon said Ofcom appeared to have abandoned competition at the wholesale level in favour of regulation at the retail level. Vodafone took a similar view and said this was highly likely to be a breach of our legal duties.

7.49 Meanwhile, SSE urged Ofcom to consider the link between our wholesale and retail market proposals from the perspective of smaller telecoms providers, who currently form part of the competitive landscape and rely on the regulated narrowband wholesale products to do so.

Off-net customers

7.50 UKCTA highlighted that WLR is still required by all providers in WBA Market A for voice telephony in order to provide a bundled service offering, and said we were therefore in danger of leaving rural users without adequate pricing protection.

Business customers

7.51 Verizon considered that our proposal not to impose new WLR and WCO charge controls was unjustified and premature, reflecting a misplaced focus on residential and small business customers. It stressed that, as a provider of services to large businesses, it is reliant on BT's network and the WLR and Carrier Pre-Selection (CPS) products, as it is not economically viable for it to build out its own network or make use of LLU.

7.52 Vodafone, UKCTA, [✂][412] and Colt also stressed that business users depend on WLR and/or WCO based products and would therefore be harmed by excessive wholesale prices. Vodafone noted the business market for WFAEL remains substantial and said specialist suppliers to this market have thrived using WLR because they understand business customers' priorities. It claimed that business customers who require business grade services aren't supported by MPF suppliers and [✂] said MPF was not the first product of choice for business voice services.

[410] SSE response to 2016 NMR Consultation.
[411] FCS response to 2016 NMR Consultation, page 2.
[412] [✂]

7.53 One respondent [✂] added that only BT offers the coverage and provision of a range of services that it needs to serve large customers with multiple locations across the country. It said it would be [✂].

MPF and superfast broadband

7.54 Vodafone argued we had placed undue prominence on the constraining influence offered by MPF on WLR pricing. It said the majority of service growth is now in superfast rather than standard broadband, and using MPF makes no economic sense for new entrants or those without MPF assets, hence their preferred model is a combination of WLR and GEA. The continued availability of MPF therefore does not act as a constraint on WLR pricing, as the operators who rely on WLR cannot make use of MPF. It added that as MPF equipment reaches the end of its working life customers will necessarily be migrated to WLR, as no new investment in the MPF platform is likely to be forthcoming.

7.55 Vodafone outlined a number of practical issues (e.g. availability of a suitable migration product) that it says will need to be resolved once BT's SOGEA product becomes available[413], before providers can begin the task of migrating their customers. It said it did not anticipate mass SOGEA adoption by the end of the market review period. It argued that effective regulation of WFAEL (including a WLR charge control) therefore remains essential, adding that [✂].[414]

7.56 UKCTA also claimed that MPF investment is now sunk and will not be extended. It said for those providers that have not invested in MPF, then WLR is the rational and only obvious product to deliver service to customers, ahead of a fit for purpose appropriately regulated alternative, which would enable telecoms providers to offer a bundled competitive proposition.

7.57 Vodafone said there is no effective commercial wholesale market of services based on MPF, with TalkTalk and Sky using their co-location assets for self-supply only. It added that Virgin Media has not used its cable network to target any wholesale market and it has little incentive or ambition to do so.

Productive efficiency

7.58 Sky said we should be mindful of the objective of promoting productive efficiency and removing the risk of competitive distortions arising between those telecoms providers dependent on WLR (and shared LLU, i.e. SMPF) and those who rely on full LLU (i.e. MPF). It said there was a risk of adverse effects stemming from price distortion if BT is allowed to set the price of WLR above or below the difference in LRIC between WLR and MPF.

[413] See Section 4 for discussion of the anticipated launch of BT's single order GEA product during the market review period and its relevance to the WFAEL market.
[414] Vodafone response to 2016 NMR Consultation, part 2, pages 47-48.

Form of any charge controls

7.59 Vodafone proposed that instead of a fair and reasonable charging obligation we could instead impose a safeguard price ceiling in the form of a CPI-CPI control for WCO and WFAEL (or a link to regulated MPF pricing in the case of WLR). Verizon said that a CPI-CPI control would give BT more than enough pricing freedom, but greater certainty to competitors and ensure that prices are not excessive. Colt and UKCTA also suggested a CPI-CPI control on WFAEL and WCO while [✂][415] said we should apply a charge control of CPI+0% to a combined market of WCO and WFAEL.

Our reasoning and conclusions

7.60 We considered two options for price regulation of the WFAEL and WCO markets: fair and reasonable charges and a charge control (cost-based or simple indexation). Below, we explain the reasoning behind our decision not to impose a charge control in the context of the concerns raised by stakeholders above. We explain our decision to impose a fair and reasonable charging obligation in Section 8.

Extent of BT market power

7.61 While BT still has SMP in the WFAEL and WCO markets, we consider that its market power is less than identified in the previous review. In particular, this is due to the further development of infrastructure-based competition from Virgin Media's cable network and MPF-based providers (particularly Sky and TalkTalk), which do not rely primarily on WLR and WCO inputs. Most consumers in most parts of the country now have a choice of providers using alternative infrastructure to offer fixed voice services (typically bundled with broadband and other communications services). This has led to a reduction in BT's market share in WFAEL from around two-thirds to just over one-half of the market and from nearly 60% to just under one-half of the market in WCO between 2012/13 and 2016/17 (see Section 6).

Mobile and VoIP substitution

7.62 We have also observed increasing constraints from outside the market from mobile and IP-based voice services, particularly for WCO. Many consumers are substituting mobile calls for some types of fixed voice calls. In 2017, 52% of residential consumers with access to a mobile phone at home used it to call others daily, instead of using their landline.[416] The main reason given by respondents was "convenience" (26%).[417] As discussed in Section 4, there has also been growth in residential consumers making OTT voice calls, while business consumers are increasingly using VoIP or mobile services to make calls. Our research found

[415] [✂]

[416] NMR 2017 Residential survey, Q27. Base is those with a landline phone (or pay line rental for their fixed broadband service) in a household with a mobile phone.

[417] NMR 2017 Residential survey, Q30. Base is those who have used a mobile phone to make calls from home in the last 12 months.

that 39% of business customers with both landline and mobile phones state that the percentage of calls they have made over mobile has increased over the last three years.[418] The proportion of business customers that say they are using VoIP has remained stable over the last three years at 19%.[419]

7.63 We expect these constraints to further develop during the market review period. As discussed in Section 4, the development of SOGEA is likely to be an important enabler of competition. However, we consider retail services based on SOGEA are unlikely to impose a significant constraint during much of this review period – at least the first couple of years.

7.64 As we outlined above, in light of these competitive constraints we consider that BT's market power is less than identified in the previous review and so its ability to sustain an increase in wholesale prices absent a charge control is diminished compared to previous reviews. There are a range of constraints at the retail level so if wholesale prices were to rise, we do not expect this to lead to a significant and sustained increase in retail prices (which would harm end consumers). Finally, we have seen a de-coupling of wholesale and retail pricing (especially for FAELs, see Figure 3.16 and Table 3.1), which shows that wholesale charge controls are not necessarily an effective remedy to address high retail prices. We therefore overall do not consider it appropriate to impose a cost based charge control in the WFAEL and WCO markets.

Uncertainty of WLR pricing

7.65 Some stakeholders highlighted the uncertainty associated with a fair and reasonable charging obligation, arguing that it might impair retail competition.

7.66 We acknowledge the removal of charge controls from WLR and WCO will lead to less certainty about their future pricing for telecoms providers that currently rely on these wholesale inputs. However, even in competitive wholesale markets there will be uncertainty. We do not accept that such wholesale pricing uncertainty as might arise will adversely affect retail market competition for the following reasons:

- WFAEL and WCO regulation plays a less significant part in the promotion of retail competition in fixed lines and calls than was the case in previous market reviews.
- most retail consumers can already choose from a range of voice services provided by competitors to BT using MPF and we expect Virgin Media's network to further expand during the market review period.
- as highlighted in our Strategic Review, we consider there are benefits to consumers from encouraging network investment and exposing more of the value chain to competition.

[418] NMR 2017 Small Business survey, Q5. Base is those with standard landlines and mobile phones.

[419] NMR 2017 Small Business survey, Q1. Base is all eligible organisations. NMR 2015 Small Business survey (Wave 2), QS11. Base is all eligible organisations.

7.67 We recognise that wholesale price increases for WLR and WCO are a possibility. However, BT's market power, and its ability to sustain wholesale price rises, is reduced compared to previous reviews. We do not expect a significant and sustained increase in retail prices.

7.68 We do, however, consider that there is a risk to current and future competition if BT were able to foreclose certain segments of the lines and calls markets, by engaging in a price squeeze. As we discuss in Section 8, we are therefore imposing a fair and reasonable charging obligation to protect downstream competition. This will ensure that telecoms providers that continue to use BT's wholesale inputs are not at an unfair disadvantage when competing with BT in these markets.

Voice-only consumers

7.69 Some stakeholders highlighted the importance of taking a co-ordinated approach to our reviews of wholesale markets in the NMR and the retail market for standalone landline telephone services (SLTS). Our analysis of the relevant markets and decisions on remedies are designed to ensure consistent treatment of these markets, and we are publishing the outcome of our review of SLTS alongside this statement.

7.70 We do not agree that the imposition of WLR and WCO charge controls is either necessary or effective in protecting consumers of voice-only services from the high prices in the retail market. The increases in retail line rental prices that we have observed have occurred despite cost-based wholesale charge controls having been in place for many years.

7.71 BT has now voluntarily announced a £7 cut in the line rental price for voice-only customers and a real price freeze for calls and line rental for the next three years. Nevertheless, telecoms providers supplying voice-only customers will still retain a degree of reliance on WLR and WCO, and so our concerns at the wholesale level still arise. A wholesale fair and reasonable charging obligation, alongside the retail price reductions, will allow telecoms providers to continue to compete with BT in the provision of voice-only services to these customers. We therefore do not accept the contention of Verizon and Vodafone that we are abandoning competition.

Off-net customers

7.72 We acknowledge that WLR is still required in wholesale broadband access (WBA) Market A in order for alternative providers to offer fixed voice services to retail consumers, as noted by UKCTA. This is one of the reasons why we are imposing remedies in relation to WLR, including requiring BT to provide the product at fair and reasonable charges.

7.73 However, we do not agree with UKCTA that there is a danger of leaving rural users without adequate pricing protection. The fair and reasonable wholesale pricing obligations we are imposing on BT will preserve the ability of competitors, using WLR and WCO inputs, alongside regulated WBA in Market A, to compete with BT downstream.[420] In addition,

[420] See June 2017 WBA consultation in which we propose regulation on WBA in Market A that is consistent with that we are imposing on WFAEL provided by BT.

because of the obligations on BT as a result of the USC in relation to narrowband services, and the policy of its main brand to price nationally for broadband services, we expect that retail competition in dual-play services in the rest of the country will prevent retail price rises in Market A areas.[421]

Business customers

7.74 Some stakeholders highlighted that telecoms providers serving business customers are particularly reliant on WLR and WCO, and argued that charge controls should be retained to ensure this group of consumers benefits from competition.

7.75 We recognise that supply using WLR and WCO is more common for supply of voice services to business customers, than is the case for residential consumers. However, as we discuss in Section 6 and Annex 3, there is scope for that to change if the prices of WLR and WCO were to rise. Business grade products can be provided over MPF in most parts of the country and we do not agree that there are specialist needs that can only be met by using WLR. TalkTalk and Virgin Media already provide some retail voice services to business consumers, and we have not identified significant barriers to the expansion of this part of their businesses. Higher prices for WLR and WCO would also provide an increased incentive for suppliers with their own infrastructure to make sales via commercial wholesale arrangements to other telecoms providers serving business customers.

7.76 We recognise that some telecoms providers may continue to rely on BT's products to some extent, which is why we are imposing the fair and reasonable charging obligation and other remedies on BT. These remedies are sufficient in our view to maintain effective competition from telecoms providers that are reliant on BT's products.

7.77 In addition to a choice of telecoms providers offering business FAELS, business customers have a range of other options for their voice services.

a) Business customers can make use of residential voice products. Around 30% of SMEs already do so and this is likely to increase if the price of business FAELS were to rise relative to residential FAELs.[422]

b) Business customers can also use mobile and VoIP to make and receive calls. While in Section 4 we conclude that these services are not sufficiently strong substitutes to form part of the relevant market, they nonetheless provide a constraint. Managed VoIP in particular is more established for business customers. Use of managed VoIP by business customers has grown significantly in recent years, and we would expect the development of these services to accelerate if the price of business FAELS was to increase.[423]

---

[421] BT's approach to retail broadband pricing is discussed at pages 27-28 of our June 2017 WBA consultation.
[422] Ofcom, 2017. *SME experience of communications services – a research report,* Figure 103.
https://www.ofcom.org.uk/__data/assets/pdf_file/0030/96348/Ofcom-SME-customer-experience-research-2016-Report.pdf.
[423] See Figure 3.13 in Section 3.

7.78 Our consumer research indicates that business customers are no less responsive to changes in the price of their voice services than residential customers. For example, our market research showed that a higher proportion of SMEs would react to an increase in the price of their landline service by dropping their landline service and we would expect larger businesses to be more responsive than SMEs.[424]

7.79 Given the scope for telecoms providers to make greater use of alternative infrastructure to supply business customers with FAELS, and the remedies we have in place to maintain competition from those that will continue to use BT's wholesale products, we see no need for a charge control to ensure telecoms providers continue to compete effectively in the supply of FAELS to business customers. Given that competition within the market and the out-of-market alternatives available to business customers we do not agree that a charge control is necessary or appropriate as a means of protecting consumer outcomes and we do not expect a significant and sustained increase in retail prices for business customers.

MPF and superfast broadband

7.80 Vodafone and UKCTA argued that we were over-estimating the constraint from MPF on WLR pricing, claiming that the growth in superfast broadband means that for new entrants, or those without MPF assets, their preferred model is a combination of WLR and GEA when providing voice bundled with broadband.

7.81 In Section 6 and Annex 3, we consider the network costs of switching from WLR to MPF, for exchanges where MPF is already present. The evidence suggests it might be cost effective to migrate customers from WLR and WCO to MPF, in response to relatively modest increases in the charges for WLR and WCO.

7.82 We note that among competitors to BT, consumption of MPF in combination with GEA significantly exceeds consumption of WLR with GEA. TalkTalk uses MPF and GEA to deliver [✂]% of its retail lines, while it uses WLR and GEA to deliver [✂]%. Sky uses MPF and GEA to deliver ([✂]% of its retail lines and uses WLR and GEA to deliver [✂]% respectively).[425] Sky have not indicated that they intend to shift away from MPF to WLR as their existing and potential new bundled customers switch from standard to superfast broadband and TalkTalk [✂].

7.83 In the March 2017 WLA Consultation[426], we recognised that new entrant providers are unlikely to invest in MPF equipment, particularly if they focus on providing superfast broadband services. We therefore proposed that BT must continue to provide a copper bearer product to GEA services, until a standalone fibre access product becomes available. We said the charges for the copper bearer should be fair and reasonable and, when

[424] See Table 4.1 in Section 4. While a greater proportion of SMEs than residential consumers expressed reluctance to give up their landline, a greater proportion also said they would be willing to do so when faced with a price rise. 18% of SMEs said they would give up their landline in response to a 10% increase in their landline bill compared to 14% of all residential customers and 10% of residential customers with no broadband.

[425] TalkTalk response dated 28 June 2017 to the 8th NMR s.135 notice. Sky response dated 12 June 2017 to the 6th NMR s.135 notice.

[426] Ofcom, March 2017. *Wholesale Local Access Market Review – Consultation on the proposed market, market power determinations and remedies.* https://www.ofcom.org.uk/__data/assets/pdf_file/0033/99636/Vol1-Market-review.pdf.

purchased together with the GEA 40/10 service, charges should reflect the costs of proving that bearer. We further noted that WLR is currently the only alternative to MPF for providing the copper bearer, so where it is offered by BT for this purpose, we proposed that its charges should continue to reflect the costs of providing a copper bearer. Finally, we stated that when BT launches an effective SOGEA product this may allow other telecoms providers to provide services without relying on WLR. At that point, we said BT's pricing of WLR would be subject only to the fair and reasonable charging obligation imposed in this statement.

7.84 We will address responses to the WLA Consultation when we issue the WLA Statement. But we note our proposal in relation to the pricing of non-MPF copper bearer products is designed to address the potential short-term risks to WLR-based competition for consumers of voice and superfast broadband highlighted by Vodafone and UKCTA.

Productive efficiency

7.85 We have considered Sky's observation that there is a risk of adverse effects to productive efficiency stemming from price distortion, if BT is allowed to set the price of WLR above or below the difference in LRIC between WLR and MPF. However, we consider that the competitive constraints on WLR pricing will help to restrict any such adverse effects. The scale of any such impact is further contained by the decline in consumption of WLR by non-BT telecoms providers which we have observed. We have also taken account of other relevant considerations in relation to dynamic efficiency and the importance of encouraging investment further up the value chain, when designing our pricing remedies.

Charge control

7.86 In conclusion, we have considered whether a charge control – either cost-based or capped against an index – would be necessary to address our competition concerns. A charge control on BT might be appropriate if our primary competition concern was to address the risk of excessive wholesale pricing. However, in light of our market analysis, we consider that the main competition concern to guard against is that of a price squeeze. In our assessment, BT appears to have less market power in the WFAEL and WCO markets than at the time of the last review. While we do not rule out the possibility of wholesale price increases, we consider that this would be unlikely to lead to a sustained and significant increase in retail prices.

7.87 Therefore, we have concluded that it is not appropriate to impose a charge control condition in either the WFAEL or WCO markets. Given the analysis set out above, we consider this decision is consistent with our statutory duties and the Community requirements under sections 3 and 4 of the Act. We set out our decision to impose fair and reasonable charging obligations in the WFAEL and WCO markets, including the legal tests, in Section 8.

Designing remedies for the ISDN30 and ISDN2 markets

7.88 In this sub-section, we explain our overall approach to imposing remedies on BT and KCOM in the ISDN30 and ISDN2 markets, in light of the competition concerns we have identified.

Our proposed approach

7.89 In the 2016 NMR Consultation, we proposed to make a distinction between existing ISDN lines, which will have been installed before the end of a transitional period, and new ISDN lines, which will be installed after the transitional period.

7.90 We therefore proposed to tailor the remedies on BT and KCOM accordingly, by removing most regulation for new ISDN lines over the period of this review and focusing our *ex ante* regulation on existing ISDN lines only. Our proposals included imposing a charge control on BT's existing lines and a fair and reasonable charging obligation on KCOM's existing lines.

Stakeholder responses to the 2016 NMR Consultation

7.91 BT[427] and KCOM[428] agreed with our proposed distinction between existing and new ISDN services, and that relaxing regulation on new services after the transitional period is appropriate.

7.92 TalkTalk also said it was reasonable to deregulate new lines, while considering it essential for Ofcom to continue to impose a price cap on BT's existing lines given BT's enduring market power.[429]

7.93 However, Verizon[430], Vodafone[431], UKCTA[432] and [✂][433] said we should extend our proposed remedies on BT's existing ISDN lines to also cover new lines. They argued that this would be simpler to administer and fairer to existing businesses opening new premises.

Our reasoning and conclusions

7.94 In Sections 5 and 6, we explain our conclusions that current ISDN users can face barriers to switching to IP-based services and that IP-based services therefore fall outside the relevant markets for ISDN. However, we also observed a growing and significant indirect constraint from IP-based alternatives. Although we have decided not to include IP-based services in the market at this time, we note there is an increasing degree of substitutability between ISDN and IP. For customers who do not already have ISDN lines, we consider that the availability of IP-based alternatives is likely to limit the extent of BT's and KCOM's market power in ISDN markets.

---

[427] Openreach response to 2016 NMR Consultation, paragraph 47.
[428] KCOM response to 2016 NMR Consultation, paragraphs 2.8-2.9.
[429] TalkTalk response to 2016 NMR Consultation, paragraph 7.4.
[430] Verizon response to 2016 NMR Consultation, paragraphs 51-52.
[431] Vodafone response to 2016 NMR Consultation, part 2, paragraph 5.16.
[432] UKCTA response to 2016 NMR Consultation, paragraph 21.
[433] [✂]

7.95 While taking the constraint exerted by these 'out-of-market' services into account may mean that BT's and KCOM's market power diminishes over time, we consider that BT and KCOM are likely to continue to enjoy a strong market position over existing customers of ISDN for the period of this review. We are therefore tailoring the remedies by removing most regulation for new ISDN lines over the period of this review and focusing our *ex ante* regulation on existing ISDN lines only.

7.96 The remedies we are imposing for existing lines are aimed at protecting against the risks of excessive wholesale pricing and price squeeze, and ensuring continued access to ISDN services, for those consumers for whom IP-based services are not a viable alternative. We are therefore imposing a charge control and other remedies on BT's existing lines in the wholesale ISDN30 and ISDN2 markets, which we explain in more detail in Sections 8 and 9. We are retaining the fair and reasonable charging obligation and other remedies on KCOM's existing lines, which we explain in more detail in Section 11.

7.97 With regard to new lines, we are removing most remedies, including network access requirements and all charge controls, after a transitional period of one year. In Section 8 we explain our decisions on the definition of new lines and the length of the transitional period. The only remedies (on both BT and KCOM) that we are maintaining for new lines relate to regulatory financial reporting, as set out in Sections 8, 11 and 20.

7.98 We do not consider that a regulatory distinction between BT's and KCOM's existing and new ISDN lines is unduly complex to administer (as suggested by some stakeholders). We have identified a distinction between the market power that BT and KCOM hold over existing customers of ISDN lines and new customers, and designed our remedies accordingly. Although some businesses with existing ISDN lines may choose to install new ISDN lines when they open new premises, our analysis suggest that most businesses are likely to regard IP-based alternatives as a viable substitute to ISDN services when installing new services. As discussed in Section 3, we have observed rising volumes of business VoIP services, and declining numbers of ISDN channels. Our research found that 71% of ISDN users not currently using IP-based alternatives are aware of these services.[434] Of these, 89% have plans to add additional IP-based services, rather than new ISDN services in the next four years.[435] Hence, we are applying lighter remedies to new lines than to existing lines, in accordance with the competitive conditions that we observe.

The impact of Openreach reform

7.99 Another element of our Strategic Review was to secure greater operational and strategic independence for Openreach. On 10 March 2017 BT notified Ofcom of voluntary commitments (Commitments) to reform Openreach under section 89C of the

[434] 2017 NMR ISDN survey, QC1. Base is ISDN users who do not use IP-based alternatives.

[435] We interpret this to include those who intend to use both ISDN and IP-based alternatives at the same time, and those who intend to retire their current ISDN service. NMR 2017 ISDN survey, QC2B. Base is all ISDN users not using but aware of IP-based alternatives.

Communications Act 2003. These Commitments mean Openreach will become a distinct company with its own staff, management, purpose and strategy.

7.100 In a July 2017 Statement[436] we confirmed our decision to release BT from the Undertakings (that it offered to Ofcom in 2005 when Openreach was originally created), once the new Commitments are fully in place. We consider that the new arrangements, established by the March 2017 Notification, provide Openreach with significantly more independence to take its own decisions about the strategic direction and operation of the network, acting with a clear focus on the equal treatment of all its customers, not just the needs of BT Group.

7.101 Having received the section 89C Notification from BT, we were required by section 89C(4) of the Communications Act 2003 to consider, as soon as reasonably practicable, the impact on SMP conditions set in relation to markets which, in our opinion, will be affected. We said in our July 2017 Statement that we would consider the effect, if any, of the new arrangements described in BT's Notification on our SMP regulation as part of this market review and other market reviews that are currently underway.

7.102 As noted above, BT said it considers that our competition concerns (as set out in our 2016 NMR Consultation) in relation to access, discrimination and restricting competition cannot subsist in light of the Notification. We have therefore revisited our competition concerns in relation to the narrowband access markets, taking account of BT's Notification and responses to the 2016 NMR Consultation.

7.103 As explained earlier in this section, we have concluded that these competition concerns remain. We have found that BT has SMP in the three narrowband access markets and in WCO, which remain important wholesale inputs for telecoms providers downstream. BT and Openreach remain in common ownership and BT retains control over the pricing of its products that exist outside of Openreach. Given those factors we think that Commitments are insufficient, on their own, to allay our concerns regarding access, discrimination and restricting competition.

7.104 Further, as we set out in our July 2017 Statement, the changes to the pre-existing functional separation of Openreach addressed by BT's Notification relate primarily to the degree of independence in Openreach's strategic decision-making through the new model of legal separation. The Commitments are, like the Undertakings before them, designed to operate alongside Ofcom's regulation of BT's SMP in individual product markets. That SMP regulation has, as part of the legal and economic context of the relevant market, reflected the existence of the Undertakings, as well as the functionally separate nature of Openreach and its obligation to supply products on an EOI basis.

7.105 BT raised a specific concern with regard the operation of the price squeeze requirements in relation to the fair and reasonable pricing obligation in the WFAEL market. It said the section 89C Notification will result in Openreach taking its pricing decisions independently

[436] Ofcom, 2017. *Delivering a more independent Openreach.* https://www.ofcom.org.uk/__data/assets/pdf_file/0020/104474/delivering-independent-openreach.pdf

in the WFAEL market, in a way that precludes discrimination in favour of downstream BT. It added it should be possible for Openreach to make pricing decisions with limited intervention from BT Group to ensure compliance with potentially conflicting regulatory requirements.[437]

7.106 We do not consider that there is a conflict between the further separation set out in BT's Commitments notified to Ofcom on 10 March 2017 and our decision to impose a fair and reasonable pricing obligation in the WFAEL market. We consider that a fair and reasonable pricing obligation is a necessary remedy to address our concern that, unless there are appropriate regulatory remedies in place, BT (as a whole) would have the incentive and ability to conduct a price squeeze to reduce competition in downstream markets. We note that while the Commitments do increase the independence of Openreach, including on pricing decisions, they are not designed specifically to address the risk of a price squeeze. BT Group is ultimately responsible for compliance with its SMP obligations and, as such, its downstream divisions will need to have regard to the pricing of WLR by Openreach in setting the prices of downstream products.

7.107 In our view, the remedies imposed for the narrowband access markets are appropriate having regard to BT's section 89C Notification which, like the Undertakings in previous reviews, will complement the SMP regulation that we are imposing on BT. We do not consider that any new SMP regulation is necessary specifically to take account of these arrangements, or that any of our remedies are now unnecessary or require amendment.

[437] Openreach response to 2016 NMR Consultation, paragraph 57.

8. Remedies on BT: WFAEL, WCO, ISDN30 and ISDN2

8.1 In Section 6, we determine that BT has SMP in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area and that KCOM has SMP in the corresponding four markets in the Hull Area.

8.2 In this section, we set out our decisions to impose certain remedies on BT in the relevant markets. We set out our decisions to impose remedies on KCOM in the corresponding four markets in the Hull Area in Section 11.

8.3 As explained in Section 7, the remedies are designed to address our competition concerns associated with our finding that BT has SMP in each of the relevant markets.

Summary of decisions

8.4 We have decided to maintain a number of the current remedies in the WFAEL, WCO, ISDN30 and ISDN2 markets, as imposed on BT in the 2013 NMR and the 2014 FAMR. The remedies we are imposing include the requirement to provide general network access on fair and reasonable terms and specific access requirements in the form of WLR in the WFAEL, ISDN30 and ISDN2 markets.

8.5 We also impose charge controls for ISDN30 and ISDN2 (set out in more detail in Section 9) and quality of service remedies for the WFAEL, ISDN30 and ISDN2 markets (set out in more detail in Section 10).

8.6 We are reducing regulation on BT in recognition of market developments and the reduction in market power that we have observed. The changes we are making include:

- removing charge controls and replacing them with a fair and reasonable charges obligation in each of the WFAEL and WCO markets;
- removing most remedies on new lines in the ISDN30 and ISDN2 markets (after a transitional period of 12 months);
- removing the requirement not to unduly discriminate in the WCO market;
- removing the new forms of access requests remedy in all four markets; and
- removing the requirement to notify technical information in all four markets.

8.7 Table 8.1 summarises the remedies we are imposing on BT in the WFAEL and WCO markets. Table 8.2 summarises the remedies we are imposing on BT in the ISDN30 and ISDN2 markets.

Table 8.1: Summary of the remedies imposed on BT in the WFAEL and WCO markets in the UK excluding the Hull Area

	2013 NMR and/or 2014 FAMR remedies	Remedies imposed
WFAEL	Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requests for new forms of network access Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation Cost accounting Quality of service: transparency and quality of service standards	Provide network access on reasonable request Provide specific network access in the form of WLR Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting Quality of service: transparency and quality of service standards
WCO	Charge control Provide network access on reasonable request Requests for new forms of network access Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation Cost accounting Quality of service: transparency	Provide network access on reasonable request Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting

Table 8.2: Summary of the remedies imposed on BT in the ISDN30 and ISDN2 markets in the UK excluding the Hull Area

	2014 FAMR remedies	Remedies imposed in the transitional period	Remedies imposed after the transitional period
ISDN30	<u>**All lines**</u> Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requests for new forms of network access Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation Cost accounting Quality of service: transparency	<u>**All lines**</u> Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting Quality of service: transparency	<u>**All lines**</u> Accounting separation Cost accounting <u>**Existing lines**</u> Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Quality of service: transparency
ISDN2	<u>**All lines**</u> Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requests for new forms of network access Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation Cost accounting Quality of service: transparency	<u>**All lines**</u> Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting Quality of service: transparency	<u>**All lines**</u> Accounting separation Cost accounting <u>**Existing lines**</u> Charge control Provide network access on reasonable request Provide specific network access in the form of WLR Requirement not to unduly discriminate and EOI Publish a Reference Offer Notify changes to charges Quality of service: transparency

8.8 We consider that these remedies address the different competition concerns we have identified in Section 7, are consistent with our statutory duties and satisfy the relevant legal tests. In reaching these decisions we have taken account of responses to the 2016 NMR Consultation[438], recent developments in the relevant markets, the maturity of the technology and expected developments over the course of the review period.

New ISDN lines: definition and transitional period

8.9 In Section 7, we set out our overall approach to regulating ISDN30 and ISDN2, and our decision to distinguish between new and existing lines when applying regulation. In this section, we first explain our definition of new lines and our decision on a transitional period before the new approach is implemented, before setting out each of the remedies we have decided to impose.

Definition of new lines

8.10 We define new ISDN lines as lines which require a new installation at the end customer's premises, rather than the connection of additional channels to an existing installed line. BT sells ISDN30 rentals by channel (with a minimum of eight channels), with each line providing up to 30 channels, so new channels can be added to existing lines. The case is simpler for ISDN2; each line provides exactly two channels, so any additional channel capacity requires a new ISDN2 line to be installed. BT agreed with this definition of new lines.[439]

8.11 We will continue to regulate new channels connected on existing lines during the market review period. The number of channels provided over an ISDN30 line can be increased via a configuration change, i.e. without the need to alter the physical connection between the exchange and the customer's premises, including the associated equipment at each end. BT's current charging structure for new ISDN30 channels is not designed to reflect cost causation. Therefore, given that the per channel connection cost could have been instead recovered through the installation charge and/or annual line rental, the latter of which is covered by our regulation of existing lines, we consider it appropriate to continue to regulate channel connections.

Transitional period

8.12 We will continue to regulate new ISDN lines for a transitional period of 12 months from the start of the market review period in order to provide telecoms providers with the opportunity to complete any ongoing contract negotiations (i.e. negotiations that have started before publishing this statement). Such a period is designed to limit the potentially negative impact on providers that currently use wholesale ISDN services and prevents BT stopping downstream competitors from accessing services or those competitors having

[438] We have also taken into account responses to the 2017 Quality of Service Consultation in relation to the March 2008 SLG Directions.

[439] Openreach response to 2016 NMR Consultation, paragraph 49.

their access suddenly restricted or provided on less favourable terms. Specifically, a transitional period is important to ongoing contract negotiations as it stops BT from changing the terms and conditions during the negotiations, thereby preventing the cost of negotiations from increasing.

8.13 For the transitional period, we will maintain the general and specific access remedies, and impose charge controls (see Section 9) for all ISDN lines. However, from 1 December 2018, the remedies below (with the exception of accounting separation and cost accounting) and the charge controls will only apply to existing ISDN lines. [✂] raised a concern that new lines ordered in the transitional period, but delivered after it, would be treated as new lines for the review period.[440] We therefore clarify that new lines ordered within the transitional period will be treated as existing lines for the remainder of the review period.

8.14 [✂] argued that the transitional period should be longer than 12 months, given that telecoms providers' budgets may be set in advance of the financial year.[441] However, we are publishing this statement well in advance of the start of the 2018/19 financial year, with the 12-month transitional period ending several months before the end of that financial year. Also, noting that no other stakeholder raised this concern, we consider that a period of 12 months following the publication of the statement provides sufficient opportunity to complete any contract negotiations that have already commenced.

8.15 BT also responded to our proposal for a transitional period, but suggested that we should limit the period to six months.[442] This was on the basis that, from the date of publishing the 2016 NMR Consultation, telecoms providers would have well over 12 months' notice of the change of regime. While the consultation would have made stakeholders aware of the approach we intended to take in this statement, our consultation proposals did not provide sufficient certainty on our final decisions to be regarded as notice. We therefore disagree with BT and conclude that a transition period of 12 months is necessary to provide sufficient opportunity to complete any contract negotiations that have already commenced.

Remedies on BT

8.16 In this subsection, we set out the remedies we impose on BT in the WFAEL, WCO, ISDN30 and ISDN2 markets.

8.17 We set out each remedy in turn, explaining:

- our proposals as set out in the 2016 NMR Consultation;
- the aim and effect of the regulation we are setting;
- stakeholder responses to our proposals;
- our reasoning and decisions; and
- our consideration of the relevant legal tests for the regulation we are setting.

---

440 [✂]
441 [✂]
442 Openreach response to 2016 NMR Consultation, paragraph 51.

Requirement to provide network access on reasonable request

Proposed remedies

8.18 We proposed an SMP obligation requiring BT to provide network access where a third party reasonably requests it in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the transitional period and subsequently for existing ISDN lines only). The proposed condition would require BT to provide network access on fair and reasonable terms, conditions and charges.

8.19 With regard to the fair and reasonable charging obligation in the WFAEL, WCO, ISDN30 and ISDN2 markets, we proposed adopting an approach to the evaluation of costs and margins consistent with the margin squeeze test under *ex post* competition law. In the ISDN30 and ISDN2 markets, we also proposed for the obligation to protect against excessive pricing, in the event that no other charge control does.[443]

8.20 In the ISDN markets, we considered the obligation is necessary for all lines in the first 12 months only (and not for new lines thereafter) to enable telecoms providers which currently use wholesale ISDN services to complete existing contract negotiations. This would prevent BT stopping telecoms providers from accessing ISDN services or having their access suddenly restricted or provided on less favourable terms.

8.21 We did not propose to apply the general network access remedy to new ISDN lines (and subsequent rentals) after the transitional period.

8.22 In the WFAEL, ISDN30 and ISDN2 markets, we proposed to retain the provision from the 20 March 2008 Directions relating to quality of service.[444]

Aim and effect of regulation

8.23 An obligation requiring BT to provide network access to third parties on reasonable request is necessary to protect effective competition in downstream markets. We consider that, in the absence of such a requirement, BT would have an incentive and the ability to refuse access at the wholesale level, thereby benefiting its own downstream operations with the effect of hindering sustainable competition on the corresponding downstream markets, ultimately against consumers' interests.

Stakeholder responses to our proposals

Fair and reasonable charges: WFAEL and WCO

---

[443] This obligation applies to ancillary services which are linked to existing ISDN lines and are not subject to the charge controls. It would also apply to existing lines services in the event that the charge controls expire before the completion of the next market review.

[444] Ofcom, 2008. *Service level guarantees: incentivising performance – Statement and Directions*. https://www.ofcom.org.uk/__data/assets/pdf_file/0020/33617/statement.pdf.

8.24 Stakeholder responses to our proposal not to impose charge controls in the WFAEL and WCO markets are discussed in Section 7.

8.25 BT expressed concern about how the obligation would interact with any retail price constraint on access to, and calls from, standalone landlines.[445] In relation to the assessment of a price squeeze in the WFAEL market, BT considered that the focus should be on defined downstream markets and, where there are bundles of services from multiple markets, Ofcom should assess the combined costs and revenues of the bundles.[446] Vodafone raised a concern that price squeeze is a "highly complex problem to identify", noting that this is particularly true where services are sold in bundles.[447]

8.26 Vodafone further questioned whether a margin squeeze test was the best remedy for dealing with a margin squeeze concern. It argued that as a margin squeeze test is an *ex post* assessment of whether a breach of an *ex ante* remedy has taken place, it does not provide competitors with price certainty, impairing effective competition. It added that a fair and reasonable obligation is too slow to enforce and it can be difficult to establish a breach.[448]

8.27 Verizon and UKCTA made similar arguments, stating that we should impose reporting requirements on BT as otherwise its compliance cannot be monitored and scrutinised.[449] TalkTalk also commented on the need for Ofcom to proactively enforce BT's obligations not to margin squeeze its rivals.[450]

8.28 Verizon said if we do decide to adopt a fair and reasonable pricing obligation, then it expects guidance on its interpretation, to ensure some protection from excessive pricing (e.g. WLR to track MPF prices, cost orientation).[451]

8.29 Separately, TalkTalk suggested we should require BT to apply geographically averaged charges to its provision of WFAEL and WCO. It argued that our proposed pricing regulation would fail to adequately protect consumers in rural and unbundled areas from being exploited by BT.[452]

Fair and reasonable charges: ISDN30 and ISDN2

8.30 Stakeholder responses to our proposal not to impose a network access obligation and pricing regulation on new ISDN30 and ISDN2 lines after the transitional period are also discussed in Section 7.

---

[445] BT response to 2016 NMR Consultation, paragraph 5.11; Openreach response to 2016 NMR Consultation, paragraph 5.
[446] Openreach response to 2016 NMR Consultation, paragraph 61.
[447] Vodafone response to 2016 NMR Consultation, part 2, paragraph 4.23.
[448] Vodafone response to 2016 NMR Consultation, part 2, paragraphs 4.6-4.9.
[449] Verizon response to 2016 NMR Consultation, paragraph 24; UKCTA response to 2016 NMR Consultation, paragraph 10.
[450] TalkTalk response to 2016 NMR Consultation, paragraphs 2.17.
[451] Verizon response to 2016 NMR Consultation, paragraph 29.
[452] TalkTalk response to 2016 NMR Consultation, paragraphs 2.16 and 3.10.

8.31 BT considered that its pricing should not be subject to more than one form of pricing regulation, stating that imposing the fair and reasonable charges obligation (in addition to charge controls) on existing lines will not provide any additional benefit for customers.[453]

Our reasoning and decisions

8.32 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide such network access as Ofcom may from time to time direct. These conditions may, pursuant to section 87(5), 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 in the conditions are complied with within periods and at times required by or under the conditions. Section 87(9) of the Act also authorises the imposition of SMP conditions on the dominant provider which include: such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network or with the availability of relevant facilities; and such rules as they may make in relation to those matters about the recovery of costs and cost orientation. In each case, in setting such conditions Ofcom must be satisfied that the conditions about network access pricing set out in section 88 of the Act are also satisfied.[454]

8.33 We have decided that it is appropriate to impose an SMP condition requiring BT to provide network access where a third party reasonably requests it in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the transitional period and subsequently for existing ISDN lines only). We consider that the obligation is necessary to protect effective competition in downstream markets by ensuring that BT cannot refuse access at the wholesale level, thereby hindering competition and ultimately against consumers' interests.

8.34 The condition will require BT to provide network access on fair and reasonable terms, conditions and charges. Regarding charges, we are adopting an approach to the evaluation of costs and margins consistent with that which would be adopted under *ex post* competition law.

8.35 For all four markets, we consider that it is appropriate for this SMP condition to include 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, where applicable, charges for providing third parties with network access. The condition includes

[453] Openreach response to 2016 NMR Consultation, paragraph 72.
[454] Section 88(1) requires that an SMP condition falling within section 87(9) can only be imposed where (a) it appears to Ofcom from the market analysis carried out for the purposes of setting the condition that there is a relevant risk of adverse effects arising from price distortion and (b) it also appears to them that setting the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on end-users of public electronic communications services. Section 88(2) requires that Ofcom takes account of the extent of investment in the maters to which the condition relates by the person to whom it is applied. Section 88(3) states that there is a relevant risk of adverse effects arising from price distortion if the dominant provider (a) fixes or maintains some or all of its prices at an excessively high level or (b) imposes a price squeeze, in each case, so as to have adverse consequences for end-users of public electronic communications services.

a requirement for the dominant provider to comply with any such direction(s), so any contravention of a Direction would constitute a contravention of the condition itself and would therefore be subject to enforcement action under sections 94-104 of the Act.

8.36 In contrast to what we proposed, the SMP conditions for BT in the WFAEL market and for new and existing ISDN30 and ISDN2 lines outside the Hull Area will no longer include provision for the Directions of 20 March 2008 relating to quality of service to apply for the period of this market review. As set out in Section 10, we have decided that it is not necessary or appropriate to reimpose the 2008 SLG Directions for WFAEL, ISDN30 and ISDN2. Rather, we have decided to include key elements of those directions in the requirement on BT to publish a Reference Offer in respect of these markets. The Reference Offer must include specific service level commitments on the availability of the relevant operational support systems (by which requests for service provision, transfers and fault repair as applicable are made) and a provision for SLG payments to be made on a proactive basis.

Fair and reasonable charges: WFAEL and WCO

8.37 In Section 7 we explain our decision not to impose charge controls in the WFAEL and WCO markets.

8.38 We are imposing a fair and reasonable charging obligation on BT in the WFAEL and WCO markets to address the competition concerns identified in Section 7.

8.39 We are adopting an approach to the evaluation of costs and margins consistent with the margin squeeze test under *ex post* competition law. We impose this *ex ante* SMP fair and reasonable pricing obligation on BT to enable us to intervene in the event that BT sets prices which amount to a price squeeze. This will enable us to intervene more quickly in the event that BT sets prices which amount to a price squeeze. We consider this is an effective remedy for dealing with a price squeeze competition concern, and the imposition of wholesale charge controls would be a disproportionate intervention for dealing with this risk. We do not consider it appropriate to provide alternative guidance on the fair and reasonable pricing obligation, in order to protect against wholesale price increases (as suggested by Verizon) given we have not identified that as a competition concern likely to harm end consumers.

8.40 All WLR charges (including ancillary services) are subject to the fair and reasonable charges obligation. This includes BT's wholesale charges for Caller Line Identification (CLI), which was previously subject to a charge control. CLI is a service that enables the telephone number of a person making a call to be displayed to the recipient of the call. This gives the recipient the ability to identify the person or organisation calling them, and to make informed decisions about how to handle incoming calls. It also assists regulators and enforcement bodies with the identification, tracing and prevention of nuisance calls.

8.41 In the 2016 NMR Consultation we noted Ofcom's view that this service should be provided to retail consumers at no additional charge to the retail line rental (as most retail providers already do) and we said we were considering how this might be achieved through other regulation. We have since carried out a review of the General Conditions and decided to amend the wording of GC 16 to make it clearer that CLI facilities must be provided unless a telecoms provider can show it is not technically feasible to do so, and to clarify that providers cannot charge retail consumers for the use of these facilities.[455]

8.42 In light of these requirements, it would not be appropriate to adopt an approach to the evaluation of wholesale costs and margins consistent with *ex post* competition law for CLI on a standalone basis, as BT (and other wholesale telecoms providers) will be unable to make a positive margin on the provision of CLI. We recognise that providers might reasonably pass the wholesale costs of providing CLI on to consumers through other charges, such as line rental. Therefore, BT's wholesale costs and charges for CLI will be assessed as part of any broader evaluation of the costs and margins for WLR under the fair and reasonable charging obligation we are imposing.

8.43 BT was concerned about how the fair and reasonable charges obligation would interact with our proposed requirement in the SLTS review for retail prices to be reduced for voice-only lines. BT has now voluntarily announced it will reduce line rental prices for its voice-only customers by £7 per month and freeze the real prices of these lines and calls for the next three years. We consider that BT should be able to reduce retail prices and comply with a no price squeeze requirement, and trade profitably. Furthermore, BT will have wholesale pricing flexibility for all WLR lines (not just lines that support BT's residential voice-only customers) so far as the wholesale charges it sets do not amount to a price squeeze. BT's pricing flexibility in WLR should therefore enable it to adjust for any increase in its wholesale costs and the retail price reductions have been set in recognition of current and future retail costs of serving voice only customers.

8.44 BT also expressed its belief that the focus of any margin squeeze assessment should be on defined downstream markets and we should assess the combined costs and revenues of bundles including voice services. While an assessment of BT's compliance with the wholesale fair and reasonable charging obligations would look at relevant downstream markets, we emphasise that the purpose of the fair and reasonable charges obligation is to protect existing competition. For example, we would be concerned about a price squeeze in relation to the business segment of the market, regardless of whether it formed a separate downstream market to the residential segment; there is existing competition in relation to the business segment of the market and we are imposing a fair and reasonable charges obligation in order to protect it.

8.45 In response to Vodafone's concern about the assessment of a margin squeeze in the WFAEL and WCO markets where services are bundled together, the scope of our assessment would depend on the nature of the conduct which has allegedly resulted in the margin squeeze. We acknowledge that a margin squeeze assessment may provide less certainty than a cost-based charge control, but we do not consider that is sufficient reason to impose a charge control when our aim is to protect existing competition.

---

[455] Ofcom, 2017. *Review of the General Conditions of Entitlement – Statement and Consultation*, Section 13. https://www.ofcom.org.uk/__data/assets/pdf_file/0026/106397/Statement-and-Consultation-Review-of-the-General-Conditions-of-Entitlement.pdf.

8.46 Vodafone questioned the suitability of a margin squeeze test for dealing with our competition concern, arguing that it does not provide competitors with pricing certainty and thus has a negative impact on competition. However, as we outlined in Section 7, we are adopting this approach to price regulation in recognition of BT's reduced market power and increased competition in the WFAEL and WCO markets. Furthermore, while we note that wholesale pricing uncertainty can be a feature of competitive markets, telecoms providers will have certainty that the wholesale charge allows an equally efficient operator (EEO) to make a retail margin. In the WFAEL market, the no undue discrimination obligation will ensure that all providers, including BT, will pay the same wholesale charge. This should provide sufficient certainty in the context of our market analysis.

8.47 We are not imposing specific *ex ante* reporting remedies on BT to demonstrate its compliance with the fair and reasonable charges obligation. Given BT's reduced market power in the WFAEL and WCO markets and our objective of protecting rather than promoting competition, we consider we will be able to enforce the fair and reasonable charges obligation without such reporting remedies. To impose such reporting in addition to the accounting separation and cost accounting remedies in the context of this review would therefore be unnecessary.

8.48 Nevertheless, BT must ensure compliance with all its regulatory obligations, including in relation to wholesale pricing of WFAEL and WCO. While we would assess BT's compliance (either in a dispute or part of any enforcement action) on the relevant facts, our starting point for evaluating costs and margins would be, as set out above, to take an approach consistent with that which would be adopted under *ex post* competition law.[456]

8.49 We recognise that assessing compliance with the obligation imposed is more complex than assessing compliance with a charge control. However, in light of our market analysis, we remain of the view that a fair and reasonable charging obligation is the appropriate and proportionate form of pricing regulation to impose in the WFAEL and WCO markets. We have been clear on the nature of the assessment we would undertake – an assessment of costs and margins consistent with that which would be adopted under *ex post* competition law – and there is a substantial body of case law on this matter. Furthermore, the fact we have defined markets for WFAEL and WCO and found BT to hold SMP limits the issues we would need to consider in any assessment of BT's compliance with this obligation as compared to the assessment we would undertake under *ex post* competition law.

8.50 TalkTalk suggested we impose a national wholesale pricing obligation in the WFAEL and WCO markets to ensure that BT applies geographically averaged prices. While we recognise that BT has a varying degree of market power across geographic areas, we do not anticipate that it will vary wholesale prices in order to target increases on rural areas and areas without fully unbundled exchanges. As discussed in Section 4, while we

[456] When we resolve a regulatory dispute under the Act, our decision is binding only on the parties in dispute. However, we would expect dispute determinations to be read across and followed as appropriate. If we were to determine that BT had not complied with a fair and reasonable charging obligation, we would expect BT to take account of our conclusions in negotiations with telecoms providers other than the parties to such a dispute (to the extent that they are relevant).

recognise there may be differences in wholesale competitive conditions between on-net and off-net areas, we consider that BT's retail-level Universal Service Conditions are likely to carry over to uniform pricing at the wholesale level.[457] Hence we do not consider it necessary to impose further regulation as suggested by TalkTalk.

Fair and reasonable charges: ISDN30 and ISDN2

8.51 We impose a fair and reasonable obligation on all charges for existing ISDN30 and ISDN2 lines (and for all ISDN lines during the transitional period).

8.52 Our competition concerns in the ISDN30 and ISDN2 markets are price squeeze and excessive pricing. While our charge controls in these markets seek to address our concerns regarding excessive pricing, they may not be sufficient to address the risk of a price squeeze. We therefore disagree with BT's suggestion that it should not be subject to more than one form of price regulation. For this reason, as part of the wider general access obligation, we impose an obligation on BT to provide ISDN30, ISDN2 and ancillary services on fair and reasonable charges.

8.53 As for the WFAEL and WCO markets, we are adopting an approach to the evaluation of costs and margins for ISDN30 and ISDN2 consistent with the margin squeeze test under *ex post* competition law.

8.54 Our fair and reasonable charges obligation in the ISDN30 and ISDN2 markets will also apply to existing lines in the event that no other charge control does, i.e. on ancillary services which are linked to existing lines and are not subject to the charge control, or in the event that the charge control on existing lines expires before the completion of the next market review.[458] In these two scenarios, our fair and reasonable charging obligation is further intended to protect against the risk of excessive wholesale pricing.

8.55 We consider that the requirement for charges to be fair and reasonable, in addition to our charge controls, is sufficient to address our concerns regarding a price squeeze and excessive pricing.

8.56 As in the WFAEL and WCO markets, BT must ensure compliance with all its regulatory obligations, including in relation to fair and reasonable pricing of ISDN access lines. We would expect any dispute determinations in respect of this obligation to be read across and followed as appropriate in BT's discussions with CPs other than the parties to such a dispute, to the extent that they are relevant.

[457] See Section 4 for further discussion of this issue and our decision to define a single geographic market for WFAEL in the UK excluding the Hull Area.

[458] In its consultation response, BT noted that our proposal for a fair and reasonable obligation in the ISDN30 and ISDN2 markets to "apply in the event that no other control does, i.e. on new services not subject to the proposed charge control" could be interpreted to apply to new services connected after the transitional period. We clarify that the application of the obligation to "new services" is restricted to any new ancillary services (e.g. new care levels) which are linked to existing lines, rather than to new lines. See Openreach response to 2016 NMR Consultation, paragraph 50.

Legal tests

8.57 For the reasons set out below, we are satisfied that the network access condition for BT in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, sections 87(3) and (9) authorise the SMP condition we are imposing.

8.58 In setting these conditions, we have taken into account the factors set out in section 87(4) of the Act. When considering the imposition of such conditions in a particular case, we must take into account the following six factors set out in section 87(4):

- the technical and economic viability (including the viability of other network access products, whether provided by the dominant provider or another person), having regard to the state of market development, of installing and using facilities that would make the proposed network access unnecessary;
- the feasibility of the provision of the proposed network access;
- 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 (taking account of any public investment made);
- the need to secure effective competition (including, where it appears to Ofcom to be appropriate, economically efficient infrastructure-based competition) in the long-term;
- any rights to intellectual property that are relevant to the proposal; and
- the desirability of securing that electronic communications services are provided that are available throughout the Member States.

8.59 In reaching our decision that BT should be subject to a requirement to provide network access on reasonable request, we have taken all of the above six factors into account. In particular, having considered the economic viability of building access networks to achieve ubiquitous coverage that would make the provision of network access unnecessary, we consider that the SMP condition is required to secure effective competition in the WFAEL, WCO, ISDN30 and ISDN2 markets. The requirements for BT to meet only reasonable network access requests also ensures that due account is taken of the feasibility of the proposed network access, and of the investment made by BT initially in providing the network.

8.60 In imposing a fair and reasonable charges obligation, we are also required to ensure that each condition satisfies the tests set out in section 88 of the Act.

8.61 Section 88(1)(a) of the Act requires that Ofcom must not impose pricing conditions unless it appears, from the market analysis carried out for the purpose of setting that condition, that there is a relevant risk of adverse effects arising from price distortion. We discuss in Section 7 that it appears to us from the market analysis carried out that there is a relevant risk of adverse effects arising from price distortion in that BT might:

- in all four markets impose a price squeeze; and
- in the ISDN markets fix or maintain some or all of its prices for existing lines at an excessively high level;

in each case so as to have adverse consequences for end users of public electronic communications services.

8.62 Section 88(1)(b) of the Act requires that the pricing condition should be appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on consumers of public electronic communications services.

8.63 In the case of WFAEL and WCO, where we do not impose another form of pricing obligation, we consider that a fair and reasonable charging obligation will prevent BT from setting charges that amount to a price squeeze. In addition, the obligation will prevent BT from charging excessively high prices in the ISDN30 and ISDN2 markets where no charge control applies. In this way, this condition supports the aim of improved efficiency and sustainable competition.

8.64 We consider that the provision of network access on fair and reasonable terms will promote competition by ensuring that there is no distortion or restriction of competition and that other telecoms providers can effectively compete at the downstream level.[459] We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on consumers of the services.

8.65 We are also required, under Section 88(2) of the Act, to take account of the extent of BT's investment in the matters to which each condition relates. We believe that a fair and reasonable charges obligation will not impact BT's investment in any of the WCO or wholesale access markets in that it allows BT's costs to be taken into account and also provides for common cost recovery.

8.66 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

8.67 We have considered our duties under section 3 of the Act. We consider that this condition furthers the interests of consumers in relevant markets by the promotion of competition.

8.68 We also consider that each condition meets the Community requirements as set out in section 4 of the Act. Each condition will promote competition in relation to the provision of electronic communications networks and encourage the provision of network access and service interoperability in markets for electronic communication networks and services.

8.69 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

8.70 In the WFAEL and WCO markets, and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that in each of the markets it facilitates access to BT's network and therefore protects competition to the ultimate benefit of consumers;

[459] Article 8(2) of the Framework Directive provides that national regulatory authorities shall promote competition including by ensuring that there is no distortion or restriction of competition in the electronic communications sector.

- not unduly discriminatory, in that it is imposed on BT and no other telecoms provider has been found to hold a position of SMP in these markets in the UK excluding the Hull Area;
- proportionate, in that it is targeted at addressing the market power that BT holds in these markets, does not require it to provide access if it is not technically feasible or reasonable; and
- transparent, in that the condition is clear in its intention to ensure that BT provides access to its network in order to facilitate effective competition.

8.71 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it enables a period of access to BT's network under the current regulatory framework in order to allow the completion of existing contract negotiations;
- not unduly discriminatory, in that it is imposed on BT and no other telecoms provider has been found to hold a position of SMP in these markets in the UK excluding the Hull Area;
- proportionate, in that it is imposed for a limited time only, is targeted at addressing the market power that BT holds in these markets and does not require BT to provide access if it is not technically feasible or reasonable; and
- transparent, in that the condition is clear in its intention to ensure that telecoms providers have the opportunity to complete any ongoing contract negotiations.

8.72 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding markets, in line with section 87(1) of the Act.

Provide specific network access in the form of WLR

Proposed remedies

8.73 We proposed that BT should be required to offer WLR in the WFAEL, ISDN30 and ISDN2 markets, including such ancillary services as are reasonably necessary, on fair and reasonable terms and conditions and charges.

8.74 We also proposed a specific access remedy to address BT's SMP in each of the ISDN markets. BT would be required to continue to make available the ISDN WLR product for existing lines, which allows other telecoms providers to compete with BT in the provision of retail ISDN services on an equivalent basis. This obligation would not apply to the provision of new lines after the transitional period.

Aim and effect of regulation

8.75 Specific access services are sold by BT to competing telecoms providers. They are aimed at providing retail consumers (both residential and business) with access to narrowband telephony services.

Stakeholder responses to our proposals

8.76 Stakeholders did not comment on our proposal to require BT to provide specific network access in the form of WLR in the WFAEL, ISDN30 and ISDN2 markets.

Our reasoning and decisions

8.77 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide such network access as Ofcom may from time to time direct. These conditions may, pursuant to section 87(5), 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 in the conditions are complied with within the periods and at the times required by or under the conditions.

8.78 We have decided that it is appropriate to impose a requirement on BT to offer WLR in the WFAEL, ISDN30 and ISDN2 markets, together with such ancillary services as may be reasonably necessary for the use of these services.

8.79 We expect there to be continued material demand for WLR during the forward look period of our review and that the services will remain important for competition. In the absence of a regulatory requirement to provide access to BT's infrastructure for the purposes of providing retail services, BT would have the incentive and ability to refuse access to these services at the wholesale level and thereby favour its own retail operations. This would have the effect of hindering competition in the corresponding downstream markets, ultimately against consumers' interests.

8.80 In Section 4, we explain that there are certain groups of interest which are more reliant on services based on BT's WLR and WCO, and these customers account for a significant share of retail lines and are likely to continue to do so during the review period.

Specific access for WFAEL

8.81 For the reasons set out above, we propose to require BT to offer WLR in the WFAEL market, together with such ancillary services as may be reasonably necessary for the use of that service. The condition is set out in full in Annex 9.

8.82 This obligation when combined with the requirement to provide network access on reasonable request requires the provision of WLR services, together with ancillary services which are reasonably necessary for its use, on fair and reasonable terms, conditions and charges.

Specific access for ISDN30 and ISDN2

8.83 As noted in Section 5, while the ISDN30 and ISDN2 markets are gradually declining, there remains demand for wholesale services and we expect this to continue during the period of this market review.

8.84 Therefore, we have decided to impose a WLR remedy to address BT's SMP in each of the ISDN markets. BT will be required to continue to make available the ISDN WLR product for existing lines, which allows other telecoms providers to compete with BT in the provision of retail ISDN services on an equivalent basis. This obligation will not apply to the provision of new lines after the transitional period.

8.85 This obligation also requires the provision of ancillary services which are reasonably necessary for the use of the ISDN30 or ISDN2 WLR. We consider the ancillary services which are reasonably necessary for the use of BT's ISDN30 and ISDN2 WLR services include connections and transfers.

Legal tests

8.86 We consider that the obligations to provide analogue WLR and ISDN WLR services, together with such ancillary services as may be reasonably necessary for the use of those services, are appropriate and satisfy the legal tests set out in the Act. As explained above, section 87(3) authorises the SMP condition we are imposing.

8.87 In setting each condition, we have taken into account the factors set out in section 87(4) of the Act. When considering the imposition of such conditions in a particular case, we must take into account the following six factors set out in section 87(4):

- the technical and economic viability (including the viability of other network access products, whether provided by the dominant provider or another person), having regard to the state of market development, of installing and using facilities that would make the proposed network access unnecessary;
- the feasibility of the provision of the proposed network access;
- 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 (taking account of any public investment made);
- the need to secure effective competition (including, where it appears to Ofcom to be appropriate, economically efficient infrastructure-based competition) in the long-term;
- any rights to intellectual property that are relevant to the proposal; and
- the desirability of securing that electronic communications services are provided that are available throughout the Member States.

8.88 In reaching our decision that BT should be subject to a requirement to provide network access on reasonable request, we have taken all of the above six factors into account. In particular, we consider that there is no alternative network on which the provision of analogue or digital WLR appears likely over this review period. Further, we consider that it is entirely feasible for BT to be required to provide analogue WLR and ISDN WLR in light of its widespread existing provision.

8.89 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

8.90 We have considered our duties under section 3 of the Act. In particular, we consider that each condition furthers the interests of citizens in relation to communications matters and furthers the interests of consumers in relevant markets in line with section 3 of the Act by encouraging competition in fixed narrowband services at the retail level.

8.91 We also consider that each condition meets the requirements set out in section 4 of the Act. As noted above, each condition promotes competition in relation to the provision of electronic communications networks and services by enabling providers to compete in downstream markets.

8.92 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

8.93 In the WFAEL market, and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that it seeks to support and protect competition in downstream markets for the benefit of consumers and removing the obligation may result in BT withdrawing the product or otherwise changing it to the detriment of the existing level of downstream competition that has developed;
- not unduly discriminatory, in that the condition aims to address BT's market power only in the market in which we find that BT has SMP (namely, the UK excluding the Hull Area);
- proportionate, in that it is necessary to enable competition but is not unduly burdensome on BT and, in particular, the requirement to provide ISDN WLR will only apply to existing lines after the transitional period (and not new lines after that period); and
- transparent, in that it is clear in its intention to ensure that BT provides analogue WLR and ISDN WLR services (and ancillary services which are reasonably necessary for their provision).

8.94 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it enables a period of access to BT's network under the current regulatory framework in order to allow the completion of existing contract negotiations;
- not unduly discriminatory, in that it is imposed on BT and no other telecoms provider has been found to hold a position of SMP in these markets in the UK excluding the Hull Area;
- proportionate, in that it is imposed for a limited time only, is targeted at addressing the market power that we have identified that BT holds in these markets and does not require BT to provide access if it is not technically feasible or reasonable; and
- transparent, in that the condition is clear in its intention to ensure that telecoms providers have the opportunity to complete any existing contract negotiations.

8.95 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding markets, in line with section 87(1) of the Act.

Requirement not to unduly discriminate and equivalence of inputs (EOI)

Proposed remedies

8.96 This obligation has different forms of implementation:

- a strict form of non-discrimination which would result in the SMP operator providing identical products and 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, known as EOI; and
- a less strict interpretation of non-discrimination allowing for flexibility in cases where it is justified, which we refer to as no undue discrimination.

8.97 We proposed that BT should continue to provide network access on an EOI basis in the WFAEL, ISDN30 and ISDN2 markets (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

8.98 We also proposed to retain the condition on BT not to unduly discriminate in relation to the provision of network access in the WFAEL, ISDN30 and ISDN2 markets.

8.99 We did not propose to apply the no undue discrimination and EOI obligation to the provision of new ISDN lines after the end of the transitional period as we did not propose a general network access obligation in relation to such lines.

8.100 We proposed to remove the no undue discrimination obligation in the WCO market.

Aim and effect of regulation

8.101 A non-discrimination obligation is intended to prevent the dominant provider from discriminating in favour of its own downstream divisions and, more generally, to ensure that competing providers are placed in an equivalent position. An EOI obligation removes any degree of discretion accorded to the nature of the conduct.

Stakeholder responses to our proposals

8.102 [✂], Sky, TalkTalk and Vodafone disagreed with our proposal to remove the no undue discrimination obligation on BT in the WCO market. We discuss their responses at the end of this section.

8.103 TalkTalk emphasised the need for Ofcom to enforce the requirement to provide network access on an EOI basis and to maintain the no undue discrimination obligation in the WFAEL market.[460] No other stakeholder commented on our proposal to maintain the requirement in the WFAEL, ISDN30 and ISDN2 markets (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

[460] TalkTalk response to 2016 NMR Consultation, paragraph 2.17.

Our reasoning and decisions

8.104 Section 87(6)(a) of the Act authorises the setting of an SMP 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 the provision of network access.

8.105 We have decided that it is appropriate that BT should continue to provide network access on an EOI basis in the WFAEL, ISDN30 and ISDN2 markets (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

8.106 This obligation applies to those services for which BT currently provides network access on an EOI basis. We consider that imposing EOI in these circumstances would not be onerous as it would not require BT to re-engineer existing systems and processes.

8.107 We have also decided to retain the condition on BT not to unduly discriminate in relation to the provision of network access in the WFAEL, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only). This is to ensure that there is appropriate non-discrimination protection to remedy the incentive and ability for BT to engage in discriminatory pricing and/or discriminatory non-pricing practices for those services provided currently that will not be subject to an EOI obligation, or for any new network access services not subject to an EOI obligation (for example, where we give our consent that EOI should not apply).

8.108 The no undue discrimination and EOI obligations do not apply to the provision of new ISDN lines after the end of the transitional period as we are not imposing a general network access obligation in relation to such lines after the transitional period.

8.109 We have also decided not to impose a no undue discrimination obligation (or any other form of non-discrimination remedy) in the WCO market based on our SMP analysis of the WCO market and conclusion that BT faces greater competitive pressures than at the time of the last review. Stakeholder responses and our reasoning are set out in more detail at the end of this section.

Legal tests

8.110 For the reasons set out below, we are satisfied that the condition for BT in each of the WFAEL, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, section 87(6)(a) authorises the SMP condition we are imposing.

8.111 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

8.112 We have considered our duties under section 3 of the Act. We consider that each condition furthers the interests of consumers in relevant markets by the promotion of downstream competition.

8.113 We also consider that each condition meets the Community requirements as set out in section 4 of the Act. Each condition encourages the provision of network access and service interoperability by ensuring that BT does not unfairly favour its own downstream businesses or particular third parties and therefore distort competition.

8.114 Section 47(2) requires such conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

8.115 In relation to WFAEL and existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that it provides safeguards to ensure competitors, and hence consumers, are not disadvantaged by BT discriminating in favour of its own downstream activities or between competing providers;
- not unduly discriminatory, in that the condition applies to BT which is the only telecoms provider which we find to have SMP in the relevant markets in the UK excluding the Hull Area;
- proportionate, in that it seeks to prevent discrimination that would adversely affect competition and ultimately cause detriment to consumers, is only applied in the WFAEL market and to existing ISDN services, and in relation to the requirement on BT to provide services on an EOI basis, that the requirement only applies where BT is already providing services on the basis of EOI; and
- transparent, in that the conditions are clear in what they are intended to achieve.

8.116 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it provides a period of protection for the completion of contract negotiations to ensure competitors, and hence consumers, are not disadvantaged by BT discriminating in favour of its own downstream activities or between competing providers;
- not unduly discriminatory, in that each condition applies to BT which is the only telecoms provider which we find to have SMP in the relevant markets in the UK excluding the Hull Area;
- proportionate, in that each condition seeks to prevent discrimination that would adversely affect competition and ultimately cause detriment to consumers, is only applied for a limited period of time, and in relation to the requirement on BT to provide services on an EOI basis, that requirement only applies where BT is already providing services on the basis of EOI; and
- transparent, in that each condition is clear in its intention to ensure that telecoms providers have the opportunity to complete any ongoing contract negotiations during the transitional period.

8.117 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Transparency

8.118 The requirements for the transparency of charges, terms and conditions in markets in which one operator is dominant are complementary remedies to ensure that third party telecoms providers are able to make effective use of the dominant provider's network access.

8.119 BT is currently subject to three transparency obligations in respect of its SMP in each of the relevant markets. They are:

- a requirement to publish a Reference Offer;
- a requirement to notify changes to charges in advance; and
- a requirement to notify technical information.

8.120 In the following subsections, we set out the requirements to publish a Reference Offer and to notify changes to charges. As we explain at the end of this section, we are not imposing a requirement on BT to notify technical information.

Publish a Reference Offer

Proposed remedies

8.121 We proposed to retain the condition on BT to publish a Reference Offer for its services in the WFAEL, WCO, ISDN30 and ISDN2 markets (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

8.122 We did not propose a requirement to publish a Reference Offer with regard to the provision of new ISDN lines after the end of the transitional period as we proposed a general network access obligation in relation to existing lines only.

8.123 The proposed requirement included publishing terms and conditions for provisioning, technical information, Service Level Agreements (SLAs) and Service Level Guarantees (SLGs) linked to specific services, and availability of co-location.

Aim and effect of regulation

8.124 The main reason for requiring the publication of a Reference Offer is to give visibility to the terms and conditions on which other providers can purchase WFAEL, WCO, wholesale ISDN30 and wholesale ISDN2 services, which complements the general network access remedy in each market.

Stakeholder responses to our proposals

8.125 Stakeholders did not comment on our proposal to require BT to publish a Reference Offer for its services in the WFAEL, WCO, ISDN30 and ISDN2 markets.

Our reasoning and decisions

8.126 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. Section 87(6)(c) of the Act 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. 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.

8.127 We have decided that it is appropriate to retain the condition on BT to publish a Reference Offer for its services in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for ISDN all lines in the first 12 months and subsequently for existing ISDN lines only). We are retaining the obligation to give visibility to the terms and conditions on which other providers can purchase wholesale services in order to enable faster negotiations and to help avoid possible disputes.

8.128 As we are giving BT more flexibility on terms and conditions in the WCO market by removing the no undue discrimination remedy, we consider that the requirement to publish a Reference Offer should apply to BT's standard contract in this market. While we acknowledge that some telecoms providers may negotiate terms and conditions that differ from BT's standard contract for the same services, we expect that others may continue to purchase on the standard terms and conditions, and therefore consider it is important for transparency for changes to BT's standard contract to be published.

8.129 The published Reference Offer in the WFAEL, WCO, ISDN30 and ISDN2 markets should include:

- a clear description of the services on offer including technical characteristics and operational processes for service establishment, ordering and repair;
- the locations of points of network access and the technical standards for network access;
- conditions for access to ancillary and supplementary services associated with the network access including operational support systems and databases etc.;
- contractual terms and conditions, including dispute resolution and contract negotiation/renegotiation arrangements;
- charges, terms and payment procedures; and
- SLAs and SLGs.

8.130 Except in the WCO market, where BT provides its downstream divisions with a form of network access that is different to the network access provided to other telecoms providers, and set out in a Reference Offer, BT must publish an additional Reference Offer setting out the details of the network access it provides to itself.

8.131 We retain the condition in relation to existing ISDN30 and ISDN2 lines after the transitional period so as to give visibility to any amendments to the terms and conditions of BT's network access. However, we are not imposing the condition on the provision of new ISDN lines after the end of the transitional period. This is because the main purpose of a

Reference Offer is to give visibility to the terms and conditions on which other providers can purchase new services and we are imposing a general network access obligation in relation to existing lines only after the transitional period.

8.132 We consider the obligation is necessary for all lines in the first 12 months to enable telecoms providers which currently use wholesale ISDN services to transition to the new regulatory framework and provide sufficient time for them to complete ongoing contract negotiations.

SLAs and SLGs

8.133 Contracts for the provision of services include SLAs which specify the standard that a given service is to be delivered to, for example, the timeliness of repair or provisioning. SLGs are the compensation payments linked in the contract to specific SLAs in the event that the service is not delivered to the standard set in that SLA.

8.134 Our regulation specifies a minimum set of services which must have associated SLAs and SLGs within the access Reference Offer contracts offered by Openreach (see SMP Condition 6 at Annex 9). However, Openreach and its customers are free to negotiate the terms of these SLAs and SLGs and to incorporate additional terms. Such negotiations would be subject to the fair and reasonable obligation we apply to BT with respect to access services and negotiations are, since the 2014 FAMR, facilitated by the Office of the Telecommunications Adjudicator (OTA2). The OTA2 facilitation process is subject to the principles and timeframes set out in the 2014 FAMR.[461] See Section 10 for a detailed explanation of the changes we are making to the 2008 Directions and Reference Offers in the WFAEL, ISDN30 and ISDN2 markets.

Legal tests

8.135 For the reasons set out below, we are satisfied that the condition for BT in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, sections 87(6)(b), (c), (d) and (e) authorise the SMP condition we are imposing.

8.136 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

8.137 We have considered our duties under section 3 of the Act. The requirement to publish a Reference Offer will facilitate service interoperability and protect existing entrants to a market by ensuring that services, and any changes, are transparent. Further, the obligation will enable purchasers to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. Finally, the obligation will make it easier for Ofcom and other telecoms providers in the relevant markets to monitor any instances of discrimination. Therefore, we consider that each condition in particular furthers the

---

[461] Ofcom, 2014. *Fixed Access Market Reviews Statement*, paragraphs 11.394-11.431. https://www.ofcom.org.uk/__data/assets/pdf_file/0032/78863/volume1.pdf.

interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.

8.138 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. In particular, each condition will protect competition, and encourage the provision of network access and service interoperability. The publication of a Reference Offer will mean that other telecoms providers would have the necessary information readily available to allow them to make informed decisions about entry into, and participation in, the market.

8.139 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

8.140 In the WFAEL and WCO markets, and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that it requires that terms and condition are published in order to encourage competition and provide stability in markets;
- not unduly discriminatory, in that the condition applies to BT which is the only telecoms provider which has SMP in the relevant markets in the UK excluding the Hull Area;
- proportionate, in that only information that is considered necessary to allow telecoms providers to make informed decisions about competing in downstream markets is required to be provided; and
- transparent, in that each condition, is clear in its intention that BT publish details of its wholesale service offerings.

8.141 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it provides regulatory and market stability by supporting a period of access under the current regulatory framework;
- not unduly discriminatory, in that the condition applies to BT which is the only telecoms provider which has SMP in the relevant markets in the UK excluding the Hull Area;
- proportionate, in that only information that is considered necessary to allow telecoms providers to make informed decisions about competing in downstream markets is required to be provided for the appropriate period of time; and
- transparent, in that each condition is clear in its intention to support telecoms providers to complete any existing contract negotiations.

8.142 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Notify changes to charges

Proposed remedies

8.143 We proposed that BT should be subject to an obligation to notify (by means of a written notice) changes to standard charges for wholesale network access in the WFAEL, WCO, ISDN30 and ISDN2 markets (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only). We considered that the notice periods imposed previously remain appropriate and proposed to apply the same notice periods to BT in the next market review period.

8.144 As we did not propose any form of price regulation on BT's provision of new ISDN lines after the transitional period, we did not consider it appropriate to propose an obligation to notify changes to charges for these lines after the transitional period.

Aim and effect of regulation

8.145 Notification of changes to charges at the wholesale level has the joint purpose of assisting transparency for the monitoring of potential anti-competitive behaviour and giving advance warning of charge 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 changes in charges at the wholesale level.

8.146 There may be some disadvantages to notifications, particularly in markets where there is some competition. It can lead to a 'chilling' effect where other telecoms providers follow BT's prices rather than act dynamically to set competitive prices. However, we do not consider, on balance, that this consideration undermines the rationale for imposing a notification of charges condition. Each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area is characterised to a varying extent by competitors' reliance on the provision of wholesale access products and services to enable them to compete in downstream markets. We therefore consider that the advantages of notifying charges are likely to outweigh any potential disadvantages.

Stakeholder responses to our proposals

8.147 TalkTalk responded to our proposal to maintain a 56-day notice period on BT in the WCO market, arguing that the period should be extended to 90 days for price increases of more than 5% in a year. TalkTalk suggested that 90 days would be more suitable because:

- 56 days is insufficient time for customers to change WCO supplier;
- a longer notice period would make BT less likely to increase wholesale charges; and
- given the removal of the no undue discrimination obligation, BT would be able to target rivals which are unable to switch provider quickly.

8.148 Stakeholders did not comment on our proposal for BT to notify changes to charges in the WFAEL, ISDN30 or ISDN2 markets.

Our reasoning and decisions

8.149 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. 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.

8.150 We consider it appropriate to retain an obligation on BT to notify (by means of a written notice) changes to standard charges for wholesale network access in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

8.151 As we are giving BT more pricing flexibility in the WCO market by imposing a fair and reasonable charges obligation (instead of a charge control) and removing the no undue discrimination remedy, the requirement to notify changes to charges only applies to BT's published standard wholesale charges in this market. While we acknowledge that some telecoms providers may negotiate WCO charges that differ from BT's standard wholesale charges for the same services, we expect that others may continue to rely on the standard wholesale charges. We therefore consider it is important for transparency for changes to BT's standard wholesale charges to be notified in advance. Regarding changes to charges which differ from BT's standard wholesale charges, we would expect telecoms providers to agree terms for changes to these charges on a commercial basis.

8.152 While we are allowing BT more pricing flexibility in the WFAEL market by imposing a fair and reasonable charging obligation (instead of a charge control), our decision to impose an EOI obligation will prevent BT from being able to offer different WLR prices to different telecoms providers.

8.153 In relation to ISDN30 and ISDN2, we consider the obligation is necessary for existing lines throughout the market review period and for all lines in the first 12 months only (and not to new lines thereafter). Retention of the notification requirement on all lines during the first 12 months will enable telecoms providers which currently use wholesale ISDN services to complete ongoing contract negotiations. If BT makes any changes to its ISDN charges (including connection charges) during this first 12 months, the notification requirement will provide certainty to telecoms providers about the wholesale charges during this time period.

8.154 A notice must include the following:

- a description of the network access in question;
- a reference as to where the terms and conditions associated with the network access in question can be found in the dominant provider's Reference Offer;
- the date on which the new charges take effect (or the period over which the new charges will apply);
- the current and proposed charge; and
- other charges for services that would be directly affected by the proposed charge.

8.155 Table 8.3 below details the specific notice periods we are imposing on BT in each market.

Table 8.3: Notice period requirements

	Relevant notice periods by market
WFAEL	**90 days** for changes to the WLR rental charge; **28 days** for price reductions and price changes relating to the end of a temporary[462] price reduction (both in relation to WLR rental charges); and **28 days** for changes to charges for all other services
WCO	**56 days** for changes to charges for standard wholesale charges
ISDN30	**28 days** for changes to charges for all services
ISDN2	**28 days** for changes to charges for all services

Notice periods in WFAEL

8.156 In light of our review of the WFAEL market, we consider that the existing notification periods remain appropriate. A 90-day notification period for increases in BT's WLR rental charge provides telecoms providers with the opportunity to plan for price increases in respect of the ongoing monthly charge[463], while a notification of 28 days for all other services provides flexibility.

Notice periods in WCO

8.157 In light of our decision to allow BT more pricing flexibility in the WCO market, we continue to consider that a 56-day notification period is appropriate, so that BT's notified price changes can be reflected in downstream prices by telecoms providers that rely on BT's standard wholesale charge.

8.158 In terms of the time required to change supplier following a price increase, while we agree with TalkTalk that 56 days may not give providers enough time to tender for an alternative supplier of WCO, it is not clear to us that 90 days would be sufficient time to re-tender either. Noting that no other stakeholder has raised this concern, we still consider that a 56-day notice period gives providers sufficient time to restructure the prices of their downstream offerings in response to a change in wholesale charges, which is our primary consideration in relation to this remedy.

8.159 We are not convinced by TalkTalk's argument that a longer notice period would have a significant impact on the likelihood of BT increasing its charges for WCO which we expect

[462] A 'temporary' price means a price reduction for a particular product or service, applicable to all customers on a non-discriminatory basis, which is stated to apply for a limited and predefined period and where the price immediately on expiry of that period is no higher than the price immediately before the start of that period.

[463] It also provides consistency for CPs which use (or compete with those using) LLU as the current WLA requirement is a 90-day notice period for LLU price increases.

will be influenced by broader competitive dynamics in the market. Furthermore, we would be concerned about the risk of BT 'gaming' the requirement if we were to impose an obligation with different notice requirements depending on the magnitude of the price increase, as proposed by TalkTalk.

Notice periods in the ISDN30 and ISDN2 markets

8.160 In the ISDN30 and ISDN2 markets we have imposed a notice period of 28 days since 2003. We consider that the existing notice period remains appropriate.

8.161 As we are not imposing any form of price regulation on BT's provision of new ISDN lines after the transitional period, we do not consider it appropriate to impose an obligation to notify changes to charges for these lines after the transitional period.

Legal tests

8.162 For the reasons set out below, we are satisfied that the condition for BT in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, sections 87(6)(b) and (d) authorise the SMP condition we propose to make.

8.163 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

8.164 We have considered our duties under section 3 of the Act. The obligations will promote competition by ensuring that the interests of purchasers of wholesale services have the necessary information about changes to terms, conditions and charges sufficiently in advance to allow them to make informed decisions about competing in downstream markets. Finally, the obligations would make it easier for Ofcom and competitors to BT to monitor any instances of discrimination.

8.165 We also consider that the conditions meet the Community requirements set out in section 4 of the Act. In particular, the conditions promote competition by ensuring that providers have the necessary information to allow them to make informed investment and entry decisions.

8.166 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

8.167 In the WFAEL and WCO markets, and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that there are clear benefits from the notification of changes in terms of ensuring that providers are able to make informed decisions within an appropriate time frame when competing in downstream markets;
- not unduly discriminatory, in that the condition applies to BT which is the only telecoms provider which we find has SMP in the relevant markets in the UK excluding the Hull Area;

- proportionate, in that only information that other telecoms providers would need to know in order to adjust for changes would have to be notified, and the notification periods are intended to be the minimum required to allow changes to be reflected in downstream offers; and
- transparent, in that the condition is clear in its intention and implementation.

8.168 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it enables a period of access to BT's network under the current regulatory framework in order to allow the completion of existing contract negotiations;
- not unduly discriminatory, in that the condition applies to BT and no other telecoms provider has been found to hold a position of SMP in these markets in the UK excluding the Hull Area;
- proportionate, in that it is imposed for the appropriate period of time only; and
- transparent, in that the condition is clear in its intention to ensure that telecoms providers have the opportunity to complete any ongoing contract negotiations.

8.169 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Approach to regulatory financial reporting

8.170 In the 2014 Regulatory Reporting Statement, we considered the purposes of regulatory reporting.[464] In that statement, we said that regulatory reporting "should provide us with the information necessary to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues and investigate potential breaches of SMP conditions and anti-competitive practices".[465] In addition, we said that it "should provide reasonable confidence to stakeholders that the SMP provider has complied with its SMP conditions and add credibility to the Regulatory Financial Reporting Regime".[466] Requiring BT to publish financial information on its regulated activities supports transparency by providing a greater detail of information on the relevant markets than that derived from BT's statutory financial statements and gives visibility, and thus reassurance, to stakeholders that BT has complied with its SMP conditions and allows them to contribute to the regulatory regime.

8.171 Transparency is an important element of regulatory financial reporting. For example, the 2005 EC Recommendation says that one of the objectives of imposing reporting obligations

---

[464] Ofcom, 2014. *Regulatory Financial Reporting Statement*. https://www.ofcom.org.uk/__data/assets/pdf_file/0025/78460/financial-reporting-statement-may14.pdf.
[465] Ofcom, 2014. *Regulatory Reporting Statement*, paragraph 2.28.
[466] Ofcom, 2014. *Regulatory Reporting Statement*, paragraph 2.41.

is to improve transparency, recommending that relevant accounting information is published at a sufficient level of detail, having due regard for commercial confidentiality.[467] We note that section 87(6)(b) of the Act also allows us to impose a condition requiring the dominant provider to publish information to secure transparency and Article 9(1) of the Access Directive specifies that such information can include accounting information.[468]

8.172 In the following subsections, we set out our decisions to retain accounting separation and cost accounting obligations in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area. We will implement these obligations by way of a single SMP Condition (SMP Condition 9).

8.173 Our accounting separation and cost accounting obligations are underpinned by detailed requirements for regulatory financial reporting which specify what information we require BT to prepare and provide in each of these markets.

8.174 In the 2014 Regulatory Financial Reporting Statement we set out our conclusions on the regulatory financial reporting policy that should be applied to BT across all regulated markets and the changes to the framework for BT's regulatory financial reporting. In Annex 2 to the 2014 Regulatory Reporting Statement we set out pro-forma SMP conditions which would implement the policy decisions made in that statement. We explained that, in order to preserve the integrity and consistency of BT's Regulatory Financial Reporting, we considered that our starting point should be that the changes we impose should be implemented across all regulated markets, subject to this being appropriate in light of the market analysis in each review. We noted that there were significant advantages to BT and other stakeholders of BT applying one set of accounting rules across all markets and we also noted that BT was broadly supportive of the principle of applying a consistent approach across all markets.

8.175 Consistent with this approach, we have therefore considered whether regulatory financial reporting obligations are appropriate in each of the WCO and wholesale narrowband access markets and, to the extent that they are, whether the pro-forma SMP conditions are appropriate in light of our market analysis.

8.176 For the reasons explained below, and noting the benefits of applying a consistent approach across all markets, we consider that it is appropriate to impose regulatory financial reporting obligations in these markets and, subject to a minor modification, that it is appropriate to impose these conditions in each of the markets covered by this review.

8.177 As discussed in Section 7, our approach in the two ISDN markets is to discontinue most remedies in respect of new lines after the transitional period. However, we have decided to retain accounting separation and cost accounting obligations in respect of all ISDN lines for the whole period of the review.

---

[467] Recital 4 and Point 5, 2005 EC Recommendation.
[468] Article 9 (Obligation of transparency) says that "National regulatory authorities may, in accordance with the provisions of Article 8, impose obligations for transparency in relation to interconnection and/or access, requiring operators to make public specified information, such as accounting information, technical specifications, network characteristics, terms and conditions for supply and use, and prices".

8.178 We consider that BT continues to have SMP in both ISDN markets; while the competitive constraints may be greater for new customers, we do not consider that they form a separate market. To understand the financial performance of both existing and new ISDN lines and the impact and effectiveness of our remedies in the ISDN markets, we need to understand how costs and revenues are attributed to services in the market, including between new and existing lines.

8.179 The 2005 EC Recommendation states that "the imposition of accounting separation may cover markets where the operator does not have SMP, e.g. to ensure the coherence of data".[469] We consider that the principle of ensuring the coherence of data also applies here, where we determine that BT has SMP across all ISDN lines, even though competitive constraints are greater for new ISDN customers. We consider this applies equally to cost accounting obligations given that cost accounting supports the requirements to account separately for different markets and services and helps to ensure that the attribution rules are fair and do not unduly discriminate between different services or groups of customers.

8.180 In the 2015 Directions Statement[470], we set out the necessary directions to give effect to other decisions made in the 2014 Regulatory Reporting Statement about changes to BT's reporting requirements. We discuss these further, and our decisions in respect of these, in Section 20.

Accounting separation

Proposed remedies

8.181 We proposed to maintain an accounting separation obligation on BT in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area.

8.182 We proposed the form of condition set out in the 2014 Regulatory Financial Reporting Statement but modified to remove the reference to the Regulatory Accounting Guidelines.

Aim and effect of regulation

8.183 Paragraph 3 of Point 1 of the 2005 EC Recommendation states that:

> "The purpose of imposing an obligation regarding accounting separation is to provide a higher level of detail of information than that derived from the statutory financial statements of the notified operator, to reflect as closely as possible the performance of parts of the notified operator's business as if they had operated as separate businesses, and in the case of vertically integrated undertakings, to prevent discrimination in favour of their own activities and to prevent unfair cross-subsidy".

8.184 In the 2014 Regulatory Reporting Statement we considered the purposes of regulatory reporting, which is supported by the imposition of an accounting separation obligation. In that statement, we said that regulatory reporting "should provide us with the information

[469] Recital 5, 2005 EC Recommendation.
[470] Ofcom, 2015. *Directions for Regulatory Financial Reporting*, pages 82-93. https://www.ofcom.org.uk/__data/assets/pdf_file/0018/59112/statement.pdf.

necessary to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues and investigate potential breaches of SMP conditions and anti-competitive practices”.[471] In addition, we said that it “should provide reasonable confidence to stakeholders that the SMP provider has complied with its SMP conditions and add credibility to the Regulatory Financial Reporting Regime”.[472] We consider that our decision to impose an accounting separation obligation, together with a cost accounting obligation (see below), will help ensure that these regulatory reporting objectives are met.

8.185 To carry out our duties, it is important that financial information is available on the services and markets that we regulate. The availability of this information helps us understand the volumes, revenues, costs and returns of services and markets, which allows us to monitor the impact and effectiveness of, and (for certain remedies) compliance with, the remedies imposed as part of a market review.

8.186 The accounting separation obligation also requires BT to account separately for internal and external sales, which allows Ofcom and stakeholders to monitor the activities of BT to ensure that, where relevant, in the WFAEL, WCO, ISDN30 and ISDN2 markets it does not discriminate unduly in favour of its own downstream business, and to monitor BT’s activities in respect of the EOI obligation. In practice these obligations require BT to produce financial statements that reflect the performance of the regulated wholesale markets as though they were separate businesses.

8.187 Requiring BT to produce financial statements on each regulated wholesale market, combined with an obligation to attribute costs in a fair, objective and transparent way (via the cost accounting obligation) can help monitor the possibility of unfair cross-subsidy by ensuring that costs are not inappropriately loaded onto one set of regulated products to the benefit of another set of regulated products or unregulated products.

Stakeholder responses to our proposals

8.188 Vodafone supported our proposal to maintain accounting separation obligations on BT in the WFAEL market, stating that it enables WLR to be purchased in a transparent way.[473]

8.189 BT commented on the detail of the accounting separation requirement. We respond to these comments in Section 20.

Our reasoning and decisions

8.190 Under sections 87(7) and 87(8) the dominant provider may be required to maintain a separation for accounting purposes between such different matters relating to network access or the availability of relevant facilities. Section 86(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish, in such

---

[471] Ofcom, 2014. *Regulatory Financial Reporting Statement*, paragraph 2.28.
[472] Ofcom, 2014. *Regulatory Financial Reporting Statement*, paragraph 2.41.
[473] Vodafone response to 2016 NMR Consultation, part 2, paragraph 4.42.

manner as Ofcom may direct, all such information, for the purpose of securing transparency.

8.191 We consider it appropriate to retain an accounting separation obligation on BT in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area. We consider that this obligation is necessary to monitor the overall impact and effectiveness of the remedies imposed in Tables 8.1 and 8.2 and, in particular, to monitor BT's activities with regard to (where relevant) its no undue discrimination and EOI obligations. The obligation is also necessary to support transparency by providing a greater detail of information on the relevant markets than that derived from BT's statutory financial statements and give visibility, and thus reassurance, to stakeholders that BT has complied with its SMP conditions and allow them to contribute to the regulatory regime.

8.192 In respect of the specific form of the accounting separation requirements we impose for BT in these markets, we are imposing the form of condition set out in the 2014 Regulatory Financial Reporting Statement but modified to remove the reference to the Regulatory Accounting Guidelines.[474] This form of condition implements our policy decisions on regulatory financial reporting set out in that statement.[475] The purpose of the condition is to give Ofcom a greater role in the way that BT prepares its regulatory financial statements[476], improve the presentation of the published regulatory financial statements and supporting documentation[477], and ensure that Ofcom and other stakeholders have the information they need.

Legal tests

8.193 For the reasons set out below, we are satisfied that our decision to retain accounting separation requirements on BT in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area meets the relevant tests set out in the Act. As explained above, sections 87(7) and (8) authorise the SMP condition we are imposing

8.194 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act. In particular, we consider that the imposition of an accounting separation obligation promotes competition in relation to the provision of electronic communications networks and services, and encourages the provision of network access and service interoperability. This is because the imposition of

---

[474] As explained in the 2016 BCMR Statement (paragraph 8.175 and Annex 28), we no longer consider that it would be useful to establish high level guidelines and accounting rules in the Regulatory Accounting Guidelines by way of direction. Where we find concerns about BT's detailed application of cost attribution rules, in line with what we have done in the 2016 BCMR we will direct BT as to the specific reporting requirements consistent with the Regulatory Accounting Principles arising from each regulatory decision. The wording of our condition reflects our decision not to issue the Regulatory Accounting Guidelines. Each condition therefore requires BT to prepare the RFS in accordance with the SMP conditions, the Regulatory Accounting Principles and the Accounting Methodology Documents.

[475] Ofcom, 2014. *Regulatory Financial Reporting Statement*, page 1.

[476] This included establishing new Regulatory Accounting Principles (including a requirement for consistency with regulatory decisions) and a change control process whereby BT is required to notify us about proposed changes to its regulatory accounting methodology.

[477] This included a requirement on BT to publish annual reconciliation reports that show the impact of material changes and errors.

the obligation ensures that other obligations designed to curb the potentially damaging leverage of market power, in particular the pricing regulation we are imposing including charge controls on ISDN30 and ISDN2 and the requirement not to unduly discriminate (in the markets where we impose this), can be effectively monitored.

8.195 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. In relation to the WFAEL, WCO, ISDN30 and ISDN2 markets we consider each condition is:

- objectively justifiable, as it relates to the need to ensure competition develops fairly to the benefit of consumers;
- not unduly discriminatory, as it is only imposed on BT, which is the only telecoms provider with SMP in the relevant markets in the UK excluding the Hull Area;
- proportionate, in that it is the least onerous obligation necessary as a mechanism to allow us and third parties to monitor the impact and effectiveness of the remedies imposed, specifically the fair and reasonable charging and non-discrimination obligations; and
- transparent, in that it is clear the intention is to monitor the impact and effectiveness of the remedies imposed.

8.196 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Cost accounting

Proposed remedies

8.197 We proposed to maintain cost accounting requirements on BT in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area.

8.198 We proposed the form of condition set out in the 2014 Regulatory Financial Reporting Statement, but modified to remove the reference to the Regulatory Accounting Guidelines.

Aim and effect of regulation

8.199 Recital 2 of the 2005 EC Recommendation states that the purpose of imposing the accounting separation and cost accounting obligations is “to make transactions between operators more transparent and/or to determine the actual costs of services provided”. Also, paragraph 2 of Point 1 of the 2005 EC Recommendation states that:

> “The purpose of imposing an obligation to implement a cost accounting system is to ensure that fair, objective and transparent criteria are followed by notified

operators in allocating their costs to services in situations where they are subject to obligations for price controls or cost-oriented prices."[478]

8.200 The imposition of cost accounting obligations ensures that BT has in place a system of rules that support the attribution of revenues and costs to individual markets and services. It therefore supports the accounting separation obligation, which requires BT to prepare and report financial information relating to individual markets and services, by ensuring that the rules attributing revenues and costs to individual markets and services are fair, objective and transparent. The cost accounting obligation is an important means of ensuring that:

- Ofcom and stakeholders can have confidence in the financial information prepared and provided by BT on individual markets and services since the attribution processes and rules supporting that financial information are fair, objective and transparent. Where we do not consider that the attribution process and rules are fair and objective, transparency (via publication of the processes and rules followed by BT) allows us to effectively challenge them.
- Revenues and costs are attributed to individual markets and services in a consistent manner. This mitigates the risk that costs might be unfairly loaded onto particular products or markets.
- BT records all information necessary for the purposes listed above at the time that relevant transactions occur, on an ongoing basis. Absent such a requirement, there is a strong possibility that the necessary information would not be available when it is required, and in the necessary form and manner.

Stakeholder responses to our proposals

8.201 Vodafone agreed that regulatory accounting transparency is necessary.[479]

8.202 TalkTalk noted that it is important across all regulated markets for there to be appropriate cost accounting and cost allocation in order to support the EOI obligation we are imposing on BT.[480]

8.203 BT commented on the detail of the cost accounting requirement. We respond to these comments in Section 20.

Our reasoning and decisions

8.204 Section 87(9)(c) authorises conditions imposing such rules as we may make for the purposes of matters connected with the provision of network access to the relevant network, or with the availability of relevant facilities about the use of cost accounting

[478] We also note that BT's 2014/15 RFS says that a "cost accounting system is a set of rules which supports the attribution of costs, revenues and capital employed to individual activities and services". BT, *Revised Current Cost Financial Statements 2015 including Openreach Undertakings*, page 137. http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2015/RevisedCurrentCostFinancialStatements2015.pdf.

[479] Vodafone response to 2016 NMR Consultation, part 2, page 33.

[480] TalkTalk response to 2016 NMR Consultation, paragraph 6.3.

systems. Such conditions include conditions requiring the application of presumptions in the fixing and determination of costs and charges for the purposes of the price controls, rules and obligations imposed by virtue of that subsection (section 87(10)). Where such conditions are imposed, section 87(11) imposes a duty on us to set an SMP condition which imposes an obligation: to make arrangements for a description to be made available to the public of the cost accounting system used in pursuance of that condition; and to include in that description details of:

- the main categories under which costs are accounted for; and
- the rules applied for the purposes of that system with respect to the allocation of costs.

8.205 Section 86(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.

8.206 We consider it appropriate to retain cost accounting requirements on BT in the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area. We consider that this obligation is necessary to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent.

8.207 In respect of the specific form of the cost accounting requirements we impose for BT in these markets, we impose the form of condition set out in the 2014 Regulatory Financial Reporting Statement, but modified to remove the reference to the Regulatory Accounting Guidelines. This form of condition implements our policy decisions on regulatory financial reporting set out in that statement. The purpose of the condition is to give Ofcom a greater role in the way that BT prepares its regulatory financial statements, improve the presentation of the published regulatory financial statements and supporting documentation, and ensure that Ofcom and other stakeholders have the information they need.

Legal tests

8.208 For the reasons set out below, we are satisfied that the cost accounting requirements for BT in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the UK excluding the Hull Area meet the relevant tests set out in the Act. As explained above, sections 87(9), (10) and (11) authorise the SMP condition we impose.

8.209 In setting such conditions, we must be satisfied that the conditions about network access pricing set out in section 88 are also satisfied.

8.210 Below we list the various price control obligations that we are imposing. We consider that our decisions meet the conditions in section 88, in that they will address the risks of price squeeze and/or excessive pricing, and promote efficiency and protect competition, to the benefit of consumers, and would not undermine investment by BT. We impose on BT:

- fair and reasonable charges obligations in the WFAEL and WCO markets, which apply to all services including relevant WLR ancillary services;
- fair and reasonable charges obligations on all ISDN30 and ISDN2 lines in the transitional period, and on existing lines only thereafter;

- charge controls on rentals, line and channel connections and transfers in the ISDN30 and ISDN2 markets in the transitional period; and
- charge controls on rentals, channel connections and transfers of existing lines in the ISDN30 and ISDN2 markets after the transitional period.

8.211 We consider that each condition fulfils our duty under section 87(11) in that the cost accounting obligation requires the publication of a description of the cost accounting system used and the main categories of cost and the cost allocation rules applied.

8.212 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act. In particular, we consider that the imposition of the cost accounting obligation is justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services and to encourage the provision of network access (including supporting ancillary services) and service interoperability. This is because the imposition of the obligation will ensure that other obligations designed to curb the potentially damaging leverage of market power – in particular, the setting of prices at excessive levels or price squeeze – can be effectively monitored and enforced.

8.213 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. In relation to the WFAEL, WCO, ISDN30 and ISDN2 markets we consider that each condition is:

- objectively justifiable, in that it is necessary to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent;
- not unduly discriminatory, in that BT is the only telecoms provider on which we impose a cost accounting remedy in the UK excluding the Hull Area;
- proportionate, in that the obligation is the minimum required to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent; and
- transparent, in that it is clear in its intention to ensure the appropriate maintenance and provision of accounts for the purposes set out above and the particular cost accounting requirements of BT are clearly documented.

8.214 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in each corresponding market, in line with section 87(1) of the Act.

Remedies on BT that we are removing

Requests for new forms of network access

8.215 In previous market reviews, we imposed a process for requests for new forms of network access in the WFAEL, WCO, ISDN30 and ISDN2 markets. In the 2016 NMR Consultation, we proposed to remove this remedy.

Stakeholder responses to our proposals

8.216 BT supported our proposal to remove the requests for new forms of network access requirement in the WFAEL, WCO, ISDN30 and ISDN2 markets.[481] With regard to the WCO market, BT agreed that the market is mature and well established.[482]

8.217 TalkTalk also supported the removal of the requirement on the basis of the maturity of the TDM network.[483]

Our reasoning and decisions

8.218 We have decided to remove this remedy in recognition of the maturity of BT's TDM network and the provision of calls over it.

8.219 The remedy in relation to requests for new forms of network access is intended to support access seekers and ensure that there is a reasonable and transparent process for assessing requests from them. However, as BT's TDM network is mature and well established, the case for requiring BT to set out a process for new requests is weaker than at the time of previous market reviews because innovations in narrowband network access are unlikely to be a necessary aspect of competing in the WCO and narrowband access markets. Therefore, we no longer consider it necessary to prescribe the process that BT should follow in responding to such requests in order to protect downstream competition. In the event that an access seeker does require a new form of access, the access seeker will still be able to request this under the general access remedy and BT will be required to assess if the request is reasonable.

8.220 As discussed in Section 17, as BT's customers are migrated from TDM to IP, we expect BT to make available efficient replacement network access products to give other telecoms providers continued access to BT's customers, enabling them to compete in the WCO and narrowband access markets. While we do not expect BT's migration to IP to be completed in this review period, we expect BT to engage with industry in a timely manner to allow telecoms providers sufficient time to plan their interconnection approach. We expect BT's migration to be under way at the next review, when we will revisit our approach to interconnection.

No undue discrimination for WCO

8.221 In the 2016 NMR Consultation, we proposed not to apply the no undue discrimination obligation (or any other form of non-discrimination remedy) in the WCO market.

[481] Openreach response to 2016 NMR Consultation, paragraph 41.
[482] BT response to 2016 NMR Consultation, paragraph 5.12.
[483] TalkTalk response to 2016 NMR Consultation, paragraph 7.2.

Stakeholder responses to our proposals

8.222 BT supported the removal of the no undue discrimination obligation for WCO as it believes the competitive conditions are such that *ex ante* regulation is no longer required in this market.[484]

8.223 [✂] considered that the proposal to remove the no undue discrimination obligation in the WCO market was based on flawed market analysis, as mobile is not a substitute for business customers.[485]

8.224 Vodafone said it is hard to understand how Ofcom recognises BT has the market power to act independently, yet believes that BT is unlikely to act in an anti-competitive manner. Vodafone considered the no undue discrimination remedy particularly important given BT's downstream division is a very large user of its wholesale services and it dominates the merchant market for end-to-end calls with its Wholesale Calls product, which means that the regulated WCO product enables competition in end-to-end wholesale calls.[486] It said there is a risk that BT retail divisions could take WCO at a significant discount for any new retail customer resulting in a new WLR activation, targeting discounts at customers it does not serve presently. Vodafone added that BT Wholesale might increase the price of WCO on a discriminatory basis, charging a higher price to external customers. Vodafone also commented on the difficulty competing with BT's Wholesale Calls, suggesting that BT's current pricing could be indicative of margin squeeze.[487]

8.225 [✂] also pointed to BT's provision of Wholesale Calls and its conduct following Ofcom's 2013 deregulation of Indirect Access as evidence that BT will actively favour its own downstream business as soon as WCO regulation is removed[488], while Verizon urged us to assess the impact of BT Wholesale Calls on the ability of telecoms providers using carrier pre-selection to compete.[489]

8.226 SSE said that removing the no undue discrimination obligation could result in BT introducing charging structures such as bulk discounting that would adversely affect small telecoms providers while favouring BT's own downstream businesses.[490]

8.227 Sky also objected to the removal of the remedy as, given BT's SMP and competing providers' reliance on WCO to supply vulnerable customer segments, there would be a risk of consumer harm if BT is able to discriminate.[491]

---

[484] BT response to 2016 NMR Consultation, paragraph 5.10.
[485] [✂]
[486] Vodafone response to 2016 NMR Consultation, part 2, paragraphs 4.37-41.
[487] Vodafone response to 2016 NMR Consultation, part 2, paragraphs 2.33-2.42.
[488] [✂]
[489] Verizon response to 2016 NMR Consultation, page .11.
[490] SSE response to 2016 NMR Consultation, page 1.
[491] Sky response to 2016 NMR Consultation, paragraph 30.

Our reasoning and decisions

8.228 In Sections 4, 6 and 7 we set out our assessment that BT faces increasing indirect competitive constraints at the retail level from mobile, VoIP, text-based messaging, email and social media; and direct constraints at the wholesale level. We observe that BT's market share, like the overall WCO market, is in decline as a result of increased competition from within the market. We consider that BT faces constraints at the wholesale level from the potential for MPF LLU operators to provide other telecoms providers with network access to WCO (particularly if packaged with a form of line rental by provided by the MPF operator).

8.229 Given these competitive constraints, we consider that BT is unlikely to have the ability to discriminate to an extent which will restrict or distort competition and require additional *ex ante* regulation of WCO. When setting WCO charges BT will need to have regard to its need to comply with the requirement to set fair and reasonable charges, that do not result in a margin squeeze, for WFAEL. The level of WCO charges will affect that assessment, and so we see no need for additional *ex ante* price regulation for WCO.

8.230 We consider that the fair and reasonable charges obligation is sufficient to address the risk of margin squeeze identified by Vodafone and [✂], including in relation to BT's Wholesale Calls product. In addition, *ex post* competition law will further limit BT's ability to price differentially in a way which could jeopardise competition. The imposition of a further restriction on BT's pricing flexibility is not justified by the competitive conditions that we have observed. Therefore, we do not consider it necessary to impose a no undue discrimination obligation on BT in the WCO market.

8.231 In response to the point raised by [✂], while we are not including mobile call origination in the same market as fixed call origination, we consider that mobile is a growing indirect constraint on fixed calls, including for some business customers. 39% of business customers with both landline and mobile phones state that the percentage of calls they have made over mobile has increased over the last three years.[492] Furthermore, as BT's WCO product is used both for calls made by businesses and for calls made by residential customers, and because we consider that discrimination in WCO based on the retail customer being served is difficult, a constraint arising from serving residential customers is likely to also apply to business customers.

8.232 In answer to Sky's point about the potential for BT to discriminate in a way that harms vulnerable consumer segments, we considered the impact of our reduction in regulation on the groups of interest in Section 7. We observe the key consumer segment that we have identified as not having benefitted from wholesale competition and regulation – voice-only residential consumers – will be protected more directly by BT's offer to cut retail prices for this group. We do not consider it necessary to retain the no undue discrimination regulation on WCO in order to protect their interests.

[492] 2017 NMR Small Business survey, Q5. Base is those with standard landlines and mobile phones.

8.233 Given the increased competitive constraints on BT, we consider it is appropriate to remove the no undue discrimination obligation. This will give BT the same ability as other telecoms providers to negotiate bespoke deals for WCO. We recognise SSE's concern that some providers may not benefit from potential new structures of charging, such as bulk discounting, but we consider this to be a normal feature of most markets as competition develops.

Notify technical information

8.234 In previous market reviews, we imposed an obligation on BT to notify technical information in the WFAEL, WCO, ISDN30 and ISDN2 markets. In the 2016 NMR Consultation, we proposed to remove this requirement.

Stakeholder responses to our proposals

8.235 BT supported our proposal to remove the requirement to notify technical information in the WFAEL, WCO, ISDN30 and ISDN2 markets.[493] Commenting specifically on the WCO market, BT agreed that the market is mature and well established.

8.236 TalkTalk also agreed with the removal of the requirement to notify technical information in all four markets.[494]

8.237 In relation to the WCO market, [✂] recognised that there is existing contractual protection for notifying technical information, but pointed to a potential harm resulting from BT making detrimental technical changes at short notice or from using its greater bargaining power in negotiations to remove contractual protection.[495]

8.238 Regarding the ISDN30 and ISDN2 markets, [✂] raised a concern that BT would stop updating its Supplier Information Notes (SIN).[496] [✂] said the SIN documents are an important technical resource for providers, and are updated regularly (most recently for ISDN in October 2015). [✂] added that it does not consider it costly for BT to continue to make technical updates available to BT's customers, in addition to its own use.

Our reasoning and decisions

8.239 The notification of technical information remedy was designed to ensure that competing providers had sufficient time to respond to technical changes that may affect them. We have now decided to remove this remedy in recognition of the maturity of BT's TDM network and the provision of calls over it.

8.240 Given the maturity of the TDM network, we do not consider it likely that BT will make detrimental technical changes to its provision of WCO and narrowband access products at short notice. We expect providers can maintain sufficient contractual protection on the notification of technical information (as [✂] notes is available in the WCO market). We

[493] BT response to 2016 NMR Consultation, paragraph 5.12; Openreach response to 2016 NMR Consultation, paragraph 41.
[494] TalkTalk response to 2016 NMR Consultation, paragraph 7.2.
[495] [✂]
[496] [✂]

note [✂]'s observation that SIN documents are a valued technical resource for telecoms providers in the ISDN markets and expect Openreach will take account of this. However, we do not consider the points raised by [✂] are sufficient to maintain a specific remedy on the notification of technical information.

9. Remedies on BT: ISDN30 and ISDN2 charge controls

9.1 In this section we set out our approach to price regulation on BT in the ISDN30 and ISDN2 markets in the UK excluding the Hull Area.

9.2 In Section 6 we set out our conclusion that BT has SMP in the ISDN30 and ISDN2 markets in the UK excluding the Hull Area. In this section, we set out our decision to impose charge controls on BT's provision of wholesale ISDN30 and ISDN2 services, in addition to the other remedies we impose in these markets in Section 8.

9.3 As in Section 8, we refer to ISDN lines installed before the end of the transitional period (i.e. in the first 12 months of the market review period) as 'existing lines' and lines installed after the end of the transitional period as 'new lines'.

9.4 For existing ISDN lines, we are capping charges at their current nominal levels, including charges for ancillary services reasonably necessary for the use of ISDN services. The form of the ISDN30 charge control is a basket including rentals, channel connections[497] and Service Maintenance Levels (SML) 3 and 4[498] for existing lines, plus a separate control for Direct Dialling In (DDI) services. The ISDN2 charge control is a distinct control on rentals for existing lines.

9.5 In addition, for the transitional period only, we are imposing separate charge controls for ISDN30 and ISDN2 line connections at their current nominal levels.

9.6 We are also imposing charge controls for ISDN30 and ISDN2 transfers at their current nominal levels, for all lines during the transitional period and for existing lines only after the transitional period.

9.7 Table 9.1 summarises the charge controls we are imposing on BT in the ISDN30 and ISDN2 markets.

---

[497] As explained in Section 8, for ISDN30 we distinguish between the addition of channels on an existing ISDN30 line from the installation of a new ISDN30 line in our regulatory proposals.

[498] SML 3 and 4 refer to the products described as "Service Maintenance Level 3" and "Service Maintenance Level 4" in Openreach's price list. In Section 20 we refer to these as 'Enhanced Care'.

Table 9.1: Summary of the ISDN charge controls imposed on BT in the UK excluding the Hull Area

	2014 FAMR charge controls	Charge controls in transitional period	Charge controls after transitional period
ISDN30	All lines Charges capped at current levels in nominal terms Charge control basket for rentals, connections[499] and SML 3 and 4 +5% sub-cap on connections per annum 0% sub-basket on SML 3 and 4 per annum Separate charge control on DDI rentals and connections (planning and connection) Separate charge control on transfers	All lines Charges capped at current levels in nominal terms Charge control basket for rentals, channel connections and SML 3 and 4 +5% sub-cap on channel connections per annum 0% sub-basket on SML 3 and 4 per annum Separate charge control on line connections Separate charge control on DDI rentals Separate charge control on DDI connections (planning and connection) Separate charge control on transfers	Existing lines Charges capped at current levels in nominal terms Charge control basket for rentals, channel connections and SML 3 and 4 +5% sub-cap on channel connections per annum 0% sub-basket on SML 3 and 4 per annum Separate charge controls on DDI rentals Separate charge control on transfers
ISDN2	All lines Charges capped at current levels in nominal terms Charge control basket for rentals and connection[500] charges Separate charge control on transfers	All lines Charges capped at current levels in nominal terms Separate charge control on rentals Separate charge control on connections Separate charge control on transfers	Existing lines Charges capped at current levels in nominal terms Separate charge control on rentals Separate charge control on transfers

[499] Includes line and channel connections.
[500] ISDN2 connections refers only to line connections as there is no option of connecting new channels on existing ISDN2 lines.

9.8 We set out our remedies on KCOM's provision of wholesale ISDN30 and ISDN2 services in the Hull Area, including the provision of network access on fair and reasonable charges, in Section 11.

Approach to ISDN charge controls

Proposed approach

9.9 In the 2016 NMR Consultation, we proposed charge controls on new ISDN line connections for a transitional period. Following the transitional period, we proposed charge controls on existing ISDN lines only and that BT's wholesale charges for new ISDN connections, and subsequent rentals for these new lines, would not be subject to ex ante price regulation.

9.10 We proposed a charge control on new channel connections for existing ISDN30 lines throughout the market review period. We also proposed charge controls for certain ancillary services and separate controls on wholesale transfers.

Stakeholder responses to our proposals

9.11 In Sections 7 and 8 we discuss stakeholder comments on our proposal not to charge control new ISDN lines after a transitional period.

9.12 Although, as noted in Section 7, Vodafone urged Ofcom not to make a distinction between new and existing lines, it was broadly supportive of our charge control proposals. It considered that our proposed control would achieve the right balance between ensuring that competition in the supply of ISDN30 is not compromised and protecting businesses from wholesale charge increases.[501] TalkTalk also agreed with imposing a price cap on BT's provision of wholesale ISDN30 and ISDN2, and our intention to set it at a level which does not deter migration to IP-based services.[502]

9.13 TalkTalk, Vodafone and UCKTA raised concerns about what they characterise as BT's "excess profits" in the two ISDN markets. TalkTalk suggested we reduce BT's profits by reallocating common costs. Specifically, it suggested we allocate more duct costs to ISDN, as it considers this would reduce the prices of a wide range of products in a way which is neutral between providers.[503] Vodafone[504] and UKCTA[505] also stated that we should not ignore BT's "excess profits" and advised reducing the prices of other regulated products. Vodafone also suggested altering the allocation of common costs so that ISDN charges allow for a higher recovery of common costs, whereas UKCTA proposed reducing the charges for other regulated products in a way which does not threaten BT's overall cost recovery.

[501] Vodafone response to 2016 NMR Consultation, part 2, paragraph 5.14.
[502] TalkTalk response to 2016 NMR Consultation, paragraphs 4.1-4.04.
[503] TalkTalk response to 2016 NMR Consultation, paragraphs 4.05-4.12.
[504] Vodafone response to 2016 NMR Consultation, part 2, paragraph 5.15.
[505] UKCTA response to 2016 NMR Consultation, paragraph 24.

9.14 BT agreed with our clarification of the ISDN30 charge control SMP condition to include its DDI Planning Service.[506]

Our reasoning and decisions

9.15 In the 2014 FAMR, we imposed charge controls on BT's wholesale ISDN30 and ISDN2 services. The charge controls were designed to protect against excessively high wholesale prices, but also to send efficient signals to encourage migration to IP-based alternatives. Our decisions in this review recognise that ISDN services are legacy services and seek to support efficient migration to IP-based alternatives. As outlined in Section 7, we are therefore focusing our charge control remedies on protecting users of existing lines.

9.16 We are imposing a charge control on existing lines from 1 December 2017 to 31 March 2021. As we explain in Section 2, we have decided to align the NMR charge controls with financial years and other fixed market reviews, hence we are imposing ISDN charge controls for a period of three years and four months. The forward look period for this review is therefore longer than three years, but we do not anticipate significant changes in the ISDN markets during the additional period of four months.

9.17 For new ISDN line connections, we do not consider that ex ante price regulation is appropriate, given the legacy nature of ISDN30 and ISDN2 services and the availability of IP alternatives, both for new business customers and for existing customers who need additional services. Therefore, in accordance with our approach to other remedies in the ISDN30 and ISDN2 markets, as set out in Sections 7 and 8, we will only charge control new ISDN line connections for a transitional period of 12 months commencing on 1 December 2017. This is to provide sufficient time for telecoms providers and businesses to conclude contract negotiations which may have commenced under the current regulatory regime. Thereafter, BT's wholesale charges for new ISDN connections and subsequent rentals for these new lines will not be subject to ex ante price regulation.

9.18 We are imposing a charge control on new channel connections for existing ISDN30 lines throughout the market review period. As explained in Section 8, the number of channels provided over an ISDN30 line can be increased via a configuration change and, given that the per channel connection cost could have been instead recovered through the installation charge and/or annual line rental, which would be covered by our charge control for existing lines, we consider it appropriate to continue to impose a charge control on new channel connections.

[506] Openreach response to August 2017 NMR Further Consultation, page 1. In the 2016 NMR Consultation, we proposed to regulate DDI connections – including both the planning service and the separate connection service – in the first 12 months only of the next market review period. However, draft Condition 5A (Wholesale ISDN30 services charge control) omitted the charge control for "ISDN30 Direct Dial Inward Planning Service" at £81.57, for the first relevant year period of the charge control and included the DDI connection service charge only. In the August 2017 NMR Further Consultation, we clarified and consulted on this aspect of our ISDN30 charge control proposal.

9.19 We are imposing charge controls for certain ancillary services, as set out in more detail below. In addition, we set separate charge controls on wholesale transfers for both ISDN30 and ISDN2, as discussed below.

9.20 In response to comments raised about BT's "excess profits", our objective in imposing ISDN charge controls is to ensure ISDN charges are at an appropriate level, protecting existing ISDN customers from excessive charges, while at the same time recognising the ongoing value of the assets in question, and ensuring ISDN charges are not at a level that would deter migration to IP-based alternatives. Reallocating common costs in the way that TalkTalk and Vodafone suggest would put static efficiency ahead of dynamic efficiency, and would have implications for markets outside the scope of this review (i.e. the business connectivity and WLA markets). We consider BT's returns below.

ISDN charge control

9.21 In this subsection we consider which form of price regulation is appropriate and assess the suitability of an indexed or cost-based charge control. We also examine BT's most recent and projected returns for wholesale ISDN services. The projection of returns presented below illustrates how these might evolve if ISDN charges were to remain at current levels.

Form of price regulation

9.22 We have considered two possible forms of price regulation for ISDN services: a fair and reasonable charges obligation and a charge control.

9.23 We have considered whether an obligation on BT to provide access to wholesale ISDN30 and ISDN2 services on fair and reasonable charges would be sufficient to address our competition concerns in relation to existing ISDN lines.

9.24 For existing lines in the ISDN markets, we do not consider that such an obligation would be sufficient, on the basis that for telecoms providers serving customers with existing ISDN lines, we consider there is the risk that BT may set excessively high wholesale charges thus undermining effective downstream competition.

9.25 In contrast to the WCO and WFAEL markets, BT's market share is very high (especially for ISDN2, where it is close to 100%, and still above 60% for ISDN30, see Figure 6.3 in Section 6). While we recognise there is an increasing degree of substitutability with IP-based services, we consider such services are a less effective substitute for many existing users of ISDN30 and ISDN2 than they are for new customers (see Section 5).

9.26 We have also considered whether a fair and reasonable charges obligation would be sufficient for new line connections in the transitional period. However, as above, we do not consider such an obligation would be sufficient. In Section 8 we set out our decision to apply a 12-month transitional period of regulation for new ISDN line connections, so as to allow telecoms providers time to complete existing contract negotiations. We consider that customers which are negotiating new ISDN access at present are likely to be in a similar position to existing customers, such that there is a risk that BT can use its SMP to price wholesale ISDN excessively in relation to such customers. Therefore, we do not consider that a fair and reasonable charges obligation would be sufficient, given the risk that BT may set excessively high wholesale charges for these connections during the transitional period and thus undermine effective downstream competition.

9.27 Therefore, we consider that charge controls are necessary to address our competition concern in the ISDN markets. Below we set out the options of a simple indexed or a more detailed cost-based charge control.

Charge control design

Indexed charge control without explicit cost forecasting

9.28 An indexed charge control does not require detailed cost modelling or large amounts of information to be requested from telecoms providers (particularly BT). This approach would still provide certainty and stability to the market as prices would be capped in advance. We believe that this certainty would help to encourage efficient migration from wholesale ISDN30 and ISDN2 services to IP-based services.

Cost-based charge control

9.29 A cost-based charge control would limit price increases for ISDN30 and ISDN2 services by imposing a cost-based cap (which would also typically be indexed, but where the controlling percentage is determined from more detailed cost modelling). As discussed above, and in Section 6, BT's reported returns are significantly above the relevant cost of capital. This suggests that, from a cost recovery perspective, a case could be made for charges to be reduced over time, for example by imposing a cost-based charge control.

9.30 However, there is significant uncertainty over the future trajectory of ISDN unit costs and we do not think that accounting costs would form the appropriate basis for determining regulated prices for these services:

- First, we expect that volumes of ISDN30 and ISDN2 services will continue to decline. All other things being equal, this will reduce revenues and hence returns (in the presence of fixed costs). However, the rate of decline is very hard to predict, with the rate of decline increasing in recent years (as shown in Figure 3.18).
- Second, there is significant uncertainty regarding BT's operating costs on the ISDN network as the network ages. For example, as equipment ages it may require more repairs and/or a greater stock of spares (which is increasingly difficult if equipment is no longer supported by equipment manufacturers). We would also need to make adjustments to the cost figures in order to take account of the heavily depreciated nature of the assets because the assets' accounting value may underestimate their true economic value. However, the extent to which asset values and depreciation should be adjusted is not clear.[507]

[507] The HON adjusted returns presented earlier for ISDN30 and ISDN2 were illustrative, whereas a cost-based charge control requires enough confidence to make a central estimate of such adjustments.

- Third, if charges were reduced to align with projected accounting costs (without an adjustment for the heavily depreciated asset base), this could risk prices being set at a level that would result in reduced incentives to migrate to IP-based services. BT and other telecoms providers have been and are continuing to invest in alternative technologies. Substantially lower ISDN prices – which might be the consequence if we imposed a cost-based charge control – might deter the migration to IP-based alternatives to ISDN.

9.31 For ISDN2, we recognise that BT's future returns may be below the relevant cost of capital when considered on a HON basis. Given the time since BT's initial investment in ISDN2 and the absence of wholesale price regulation until 2014, the level of returns now seen (for example, see Table 6.2), and the expectation of accounting returns above its cost of capital going forward, we consider that BT will have had ample opportunity to recover the efficiently incurred costs of ISDN2.

Analysis of returns

ISDN30

9.32 In our 2012 ISDN30 Charge Control Statement, we considered that an appropriate way of capping ISDN30 charges was to uplift the heavily depreciated ISDN30 assets to base the controls on the costs of a hypothetical ongoing network (HON), such that BT was prevented from charging excessive prices but that investment and innovation incentives for IP-based services were not distorted. Even with an uplift in asset values in this way, the 2012 Statement resulted in a large reduction in real charges for ISDN30 over the period to March 2014.[508]

9.33 The 2014 review capped ISDN30 charges at constant (nominal) levels without further detailed cost analysis. This was done because the cost modelling for the 2012 statement had been very recently conducted and charges brought down to forecast HON costs by the end of that control. There were also important efficiency trade-offs since further price reductions might compromise incentives to invest (and encourage customer take-up – or slower migration from ISDN30 to IP alternatives), yet price increases (not reflecting an increase in costs) would adversely affect customers and ultimately consumers.

9.34 Recognising that it was five years since we last undertook cost analysis for ISDN30, and that over this period reported returns for ISDN30 have remained high, we have carried out a high level assessment of possible future returns, to act as a check that our proposed charge control would not conflict with our policy objectives described above. The analysis presented below is less detailed than would typically be undertaken if setting a cost-based charge control and should be interpreted in light of the significant demand (and cost) uncertainty involved in the future provision of ISDN30, which we explain below.

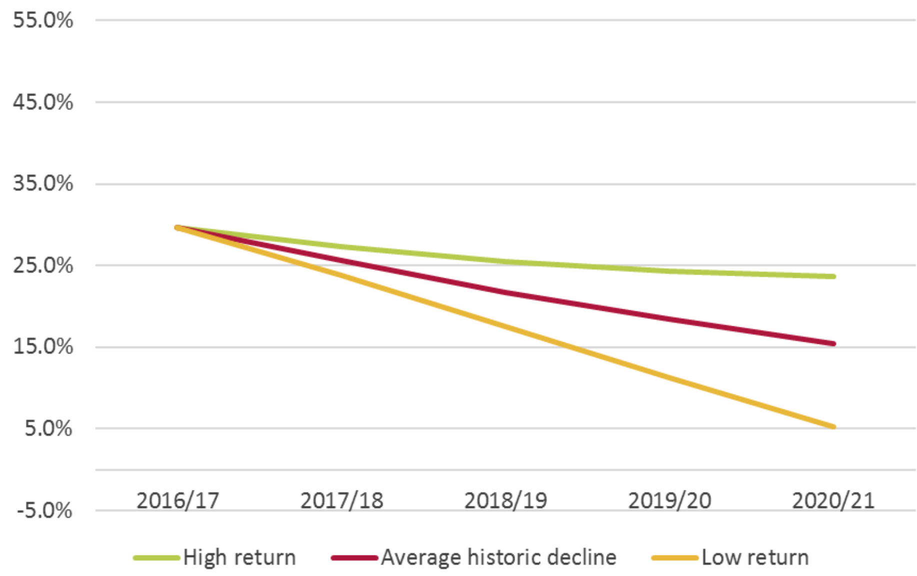
---

[508] In 2012 we imposed a price cap of RPI-13.75% for the main basket of ISDN30 rentals and connections for a two year period ending in 2013/14. Ofcom, 2012. *ISDN30 Charge Control Statement*. https://www.ofcom.org.uk/__data/assets/pdf_file/0027/73908/isdn30_final_statement.pdf.

9.35 We have carried out some indicative calculations to reflect BT's returns on the basis of a HON using the broad methodology applied in our 2012 ISDN30 Charge Control Statement. Given the significant uncertainty about future costs and volumes for ISDN30, we have considered possible future scenarios to project an indicative range for future returns. We have projected returns using a range of scenarios consistent with the cost parameter sensitivities published in our March 2017 WLA Consultation, and assumptions on whether the rate of decline in volumes will match the historical trend, slow or speed up.[509]

9.36 Figure 9.1 below shows a range of possible outcomes for BT's returns in ISDN30, once adjustments are made to reflect the costs of a HON. These figures indicate that for ISDN30, if all charges were kept constant in nominal terms, BT's returns would fall within a wide range. These returns could be below or potentially some way above the estimated cost of capital for this line of business (i.e. 9.4% pre-tax nominal in 2020/21 consistent with the March 2017 WLA Consultation). While extrapolating returns based on the historical volume trend over the last three years might imply returns somewhat above the cost of capital on the basis of HON for ISDN30 (the middle series in Figure 9.1 below), we consider that a greater than average rate of decline seems likely in light of the most recent survey evidence – showing an increasing proportion of ISDN customers are planning to migrate away from ISDN[510] – and research on the likely take-up of IP-based alternatives.

Figure 9.1: Projected ROCE HON returns for ISDN30



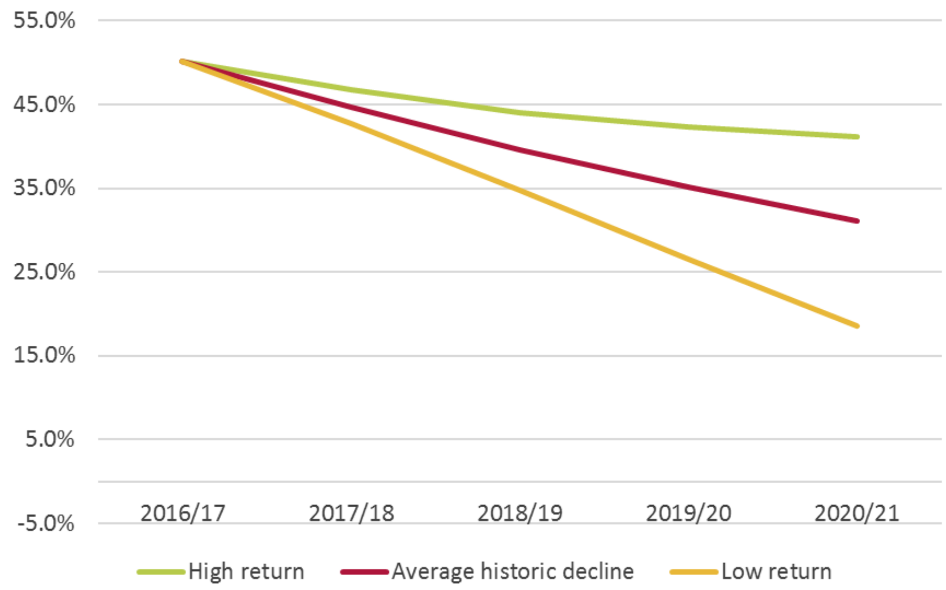
Source: Ofcom analysis based on 16/17 base year data extracted from BT Additional Financial Information

[509] We apply dampening factors to the historical rate of decline of 0.75 (in the accelerated decline, low returns scenario) and 1.5 (in the slower decline, high returns scenario). The dampening factor is applied as the reciprocal of the values above (0.75 or 1.5) to the moving average of lagged growth rates. In the historical average trend scenario, we assumed pay inflation of 3.1%, non-pay inflation of 2.4% and pay and non-pay efficiency of 5.5%. In the high return scenario, we have assumed pay inflation of 2.5%, non-pay inflation of 2.0% and pay and non-pay efficiency of 6.5%. In the low return scenario, we have assumed pay inflation of 3.5%, non-pay inflation of 3.0% and pay and non-pay efficiency of 3.5%. These are in line with sensitivities set out in Annex 14 of our March 2017 WLA Consultation.

[510] See Section 5.

9.37 Nevertheless, we anticipate BT's returns for ISDN30 on an accounting basis – i.e. that reflects the heavily depreciated asset base (as reported in BT's regulatory financial statements) – are likely to remain above the relevant cost of capital for the duration of the review period, even under the scenario of accelerated volume decline and higher costs. Figure 9.2 below illustrates the projected returns from these indicative calculations.

Figure 9.2: Projected ROCE accounting returns for ISDN30



Source: Ofcom analysis based on 16/17 base year data extracted from BT Additional Financial Information

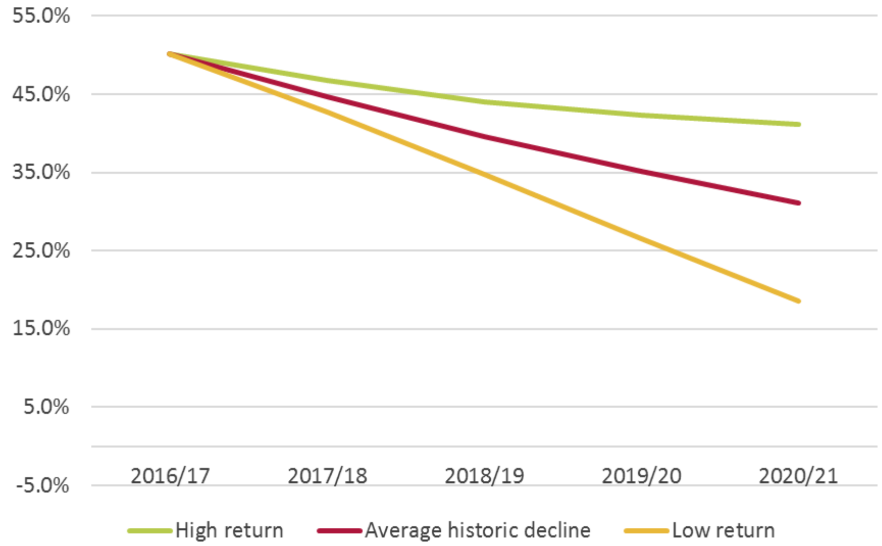
ISDN2

9.38 We imposed a flat nominal control on wholesale ISDN2 prices in the 2014 FAMR. Since then, BT's returns from wholesale ISDN2 services have been above 30% in the period 2013/14 to date – see Table 6.2 and so remain above the relevant cost of capital. However, as for ISDN30, this reflects the heavily depreciated asset base.

9.39 We have therefore carried out some indicative calculations using the same approach discussed above for ISDN30.[511] Figure 9.3 below shows a range of possible outcomes for BT's returns in ISDN2, once adjustments are made to reflect the costs of a HON. As this chart shows, HON-adjusted returns would fall from around the cost of capital in 2016/17 to below the cost of capital by 2020/21 in the three indicative scenarios.

[511] We apply dampening factors to the historical rate of decline of 0.75 (in the accelerated decline, low returns scenario) and 1.5 (in the slower decline, high returns scenario). The dampening factor is applied as the reciprocal of the values above (0.75 or 1.5) to the moving average of lagged growth rates. In the historical average trend scenario, we assumed pay inflation of 3.1%, non-pay inflation of 2.4% and pay and non-pay efficiency of 5.5%. In the high return scenario, we have assumed pay inflation of 2.5%, non-pay inflation of 2.0% and pay and non-pay efficiency of 6.5%. In the low return scenario, we have assumed pay inflation of 3.5%, non-pay inflation of 3.0% and pay and non-pay efficiency of 3.5%.

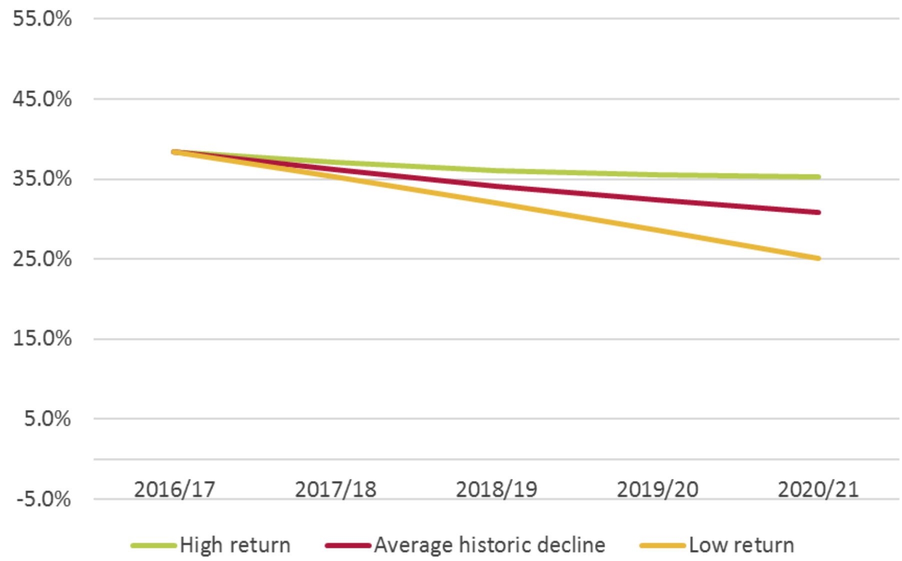
Figure 9.3: Projected ROCE HON returns for ISDN2



Source: Ofcom analysis based on 16/17 base year data extracted from BT Additional Financial Information.

9.40 However, on an accounting basis consistent with the heavily depreciated asset base reported in BT's financial statements, we anticipate that BT's returns in ISDN2 will remain above the cost of capital for the duration of the review period under the three scenarios considered. Figure 9.4 below illustrates the projected returns from our indicative calculations.

Figure 9.4: Projected ROCE accounting returns for ISDN2



Source: Ofcom analysis based on 16/17 base year data extracted from BT Additional Financial Information. There is a small immaterial difference between the ROCE in Figure 9.4 and BT's RFS due to small differences in MCEs in the base year data extracted from BT's Additional Financial Information.

Conclusions

9.41 We have assessed whether it is appropriate to impose a simple indexed or a cost-based charge control on ISDN30 and ISDN2. Given the significant uncertainty in projecting costs (and identifying the efficient level of future unit costs) and the of risk of reducing the incentives to migrate to IP-based services, we consider that a simple indexation approach reduces the risk of regulatory failure, particularly in relation to future incentives to invest. At the same time, such an approach should provide appropriate protection for downstream competitors and, ultimately, existing consumers of legacy ISDN services.

9.42 However, because BT's returns in ISDN have been consistently above the relevant cost of capital, we have decided not to hold regulated charges constant in real terms. Instead, we have decided to hold regulated charges for ISDN30 and ISDN2 at a constant level in nominal terms.

ISDN30 charge control

Structure of the ISDN30 charge control

9.43 The 2014 FAMR imposed a basket consisting of ISDN30 rentals, connections (lines and channels) and Service Maintenance Levels (SML) 3 and 4. Given our decision to stop regulating ISDN30 line connections after the transitional period, we are imposing a basket control covering ISDN30 rentals, channel connections and SML 3 and 4, with separate charge controls on transfers, DDI rentals and (for the transitional period only) ISDN30 and DDI line connections (which includes charges for the separate number planning service and connections service).[512]

9.44 We are maintaining the basket approach for rentals, channel connections and SML 3 and 4 as we consider that it remains appropriate to give BT some flexibility on individual charges. This will provide BT with the flexibility to recover common costs in the most efficient manner across these services.

9.45 Nevertheless, we are implementing a sub-cap on channel connections and a sub-basket for SML 3 and 4 so as to set some limits on BT's pricing flexibility in order to prevent undue price variation and, therefore, uncertainty for customers. Over the control period, large increases in individual charges (even if offset on average across the basket) could result in some very high charges for individual services.

9.46 The current ISDN30 charge control imposes a 5% sub-cap on connections (lines and channels) and a 0% sub-basket on SML 3 and 4. We consider that a sub-cap for connections (channels only) and a sub-basket for SML 3 and 4 remain appropriate. We are also maintaining a 5% sub-cap on channel connections and a 0% sub-basket for SML 3 and 4.

[512] In the August 2017 NMR Further Consultation, we included ISDN30 DDI Planning Services in the legal instrument for the wholesale ISDN30 charge control as it was omitted from the draft legal instrument in the 2016 NMR Consultation.

9.47 Finally, we are imposing a separate control on ISDN30 transfers because, if transfers were in the same basket as rentals, BT might have an incentive to meet the charge control by concentrating reductions on rental charges while increasing transfer charges, thus increasing the financial exposure for telecoms providers acquiring (or seeking to acquire) customers that switch provider.

Our decisions

9.48 Section 87(9) of the Act authorises Ofcom to set SMP services conditions imposing on the dominant provider, among others, such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network, or with the availability of the relevant facilities provided the conditions set out in section 88 of the Act are satisfied.

9.49 For the ISDN30 charge control, we are maintaining the structure of the current charge control, specifically:

- a basket of ISDN30 rentals, covering SML 3 and 4, and ISDN30 channel connections with a cap on average charges at current nominal levels;
- a sub-cap for ISDN30 channel connections of 5%;
- a sub-basket cap of ISDN30 SML 3 and 4 of 0%[513];
- separate controls on DDI rentals at current nominal levels; and
- a separate control on ISDN30 transfers at current nominal levels.

9.50 We also impose, for a transitional period of 12 months:

- a separate control on ISDN30 line connections at current nominal levels; and
- separate controls on DDI connections (including the planning service and connections service) at current nominal levels.

[513] Should BT replace these services, the replacement services would also be within the scope of the control.

Table 9.3: Charge controls for ISDN30

Basket/service	Charges at 1 December 2017	First Relevant Period	Second Relevant Period	Third Relevant Period
ISDN30 Connection Services New Installation	£755.00	£755.00	NA	NA
ISDN30 Transfer Services*	£81.57	£81.57	£81.57	£81.57
ISDN30 Direct Dial Inward Planning Service	£81.57	£81.57	NA	NA
ISDN30 Direct Dial Inward Connection Service	£0.81	£0.81	NA	NA
ISDN30 Direct Dial Inward Rental Service*	£1.04	£1.04	£1.04	£1.04
ISDN30 basket (rentals, connections per channel and SML 3 and 4)*	Various	0%	0%	0%
ISDN30 Connection Services per channel*	£3.50	+5%	+5%	+5%
ISDN30 SML 3 and 4 sub-basket*	Various	0%	0%	0%

*Source: Ofcom, Openreach's price list. Note: * means that for the Second and Third Relevant Period the charge control for this (these) service(s) applies only in respect to an Existing ISDN30 Rental at the end of the First Relevant Period.*

9.51 We further require that the average basket price change BT is allowed to make in the second and third period of the control should reflect whether its actual price change in the previous period was in line with the maximum allowed under the charge control. That is, if BT reduces charges by more than is required under the cap, then it will be able to carry the headroom or "excess" over the cap into the following period of the charge control and increase its average prices to compensate. Conversely, if BT reduces the charges by less than is required, then it will have to carry the deficit into the next period and make up the shortfall by reducing prices more than the cap requires. In the last period of the control, if BT is likely to fail to secure that the change in price does not exceed the control, then we can direct that BT should make an appropriate adjustment to its charges.

9.52 In addition, we impose a requirement on BT to supply information in order for us to monitor its compliance with the control. BT will be required to provide this information annually to Ofcom, three months after the end of each charge control period.[514]

Ancillary services

9.53 In the 2014 FAMR, we imposed charge controls on certain ancillary services reasonably necessary for the use of BT's wholesale ISDN services. We are maintaining these charge

[514] This requirement is set out in Condition 5A. BT is also required to publish non-confidential compliance schedules in relation to ISDN30 as set out in Section 20.

controls; specifically, we impose charge controls on SML 3 and 4 and DDI services for existing ISDN30 lines.

9.54 With regard to other ISDN30 ancillary services linked to existing lines, we consider that the revenue from these services is so small that it is not appropriate to impose a specific charge control on these services. These services, in line with our decision set out in Section 8, will instead be subject to a fair and reasonable charges obligation.

Service Maintenance Levels

9.55 SML 3 and 4 offer customers services such as expedited repair and flexible appointments. In the 2014 FAMR, we continued to impose price regulation on SML 3 and 4 by placing them in the same basket as ISDN30 rentals and connections. We are continuing with this basket approach as it allows BT some flexibility to rebalance charges if necessary.

Direct Dialling In

9.56 DDI allows consumers to control their own numbering and receipt of calls and for outside callers to directly dial into extension numbers. With regard to DDI connections (number planning and connection charges) and DDI rentals on ISDN30 lines, we are regulating them in the same way as we are regulating ISDN30 line connections and rentals. We therefore impose charge controls on new DDI connections (including the planning service and the connection service) made in the first 12 months only of the market review period and on DDI rentals connected before the start of the second charge control period. We are maintaining nominal prices for these existing DDI services.

Transfers

9.57 We are imposing a charge control on the transfer of all ISDN30 lines in the transitional period and a charge control on the transfer of existing ISDN30 lines only from the end of the transitional period. Our key competition concern in the ISDN30 market is protecting downstream competition for existing lines. We recognise the importance of transfer charges in facilitating switching and therefore downstream competition. In the absence of a charge control on transfers, BT might have an incentive to set these charges at an excessively high level, deterring switching and undermining the effectiveness of our wholesale remedies in protecting retail completion. Our approach promotes retail competition by supporting the ability of telecoms providers to compete for existing users of ISDN30.

Legal tests

9.58 For the reasons set out below, we are satisfied that the charge control condition for BT on ISDN30 meets the tests set out in the Act.

9.59 We consider that the condition satisfies the requirements of section 88(1) as our market analysis indicates that, absent the charge controls, there is a risk of adverse effects arising from price distortion as BT might fix and maintain some or all of its prices for wholesale ISDN30 at an excessively high level with adverse consequences for end users of public electronic communications services.

9.60 We consider that the charge control condition is appropriate for the purposes of promoting efficiency and sustainable competition by ensuring that there is no distortion or restriction of competition and that other telecoms providers can effectively compete at the retail level. We consider this to be the appropriate approach for the purposes of conferring the greatest possible benefits on end users of public electronic communications services. We also consider that the charge control conditions will ensure prices are set at a level which supports efficient migration to newer services and encourages efficient investment in new technologies.

9.61 In setting the ISDN30 wholesale charge control condition we have taken account of the extent of investment by BT in the matters to which the condition relates in accordance with section 88(2) of the Act. In particular, we consider that a cap set at the prevailing level of average charges is likely to ensure that returns remain above the cost of capital for this line of business and should also maintain incentives to invest in (and promote) the take-up of newer IP-based alternatives.

9.62 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

9.63 We consider that the performance of our general and specific duties under sections 3 and 4 of the Act is secured or furthered by our proposal to adopt these charge controls. In particular, we consider that the charge controls will prevent excessive wholesale pricing by BT, while encouraging migration to newer IP-based services and efficient investment in new technologies. The existing charge control for wholesale ISDN30 services has promoted sustainable competition in the downstream market to the benefit of consumers. We conclude that such controls are necessary to sustain this level of competition for existing ISDN services.

9.64 We have had regard to the requirement to promote competition and to secure efficient and sustainable competition for the benefit of consumers, which are relevant to both Sections 3 and 4 of the Act. In making our decisions and focusing our remedies on existing ISDN services, we have also sought the least intrusive regulatory measures to achieve our policy objectives.

9.65 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- Objectively justifiable, in that, in the absence of any charge control on existing ISDN30 services, BT's SMP would allow it to set charges unilaterally and set prices excessively high which would distort downstream competition. The design of the controls is also such that BT has an incentive to continue to seek efficiency gains.
- Not unduly discriminatory, in that the charge controls do not discriminate unduly against BT as it is the only telecoms provider to hold SMP in the market (for the UK excluding the Hull Area) and the controls seek to address that market position.
- Proportionate, in that the charge controls are focused on ensuring that there are reasonable wholesale prices for existing ISDN30 services, which are important in

protecting existing customers from excessively high prices. We therefore consider the charge controls are:

  - appropriate to achieve the aim of addressing BT's ability and incentive to charge excessive wholesale prices;
  - necessary, in that they do not impose controls on the prices that BT may charge that go beyond what is required to achieve the aim of addressing BT's ability and incentive to charge excessively for these services; and
  - are such that they do not produce adverse effects that are disproportionate to the aim pursued.

- Transparent, in that the aims and effects of the charge controls are clear and they have been drafted so as to secure maximum transparency.

9.66 In relation to charge controls on ISDN30 line connections in the transitional period, the condition is:

- objectively justifiable, in that it provides a period of protection against excessive wholesale pricing while telecoms providers complete existing contract negotiations;
- not unduly discriminatory, in that it is imposed on BT and no other telecoms provider has been found to hold a position of SMP in these markets in the UK excluding the Hull Area;
- proportionate, in that it is imposed for a limited time only, is targeted at addressing the market power that BT holds in these markets and important in maintaining downstream competition; and
- transparent, in that the aims and effects of the charge controls are clear, and they have been drafted so as to secure maximum transparency.

9.67 The text of the conditions has been published in Annex 9 and the operation of those conditions is aided by our explanations in this document.

ISDN2 charge control

Structure of the ISDN2 charge control

9.68 The 2014 FAMR imposed a basket consisting of ISDN2 rentals and connections. This basket structure is no longer appropriate following our decision to cease the regulation of ISDN2 connections after the transitional period. We therefore impose separate controls on ISDN2 rentals, connections and transfer charges.

Our decisions

9.69 Section 87(9) of the Act authorises Ofcom to set SMP services conditions imposing on the dominant provider, among others, such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network, or with the availability of the relevant facilities provided the conditions set out in section 88 are satisfied.

9.70 For the ISDN2 charge control, we impose:

- a separate control on ISDN2 rentals for existing lines at current nominal levels (and for all lines during the transitional period);
- a separate control on ISDN2 line connections at current nominal levels (for the transitional period only); and
- a separate control on ISDN2 transfers for existing lines at current nominal levels (and for all lines during the transitional period).

9.71 We also impose a requirement on BT to supply information in order for us to monitor its compliance with the control. BT will be required to provide this information annually to Ofcom, three months after the end of each charge control period.[515]

9.72 Our aim in controlling wholesale ISDN2 charges is to protect competition for consumers of existing lines and we consider that it is appropriate to use a similar cap as imposed in the 2014 FAMR.

Ancillary services

9.73 With regard to ISDN2 ancillary services linked to existing lines, we consider that the revenue from these services is so small that it is not appropriate to impose a specific charge control on these services. These services, will instead be subject to a fair and reasonable charges obligation (as described in Section 8).

Transfers

9.74 We are imposing a charge control on the transfer of all ISDN2 lines in the transitional period and a charge control on the transfer of existing ISDN2 lines only from the end of the transitional period. Our key competition concern in the ISDN2 market is protecting downstream competition for existing lines. We recognise the importance of transfer charges in facilitating switching and therefore retail competition. In the absence of a charge control on transfers, BT might have an incentive to set these charges at an excessively high level, deterring switching and undermining the effectiveness of our wholesale remedies in protecting downstream competition. Our approach protects downstream competition by supporting the ability of telecoms providers to compete for existing users of ISDN.

Legal tests

9.75 For the reasons set out below, we are satisfied that the charge control condition for BT on ISDN2 meets the tests set out in the Act.

9.76 We consider that the condition satisfies the requirements of section 88(1) of the Act as our market analysis indicates that, absent the charge controls, there is a risk of adverse effects arising from price distortion as BT might fix and maintain some or all of its prices for

[515] This requirement is set out in Condition 5B. BT is also required to publish non-confidential compliance schedules in relation to ISDN2 as set out in Section 20.

wholesale ISDN2 at an excessively high level so as to have adverse consequences for end users of public electronic communications services.

9.77 We consider that the charge control condition is appropriate for the purposes of promoting efficiency and sustainable competition and conferring the greatest possible benefits on end users of public electronic communications services. We also consider that the charge control conditions will ensure prices which encourage efficient migration from declining services to newer replacements and encourage efficient investment in new technologies.

9.78 In setting the ISDN2 wholesale charge control condition we have taken account of the extent of investment by BT in the matters to which the condition relates in accordance with section 88(2) of the Act. In particular, we consider that a cap set at the prevailing level of average charges is likely to ensure that returns remain above the cost of capital for this line of business and should also maintain incentives to invest in (and promote) the take-up of newer IP-based alternatives.

9.79 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

9.80 We consider that the performance of our general and specific duties under sections 3 and 4 of the Act is secured or furthered by our decision to adopt the charge controls. In particular, we consider that the charge controls will prevent excessive pricing by BT, while encouraging migration to newer IP-based services and efficient investment in new technologies.

9.81 We have had regard to the requirement to promote competition and to secure efficient and sustainable competition for the benefit of consumers, which are relevant to both sections 3 and 4 of the Act. In making our decisions and focusing our remedies on existing ISDN2 services, we have also sought the least intrusive regulatory measures to achieve our policy objectives.

9.82 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- Objectively justifiable, in that, in the absence of any charge control on existing ISDN2 services, BT’s SMP would allow it to set charges unilaterally and set prices excessively high which would distort downstream competition. The design of the controls is also such that BT has an incentive to continue to seek efficiency gains.
- Not unduly discriminatory, in that the charge controls do not discriminate unduly against BT as it is the only telecoms provider to hold SMP in the market (for the UK excluding the Hull Area) and the controls seek to address that market position.
- Proportionate, in that the charge controls are focused on ensuring that there are reasonable wholesale prices for existing ISDN2 services, which are important in protecting existing customers from excessively high prices. We therefore consider the charge controls are:

  - appropriate to achieve the aim of addressing BT's ability and incentive to charge excessive wholesale prices;
  - necessary, in that they do not impose controls on the prices that BT may charge that go beyond what is required to achieve the aim of addressing BT's ability and incentive to charge excessively for these services; and
  - are such that they do not produce adverse effects that are disproportionate to the aim pursued.

- Transparent, in that the aims and effects of the charge controls are clear and they have been drafted so as to secure maximum transparency.

9.83 In relation to charge controls on ISDN2 connections in the transitional period, the condition is:

- objectively justifiable, in that it provides a period of protection against excessive wholesale pricing while telecoms providers complete existing contract negotiations;
- not unduly discriminatory, in that it is imposed on BT and no other telecoms provider has been found to hold a position of SMP in these markets in the UK excluding the Hull Area;
- proportionate, in that it is imposed for a limited time only, is targeted at addressing the market power that BT holds in these markets and important in maintaining downstream competition; and
- transparent, in that the aims and effects of the charge controls are clear and they have been drafted so as to secure maximum transparency.

9.84 The text of the conditions has been published in Annex 9 and the operation of those conditions is aided by our explanations in this document.

10. Quality of service remedies on BT: WFAEL, ISDN30 and ISDN2

10.1 In Section 8 we set out our decisions in relation to SMP remedies on BT in the WCO and narrowband access markets in the UK excluding the Hull Area. In this section we set out our analysis of BT's quality of service (QoS) performance in the WFAEL, ISDN30 and ISDN2 markets and our decisions in relation to QoS remedies on BT in the next market review period.

10.2 In Section 18 we set out our decision to retain the obligation on BT to provide transparency as to QoS for its provision of interconnect circuits.

Structure of this section

10.3 This section is structured as follows:

- we summarise our decisions in relation to QoS remedies on BT in the next market review period;
- we summarise our proposals in relation to QoS remedies on BT in our 2016 NMR Consultation, and our proposals in relation to the 2008 SLG Directions in our March 2017 QoS Consultation;
- we set out stakeholder responses to our 2016 NMR Consultation, and stakeholder responses in relation to the 2008 SLG Directions covered in our March 2017 QoS Consultation; and
- we set out our analysis and conclusions, including our consideration of stakeholder responses.

Summary of decisions

10.4 We have decided to set an SMP condition in the WFAEL market requiring BT to comply with such conditions relating to quality of service as Ofcom directs from time to time. Under that condition we have decided to retain the existing provision and repair QoS standards for WLR, pending our comprehensive review of those standards which will be concluded in our forthcoming QoS statement, which will accompany the 2018 WLA statement. We have also decided to retain the existing directions setting KPIs for WLR, pending our comprehensive review of those KPIs which will also be concluded in our QoS statement.

10.5 We have decided to set an SMP condition in the ISDN30 and ISDN2 markets requiring BT to publish such information relating to quality of service as Ofcom directs from time to time. Under that condition, we have decided to make directions setting KPIs for the ISDN30 and

ISDN2 markets. The KPIs for these markets are based on the existing KPIs modified to remove those KPIs relating to provisioning.[516]

10.6 We have decided to remove the requirement in the WCO market on BT to publish QoS information.

10.7 We have decided not to reapply the 2008 SLG Directions, and instead to include elements of the 2008 SLG Directions in BT's Reference Offer condition, including a requirement that SLG payments are made on a proactive basis by BT.

Summary of consultation proposals

10.8 We published our consultation proposals on QoS remedies for the WFAEL, ISDN30 and ISDN2 markets in the 2016 NMR Consultation.[517] We then published proposals and changes in the March 2017 WLA Consultation[518], followed by further proposals on the level of QoS standards and withdrawing the 2008 SLG directions in the March 2017 QoS consultation. We subsequently published revised proposals on the level of QoS standards in the September 2017 QoS Consultation, which do not affect the decisions that we are taking in this review.[519] The final decisions regarding these September proposals will be included in our forthcoming QoS statement.

Proposals in relation to QoS SMP Conditions

WFAEL

10.9 In our 2016 NMR Consultation, we proposed to set an SMP condition in the WFAEL market requiring BT to comply with such conditions relating to quality of service as Ofcom directs from time to time. Under that condition we proposed to retain the existing provision and repair QoS standards for WLR, pending our comprehensive review of those standards which was set out in our March and September 2017 QoS Consultations and will be concluded in our forthcoming QoS statement. We also proposed to retain the existing directions setting KPIs for WLR, pending our comprehensive review of those KPIs which will also be concluded in our QoS statement.

Levels of WLR standards

10.10 In the March and September 2017 QoS Consultations we proposed to set directions in relation to the levels of WLR QoS standards. For WLR, MPF and GEA-FTTC, we proposed to set directions in relation to:

---

[516] The SMP condition allows a further review of these KPIs if necessary during the charge control period.
[517] 2016 NMR Consultation, Section 10.
[518] Ofcom, 2017. *Wholesale local access Consultation on the proposed market, market power determinations and remedies.* https://www.ofcom.org.uk/consultations-and-statements/category-1/wholesale-local-access-market-review.
[519] Ofcom, 2017. *Quality of Service for WLR, MPF and GEA Consultation on Proposed Quality of Service Remedies, https://www.ofcom.org.uk/consultations-and-statements/category-1/quality-of-service and Ofcom, 2017, Quality of Service for WLR, MPF and GEA Further Consultation on proposed quality of service remedies.* https://www.ofcom.org.uk/__data/assets/pdf_file/0012/106311/consultation-quality-service-wlr-mpf-gea.pdf.

- the proportion of repairs that BT must complete within the service level agreement (SLA) timescales, where we proposed an increase from the current level of 80% to 88% by 2020/21[520];
- the proportion of repairs completed five days after the time promised in the SLA, where we proposed a requirement for BT to reach a 97% compliance rate by 2020/21;
- the proportion of on-time installations, where we proposed an increase from the current level of 90% to 95% by 2021; and
- installation appointments, where an Openreach engineering visit is required to install WLR, where we proposed:
  - a reduction in the lead time for the first available appointment date offered by Openreach from within 12 working days to within 10 working days by 2021; and
  - a requirement on Openreach to offer an appointment date within 10 working days 90% of the time rather than the current 80% by 2021.

10.11 Stakeholder responses to our proposals and our final decisions regarding the levels of these standards will be included in our forthcoming QoS statement.

ISDN30 and ISDN2

10.12 In the 2016 NMR Consultation, we proposed to set an SMP condition in the ISDN30 and ISDN2 markets requiring BT to publish such information relating to quality of service as Ofcom directs from time to time. Under that condition, we proposed to make directions setting KPIs for ISDN30 and ISDN2 markets.

WCO

10.13 In the 2016 NMR Consultation, we proposed to remove the requirement in the WCO market on BT to publish QoS information.

Proposals in relation to the 2008 SLG Directions for WFAEL, ISDN30 and ISDN2

10.14 In the 2016 NMR Consultation, we proposed to retain the 2008 SLG Directions in relation to the WFAEL, ISDN30 and ISDN2 markets. However, after further consideration, in the March 2017 QoS Consultation, we proposed not to reapply the 2008 SLG Directions, and instead to include elements of the 2008 SLG Directions in BT's Reference Offer condition. This approach is consistent with our proposal in the March 2017 WLA Consultation not to re-impose the 2008 SLG Directions in relation to the WLA market.

[520] In the March 2017 QoS Consultation, we proposed an increase in the proportion of repairs that BT must complete within the SLA timescales from the current level of 80% to 93% by 2020/21. In the September 2017 QoS Consultation, we modified this proposal, and instead proposed that BT must complete 88% of repairs within the SLA timescales by 2020/21.

Stakeholder responses

Proposals in relation to the QoS SMP conditions

10.15 Vodafone, TalkTalk and BT said that they agreed with our approach of setting QoS measures on BT as part of the WLA market review.[521] Vodafone and BT noted that this allows Ofcom to ensure consistency between the WFAEL and WLA markets.

10.16 Vodafone, Verizon and [✂] broadly agreed with our SMP conditions.[522] Additionally, BT agreed with our proposal not to impose specific QoS standards on wholesale ISDN30 and ISDN2.

10.17 BT stated that it did not object to our KPI reporting proposals. [✂] welcomed the retention of KPIs relating to repairs, but disagreed with our proposal to remove KPIs relating to provisioning for the ISDN30 and ISDN2 markets. It claimed that provisioning KPIs are important in respect of BT's monopoly in these markets, and because they allow for the early identification of variations in BT's service quality. It raised concerns that, without KPIs on provisioning, Openreach would ignore industry concerns around the validity of its performance statistics and consumers would continue to be affected by poor provisioning performance.

Proposals to remove the 2008 SLG Directions and amend the SMP Reference Offer Condition

10.18 BT supported our proposal to remove the 2008 SLG Directions in relation to the NMR and WLA markets, while Vodafone, TalkTalk and [✂] disagreed with this proposal.[523]

10.19 TalkTalk claimed that industry often made reference to the 2008 SLG Directions in negotiating SLG payments, and so Ofcom should either keep them or replicate the obligations in a single, easy-to-reference guidance document. Vodafone said that we should revise the 2008 SLG Directions, removing the conditions that are out of date and maintaining those that continue to be relevant.

10.20 Vodafone was concerned about whether the principles from the 2008 SLG Directions were captured in BT's Reference Offers for all its regulated services, and whether they would be accounted for in any new reference offer conditions. Vodafone also said that BT could change its contracts for SLGs unilaterally.

---

[521] Vodafone response to 2016 NMR Consultation, part 2, pages 45-46; TalkTalk response to 2016 NMR Consultation, page 10; Openreach response to 2016 NMR Consultation, page 23. In its response, TalkTalk said that Openreach had failed the QoS standard for repairs. However, TalkTalk assumed that the QoS standards assess BT's monthly performance, when in fact these standards are measured against BT's average performance over a year as set out in the 2014 FAMR Statement and the 2014 FAMR legal instruments. See Ofcom, 2014. *Fixed access market reviews – Statement*. https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/narrowband-broadband-fixed/fixed-access-market-reviews-2014/statement. Volume 1, pages 282-273; and Annex 29, pages 148-152.

[522] Verizon response to 2016 NMR Consultation, pages 21-22; [✂].

[523] Openreach response to March 2017 QoS Consultation, pages 118-119; Vodafone response to March 2017 QoS Consultation, pages 58-59; TalkTalk response to March 2017 QoS Consultation, pages 12-13; [✂].

10.21 Vodafone and [✂] were concerned that certain principles of the 2008 SLG Statement have not been included in our proposed SMP conditions, including our position that it is not appropriate for SLG payments to be linked to forecasting. [✂] said that BT might start linking all SLG payments to forecasting with the removal of the 2008 SLG Directions, and argued that the complex value chain of wholesalers and resellers does not lend itself to accurate forecasting. Vodafone and [✂] were also concerned that we did not propose to retain the list of possible methodologies for calculating SLG payments set out in the 2008 SLG Statement as this list is used by industry as a basis for SLG negotiations.

10.22 BT disagreed with our proposal to amend the SMP Reference Offer Condition so that it included a specific service level commitment for ISDN30 for appointment availability. BT said that it does not currently have an appointment availability SLA/SLG for ISDN30 due to the complex nature of the product. BT said that the provision of ISDN30 requires detailed planning and timing is determined by customer requirements, with a minimum lead time of 30 days.

Our reasoning and decisions

Structure of this section

10.23 This section sets out our analysis and conclusions. It is structured as follows:

- we summarise our current remedies and regulation;
- we set out our strategy in relation to BT's QoS;
- we summarise BT's QoS performance for WFAEL, ISDN30 and ISDN2 since the 2014 FAMR to date;
- we explain our analysis and decisions in relation to setting SMP conditions for regulating QoS for WFAEL, ISDN30 and ISDN2; and
- we explain our analysis and decisions in relation to removing the 2008 SLG Directions for WFAEL, ISDN30 and ISDN2.

Current remedies and regulation

2008 SLG Statement

10.24 The 2008 SLG Statement in relation to WFAEL, ISDN30 and ISDN2 required Openreach to pay compensation for WLR2 and WLR3 proactively, to introduce equivalence management platform (EMP) service credits for WLR3, and to pay up to 60 full days' compensation for any one failure per line for ISDN2, WLR2 and WLR3 and per 2Mbps bearer for ISDN30.

2014 FAMR

10.25 In the 2014 FAMR, Ofcom undertook a review of matters relating to QoS delivered by BT (through Openreach) in the supply of regulated wholesale fixed access services (which included the WFAEL, ISDN30 and ISDN2 markets).[524] We determined that over several years (from 2009) there had been a decline in Openreach's performance, particularly in relation to fault repairs and provisioning of WLR and MPF services. We also concluded that the prevailing regulatory and contractual framework had not been sufficient to prevent material detriment to downstream competition in the fixed access markets arising from BT's SMP.

QoS standards for WLR and MPF

10.26 Because of the observed decline in performance, we took a number of steps to incentivise better service quality outcomes. In particular, we imposed a number of new SMP obligations on BT setting service quality standards covering provisioning and repair.

10.27 In relation to provisions, we set a QoS standard which required Openreach to offer a proportion of appointments for engineering visits within 12 working days. We also set a QoS standard on the proportion of provisions completed within this time frame, with a fixed 1% allowance for 'matters beyond our (BT's) reasonable control' (MBORC). Finally, we set a QoS standard on the proportion of repairs completed within the timeframe agreed with the telecoms provider (the service maintenance levels, or SMLs, covered by the regulation are either SML1 or SML2[525]), with a fixed 3% allowance for MBORC.

QoS for ISDN30 and ISDN2

10.28 We did not introduce QoS standards on BT in the two wholesale ISDN markets. We acknowledged the risk that BT might focus on meeting the standards for WLR and MPF at the expense of other markets, such as ISDN30 and ISDN2, but considered that we needed to balance this risk against the risks associated with the imposition of further standards, including inflexibility and the potential for gaming.[526]

10.29 We did, however, introduce enhanced reporting obligations for ISDN30 and ISDN2 markets to enable us to more effectively monitor Openreach's performance month-on-month.

KPI reporting requirements

10.30 In addition to QoS standards for WLR and MPF, in the 2014 FAMR Statement we directed BT to report a set of KPIs for WLR, LLU (MPF and SMPF), GEA (FTTC and FTTP), ISDN30 and ISDN2. This decision increased the range and granularity of the KPIs that BT is required to report to Ofcom and to industry allowing us to monitor Openreach's performance more closely and if necessary respond to any trends. The reporting requirements included an

[524] Ofcom, 2014. *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 – Statement on the markets, market power determinations and remedies.* https://www.ofcom.org.uk/__data/assets/pdf_file/0032/78863/volume1.pdf.

[525] The vast majority of access lines (for WLR, MPF and GEA-FTTC) are currently provided with a 'one day' or a 'two day' repair target. SML1 may also be referred to as 'two day' repair. Openreach aims to repair faults within two working days. SML2 may also be referred as 'one day' repairs. Openreach will aim to fix a fault within one working day, including Saturdays.

[526] By gaming, we refer to Openreach structuring its operation in a manner that will ensure the targets are met but at the expense of other stages in the service or other services.

obligation for BT to publish a sub-set of those KPIs on a publicly accessible website so that stakeholders could also monitor BT's QoS performance for these products.[527]

2016 Directions and Consents relating to the WLR and MPF minimum standards and KPIs

10.31 In our October and November 2016 Statements, Directions and Consents relating to the minimum standards and KPIs imposed in the 2014 FAMR[528], we implemented new repair standards based on the contracted care level (otherwise known as service maintenance level, or SML). At the time of the 2014 FAMR, the majority of WLR lines provided by Openreach were associated with SML1, while the majority of MPF lines were provided with SML2.[529] In 2016 a number of telecoms providers made the decision to change care level, which would have resulted in a significant proportion of total WLR and MPF lines falling outside the repair standards. To ensure that appropriate standards continued to apply in these markets, we introduced a single standard per care level that covers both MPF and WLR.

10.32 In addition, we removed the expiry dates for all WLR and MPF standard obligations and replaced these with an ongoing obligation to ensure that the standards remain in force until the WLA market review decision is published or until they are revoked, whichever is first. The 2016 Directions also amended some of the applicable KPI requirements.

Strategic Review of Digital Communications

10.33 In our Strategic Review of Digital Communications we set out our strategy for delivering an improvement in quality of service in the context of rising customer and business expectations.[530] Regarding Openreach's service quality, we explained that we have had to intervene more actively over time because Openreach is subject to limited competitive pressure at the wholesale level. We stated our intention to set standards at a level designed to ensure effective competition – so that they meet the needs of customers and businesses – rather than at a level intended only to return performance to historical levels.

QoS performance for WFAEL, ISDN30 and ISDN2 since the 2014 FAMR to date

10.34 In this sub-section, we summarise BT's QoS performance in relation to the provision and repair of WLR, ISDN30 and ISDN2 in recent years. In our 2016 NMR Consultation, we set

---

[527] Openreach, 2017. *Our Performance*, 'Home and smaller businesses'. https://www.homeandwork.openreach.co.uk/OurResponsibilities/our-performance.aspx [accessed 23 August 2017].
[528] Ofcom, 2016. *Quality of Service for WLR and MPF Directions and Consents relating to the minimum standards and KPIs imposed in the 2014 Fixed Access Market Reviews* https://www.ofcom.org.uk/__data/assets/pdf_file/0032/92678/20161017-QoS-Statement_Non-confidential.pdf; and Ofcom, 2016. *Quality of Service Direction for WLR Direction setting further minimum standard provisions for WLR provisions under the SMP Conditions imposed in the 2014 Fixed Access Market Reviews.* https://www.ofcom.org.uk/__data/assets/pdf_file/0016/94300/Further-QoS-Statement.pdf.
[529] Telecoms providers may purchase different repair packages for their wholesale inputs (WLR, LLU, VULA, and ISDN) ranging from a 'two-day' repair to a 'six-hour' repair).
[530] Ofcom, 2016. *Making Communications work for everyone, Initial Conclusions from the Strategic Review of Communications.* https://www.ofcom.org.uk/__data/assets/pdf_file/0016/50416/dcr-statement.pdf.

out a more detailed overview of BT's QoS performance using evidence provided by Openreach and, since the 2014 FAMR, mandated through KPI reporting requirements.[531] Below we set out BT's QoS performance using evidence collected through KPIs that BT is obliged to report to us.

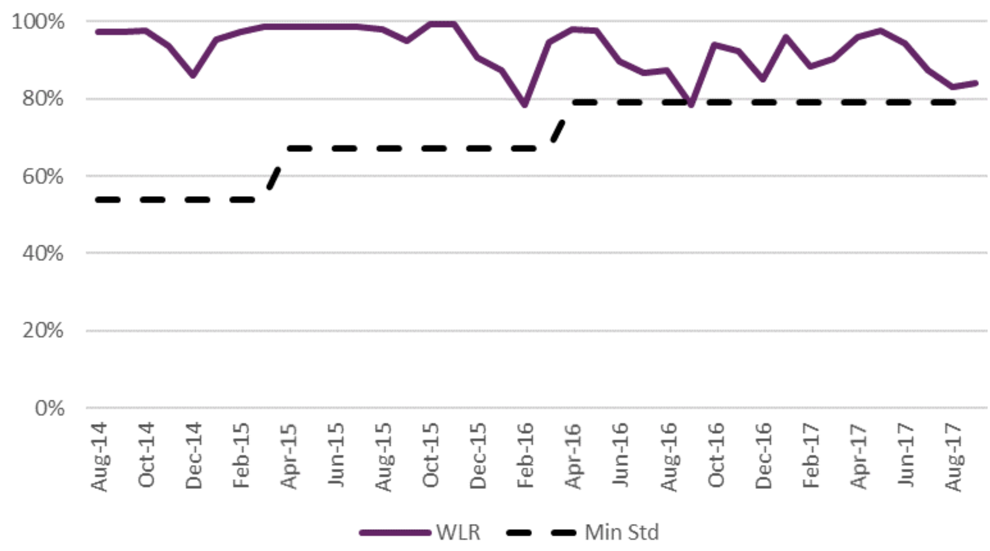
WLR performance against the standards

10.35 Openreach's compliance with the WLR standards is assessed on an annual basis, and it has met the three standards throughout the 2014 FAMR review period, although its repair performance has met the standards by a narrower margin compared to provision.[532] Openreach's performance against the WLR standards is set out below.

Provisions: Appointment availability

10.36 The 2014 FAMR requires Openreach to offer an engineer appointment, where one is required, for a new installation within 12 working days of the order being registered by a third party. The KPIs indicate that Openreach has achieved the standard at the UK level in every month (although compliance with the standard is assessed on an annual basis).

Figure 10.1: UK 12-day appointment availability for WLR services (%)



Source: Openreach mandatory non-discrimination KPIs

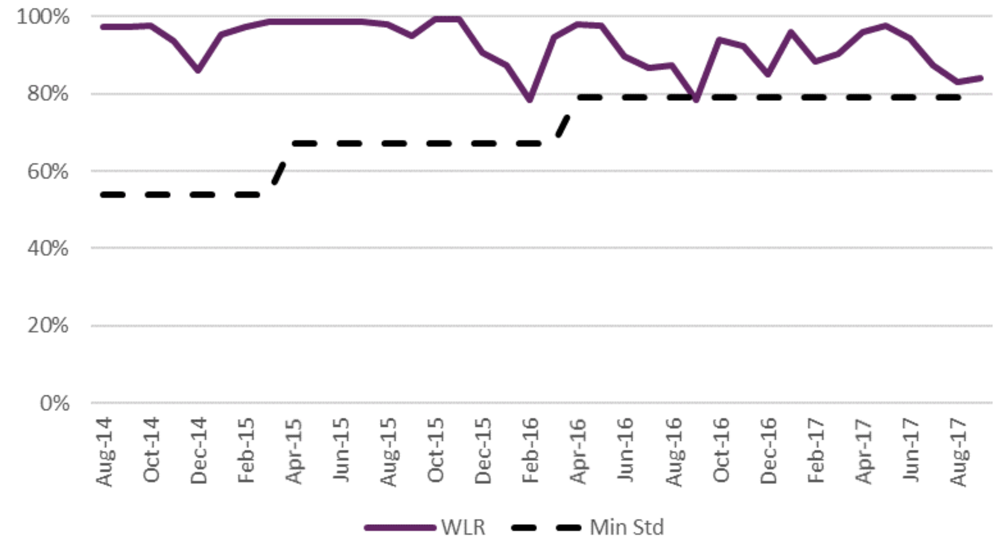
Provisions: On time completion

10.37 KPI performance at the UK level against the on-time provision standard has been consistently above the 89% standard (Figure 10.2).

531 2016 NMR Consultation, pages 188-195

532 We set out our evidence and analysis in relation to BT's QoS performance for the provisioning and repair of WLR at paragraphs 9.26-9.35 and figures 9.1-9.5 in 2016 NMR Consultation, page 188-192.

Figure 10.2: UK WLR orders provisioned on time, all orders (%)



Source: Openreach mandatory non-discrimination KPIs

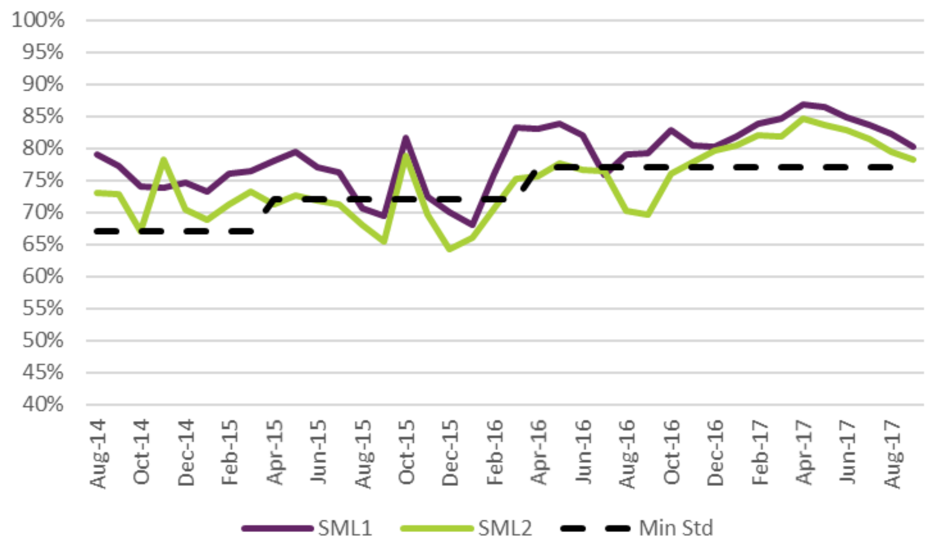
Repair performance against contractual timescales

10.38 The October 2016 QoS Directions and Consents (which amended the minimum standards imposed in the 2014 FAMR) require Openreach to complete:

- the repair of MPF and WLR faults that are subject to SML1 by the end of the second working day after such faults have been registered with Openreach; and
- the repair of MPF and WLR faults that are subject to SML2 by the end of the next working days after such faults have been registered with Openreach.

10.39 Figure 10.3 shows that UK performance against the repair SLAs for SMLs 1 and 2 since November 2016 has not fallen below the 77% standard in any given month. Over the period of the last review performance has dropped below the standard for short periods, but not to a degree or duration that affects compliance, which is measured annually.

Figure 10.3: UK faults restored on time for WLR services subject to SMLs 1 and 2 (%)



Source: Openreach mandatory non-discrimination KPIs

ISDN30 and ISDN2 performance

10.40 Based on the KPI information reported to Ofcom, Openreach's QoS in providing ISDN30 and ISDN2 over the market review period appears to be largely stable with no pronounced, continuous deteriorations in provision or repair performance.[533] Openreach's performance in relation to provisions and repairs since November 2016 is set out below.

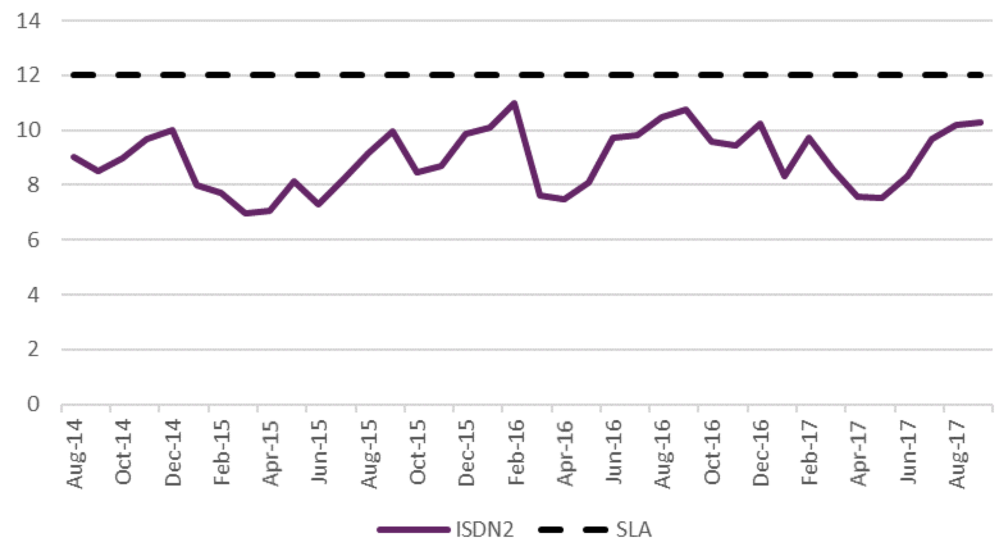
Provisions: Appointment availability

10.41 We do not currently hold data for the percentage of appointments available within the ISDN2 12-day SLA. This is a contractual commitment that requires BT to offer telecoms providers an available appointment within 12 working days of application.[534] However, as Figure 10.4 shows, average UK first available appointment dates for ISDN2 provisions across the reporting period have not exceeded the SLA (of 12 working days) in any month.

[533] We set out our evidence and analysis of BT's QoS performance in the provisioning and repair of ISDN30 and ISDN2 in the 2016 NMR Consultation, paragraphs 9.36-9.39 and figures 9.6-9.10.

[534] Openreach, 2017, *Contract for WLR3: Schedule 4 – Service Level Agreement.* https://www.openreach.co.uk/orpg/home/products/wlr3/contracts/contracts/downloads/WLR3Schedule4.pdf.

Figure 10.4: UK appointment lead time for ISDN2 (working days)[535]



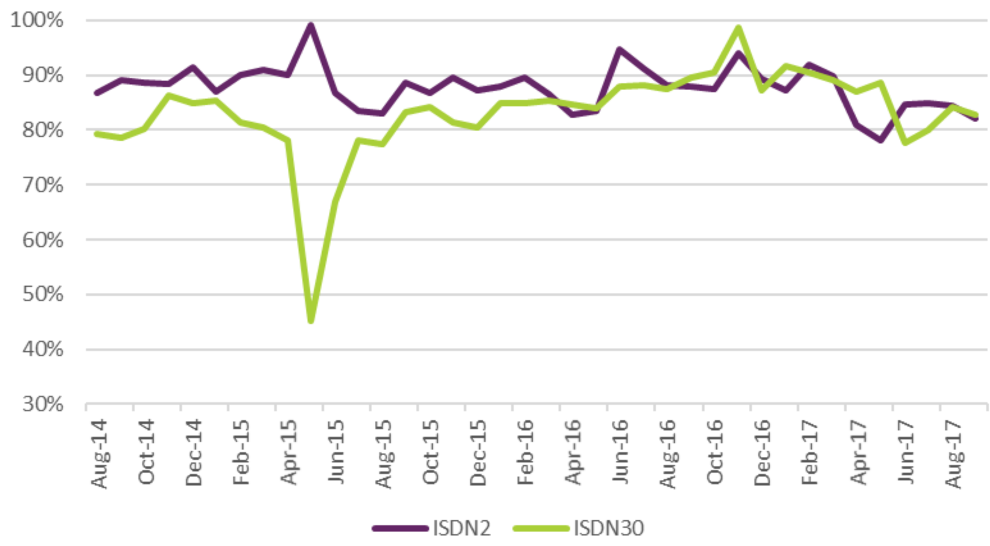
Source: Openreach mandatory non-discrimination KPIs

Provisions: On time completion

10.42 As shown in Figure 10.5, ISDN30 and ISDN2 provisioning performance has declined over the course of 2017. We note that the volatility in performance, which was particularly problematic for ISDN30 in the past, has reduced. We would not want to see the recent decline in performance develop into a trend, but we do not seek to impose tighter controls on ISDN provisioning given the lightening of remedies in relation to connections proposed in this review.

[535] This chart is derived from the monthly KPIs provided to Ofcom. The FAMR does not require that equivalent KPI data for ISDN30 is submitted.

Figure 10.5: UK ISDN orders provisioned on time (%)

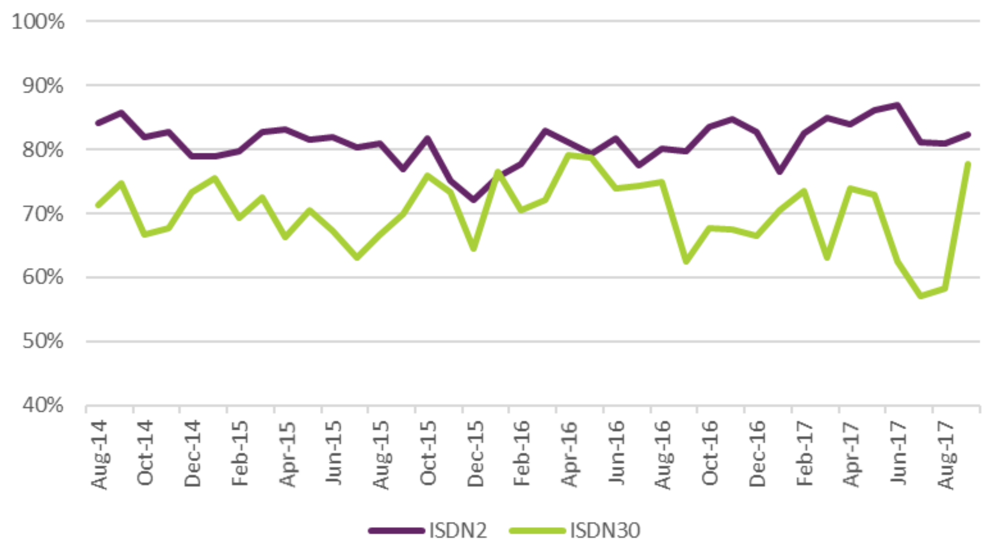


Source: Openreach mandatory non-discrimination KPIs

Repair performance against contractual timescales

10.43 Openreach on time repair performance for ISDN2 services subject to SML2 has been stable. There has been greater volatility in the repair performance for ISDN30 services (also at SML2) which is due in part to the greater complexity of the service.

Figure 10.6: UK faults restored on time for ISDN services subject to SML2 (%)



Source: Openreach mandatory non-discrimination KPIs

Our decisions in relation to an SMP condition regulating QoS for WLR

Aim and effect of regulation

10.44 The introduction of QoS standards in the 2014 FAMR appears to have stabilised and improved QoS during this review period. This highlights the importance of our intervention imposing QoS standards to support an effective WLR access remedy. However, based on our review of performance from 2009, we remain concerned that Openreach is not sufficiently incentivised (absent regulation) to maintain, or substantially exceed, current performance levels in the absence of regulatory standards.

10.45 One of the consequences of Openreach's SMP in the WFAEL market is that BT may not have the incentives to provide the quality of service that telecoms providers and customers require. Inadequate QoS delivered by BT has the potential to undermine the effective functioning of the network access remedy to the detriment of both consumers and downstream competition. Negative effects on consumers include slow resolution of faults to a loss of service and frustration resulting from long delays to the provisioning of fixed voice services. QoS issues also have the potential to adversely affect telecoms providers and the intensity of competition in retail markets by, for example, long or uncertain waiting times discouraging switching.

Our decisions

10.46 In order to address the concerns highlighted above we have decided to set an SMP condition in the WFAEL market requiring BT to comply with all such quality of service requirements in relation to network access as Ofcom may from time to time direct.[536] This condition includes a power for Ofcom to direct BT to comply with quality of service standards and KPI reporting requirements that will allow us to monitor BT's performance (subject to satisfaction of the relevant legal requirements in the Act).

10.47 Pursuant to this condition we have decided to impose a series of directions specifying quality of service standards and KPI reporting requirements in the WFAEL market in the UK excluding the Hull area. These directions have the effect of maintaining in place existing regulation and is intended to apply until we publish our final decisions in our forthcoming QoS statement.

Quality of service standards

10.48 Our March 2017 and September 2017 QoS Consultations included proposals to set higher QoS standards for WLR, alongside MPF, GEA-FTTC, GEA-FTTP and SMPF. Until we publish our decisions in relation to QoS standards, we have decided that the 2016 Directions setting QoS standards for WLR provisions and repairs will continue to apply.

[536] This condition is pursuant to our network access SMP condition. See Section 8, where we explain our decision to maintain the requirement on BT to provide network access to third party telecoms providers on reasonable request and on fair and reasonable terms, conditions and charges in the WFAEL market. It is the approach that we adopted in Ofcom, 2016. *Business Connectivity Market Review Statement*, Annex 35, Condition 7 – Quality of service. http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/statement/final-annex-35.pdf.

10.49 Maintaining the existing QoS standards until the conclusion of a detailed review of BT's quality of service will ensure there is no gap in our regulation. In the 2014 FAMR we considered in detail the justifications for and proportionality of the standards, including by reference to the resource and cost implications for Openreach and we are satisfied that continuing them in force, pending the outcome of the WLA market review, remains appropriate and proportionate.

KPI reporting requirements

10.50 We currently require BT to publish to industry and Ofcom KPIs relating to its QoS performance for the WFAEL, ISDN30 and ISDN2 markets. A subset of these KPIs for WFAEL must be published with unrestricted access on a BT Group website every three months, within 14 working days of the end of that three-month period.

10.51 Our March 2017 QoS Consultation set out our proposals in relation to KPI reporting requirements for WLR. We proposed to modify our existing set of KPIs to ensure that they remain fit for purpose; reflecting identified concerns relating to QoS performance, the proposals for new QoS standards, and the proposed extension of regulation to GEA-FTTC, as set out in the March 2017 QoS Consultation. Until we publish our decision on revising the KPIs in our forthcoming QoS statement, our view is that the current KPI reporting requirements remain appropriate. We have therefore decided that the WLR KPIs set in the 2014 FAMR (as modified in 2016) will continue to apply (see Table 10.7 below).

Table 10.7 KPIs for WLR[537]

	WLR
Percentage of orders rejected	Y
Percentage of appointed orders provisioned on time	Y
Percentage of orders provisioned on time	Y P
Percentage of orders reported as faulty	Y
Percentage of installed base reported as faulty	Y
Appointment availability	Y P GM
Average installation time (requiring an engineering visit)	Y P GM

[537] 'Y' means that BT is required to provide this information to Ofcom and industry. The precise information that must be provided to industry may differ against that provided to Ofcom although, for reasons of clarity, we have not sought to represent these differences within this table. 'P' means that BT is required to publish this information on its website every three months,. 'GM' means that the data BT provided must be disaggregated between each General Manager region (Scotland, North East, North West, North West & North Midland, South West & South Midlands, Wessex, South East, London, East Anglia and Northern Ireland). Where the 'GM' marking is not used, BT is only required to publish KPIs in relation to the United Kingdom as a whole.

	WLR
Average installation time (not requiring an engineering visit)	Y P GM
Average installation time (all order types)	Y GM
Average time to restore service	Y P
Percentage of faults restored on time for services subject to SML1	Y P GM
Percentage of faults restored on time for services subject to SML2	Y P GM
Percentage of faults restored on time for services subject to SML3	Y P GM
Percentage of repeat faults	Y
Gateway availability (excluding Scheduled Outages)	Y
Gateway availability (including Scheduled Outages)	Y
Volumes of orders submitted	Y
Volume of orders completed	Y
Volume of installed base	Y
Volume of completed faults	Y
Volume of installations affected by MBORC declarations	Y
Volume of repairs impacted by MBORC declarations	Y
Timing of fault repairs	Y P
Total fault repairs	Y P
Timing of first available appointment dates	Y P
Total appointed orders	Y P
Timing of appointed orders not provisioned on time	Y P
Total appointed orders that did not become completed orders	Y

Transparency proposals for WLR in addition to the KPI reporting requirements

10.52 In the March 2017 QoS Consultation we proposed a requirement on Openreach to report on long-term delays for WLR repairs and installations. We will publish our final decisions regarding this proposal in our forthcoming QoS statement.

Our decisions in relation to the SMP condition regulating QoS for ISDN30 and ISDN2

Aim and effect of regulation

10.53 In the 2014 FAMR, we imposed an SMP condition requiring BT to publish such information relating to its quality of service for ISDN30 and ISDN2, as Ofcom directs from time to time. However, we did not consider it was necessary to introduce pre-specified QoS standards for ISDN30 and ISDN2 at the time.

10.54 Openreach's performance on ISDN30 and ISDN2 has not been as strong across the board as its performance on WLR, MPF and GEA-FTTC. The main deterioration in performance has been on provisioning, but this may only be a temporary change. As we are proposing much lighter regulation of new ISDN lines (after a 12-month transitional period) we are not imposing a direction making power for QoS standards for ISDN30 and ISDN2 in this market review.

10.55 Nevertheless, we consider that it is appropriate to impose a requirement on BT to publish KPIs to Ofcom and industry relating to its QoS performance for these services. We consider that the publication of various performance metrics regarding service provision provides an information base that allows the early identification of variations in service quality that BT offers to itself and to its customers. This allows for the identification of potential discrimination, as well as any deterioration in quality of service.

Our decisions

10.56 We are imposing an SMP condition in the ISDN30 and ISDN2 markets requiring BT to publish such information as to quality of service in relation to network access as Ofcom directs from time to time.

10.57 Pursuant to this condition, in the sub-section below we set out our decisions in relation to imposing KPI reporting requirements in the ISDN30 and ISDN2 markets.

KPI reporting requirements

10.58 We currently require BT to publish to industry and Ofcom KPIs relating to its QoS performance for the WFAEL, ISDN30 and ISDN2 markets.

10.59 We have decided to retain the requirement on BT to provide to Ofcom and industry KPIs on repairs for ISDN30 and ISDN2 (see Table 10.8 below). This will allow us, and industry, to monitor the QoS provided to existing wholesale customers of ISDN. These transparency obligations will also allow monitoring of whether minimum standards applying to other services are having a negative impact upon BT's performance on ISDN repairs, or are leading to discrimination between services.

10.60 [✂] disagreed with our proposal to remove the KPIs relating to provisioning for the ISDN30 and ISDN2 markets, stating that BT has a monopoly in these markets. However, as explained in Section 7, we have decided to focus our regulation on existing ISDN services, rather than new ISDN connections. This is on the basis that BT's market power is weaker in relation to new ISDN lines due to the availability of, and competitive constraints from, IP-based alternatives. Given that we are removing the network access requirements on new ISDN lines and BT will no longer be obliged to connect new lines, we do not consider it appropriate to retain the KPIs that relate to BT's performance in relation to provisioning of new connections.

10.61 We have decided to remove this requirement from the start of the market review period. We consider that it is not necessary to retain this requirement for the transition period during which we are retaining other remedies on new ISDN connections, given the low and declining volumes of new ISDN connections and our decision to remove most regulation relating to new ISDN lines from the second year of the market review period.

10.62 By way of implementation, we have decided to set a new direction capturing the relevant repair KPIs (which are the same as those currently in place). These KPIs are set out in the following table:

Table 10.8: KPIs for ISDN30 and ISDN2

	ISDN30	ISDN2
Percentage of installed base reported as faulty	Y	Y
Average time to restore service	Y	Y
Percentage of faults restored on time for services subject to SML2	Y GM	Y GM
Percentage of faults restored on time for services subject to SML3	Y GM	Y GM
Timing of fault repairs	Y	Y
Percentage of repeat faults	Y	Y
Gateway availability (excluding Scheduled Outages)	Y	Y
Gateway availability (including Scheduled Outages)	Y	Y
Volume of installed base	Y	Y
Volume of completed faults	Y	Y
Volume of repairs impacted by MBORC declarations[538]	Y	Y

Source: Ofcom

Removal of WCO QoS remedy

10.63 Separately, we have decided to remove the current remedy on the WCO market that gives us the power to direct BT to publish QoS information. We have not identified a specific need to make use of this obligation and note the increasing competitive constraints acting on fixed call origination (see Section 4 and Section 6). Therefore, we are maintaining our focus on improving the QoS of narrowband access lines and removing a regulation in the WCO market that we now consider to be unnecessary.

[538] In its response to the 2016 NMR Consultation, Openreach noted that the draft KPI directions (requiring the publication of KPIs by BT for specified wholesale ISDN30 and ISDN2 exchange line services) did not reflect the modification of 19 October 2016 with regard to the timing of the publication of volume KPI(iii) (volume of repairs impacted by MBORC declarations). The modification of 19 October 2016 extended the deadline for reporting the volume of repairs impacted by MBORC declarations by one month. We have now reflected this modification in the final legal instruments.

Removing the 2008 SLG Directions and amending the SMP Reference Offer condition for the WFAEL, ISDN30 and ISDN2 markets

Aim and effect of regulation

10.64 The 2008 SLG Directions were put in place to require BT to make specific amendments to its relevant contractual agreements for the supply of regulated wholesale network access products existing at that time. These amendments to BT's terms and conditions are now well established in BT's relevant contractual agreements for the supply of regulated wholesale access products.

10.65 We note Vodafone's concern that the principles from the 2008 SLG Directions might not be captured in all BT's current or future reference offers. We consider that BT's relevant contractual agreements should continue to reflect the amendments to BT's relevant terms and conditions required by the 2008 SLG Directions, unless changes have been agreed subject to negotiation by due process (see 10.63 to 10.64). Any new contractual agreements will also be subject to negotiation, and, as such, are likely to be based on similar principles to those included in existing relevant contractual agreements.

10.66 We note Vodafone's concern that BT might change its contracts covering SLGs unilaterally. However, the relevant contractual agreement sets limitations on the circumstances in which BT may change, with notice, its contract. Any other contractual changes can only be made, in accordance with the relevant contractual provisions, following negotiations between BT and telecoms providers. In making any such changes BT would also be required to comply with its fair and reasonable obligation with respect to the provision of network access services.

10.67 Negotiations over BT's relevant contractual agreements are also subject to the principles and timeframes set out in the 2014 FAMR Statement.[539] We adopted (after consultation with stakeholders) contract negotiation principles and SLA/SLG assessment criteria to be applied to future industry negotiations in relation to SLAs/SLGs facilitated by the OTA2.[540] Where industry negotiations in relation to SLAs/SLGs do not result in an agreement, BT and its customers remain able to refer a dispute to Ofcom.

10.68 For these reasons, rather than relying on the 2008 SLG Directions as the source of regulatory obligations on BT, we have decided that it is more appropriate to include certain key elements of those directions in BT's SMP Reference Offer condition for WFAEL, ISDN30 and ISDN2. In particular the requirement to provide for proactive compensation payments to telecoms providers and to include SLAs with SLGs for the availability of BT's EMP.

10.69 We have considered [✂]'s concern that BT might start linking SLG payments to forecasting with the removal of the 2008 SLG Directions. In our 2008 SLG Statement we stated a

[539] See 2014 FAMR, SLA/SLG Negotiations, paragraphs 11.394-11.431.

[540] The Office of the Telecommunications Adjudicator – an independent organisation tasked by Ofcom to oversee co-operation between telecoms providers and enable a competitive environment in the telecommunications sector. http://www.offta.org.uk/.

general view that it is not appropriate for SLG payments to be linked to forecasting.[541] We also included a specific obligation in the LLU contract for MPF and SMPF to remove the link between SLG payments and forecasting for late provisions.[542]

10.70 We note that BT's current contracts for WLR, MPF and GEA do not link SLG payments to forecasting, except in relation to Appointment Availability for certain telecoms providers.[543] While we recognise the importance of accurate forecasting, we do not believe that linking SLGs to forecasting would be appropriate for any other situation for SLGs for WLR, MPF or GEA, apart from in relation to Appointment Availability. We note that in relation to areas such as repairs the telecoms provider has little influence over the level of activity.

10.71 Vodafone and [✂] said that the list of possible methodologies for calculating SLG payments set out in the 2008 SLG Directions continues to be used as a basis for negotiations. We note that this list was only included in the main 2008 Statement of the SLG Directions by way of describing the different principles that generally applied in commercial transactions, and were not part of the requirements imposed in the directions themselves.[544] We continue to consider that in standard commercial circumstances, it is possible to use various methodologies to calculate SLG payments, such as:

- lost/delayed revenue as a result of the failure;
- lost customers;
- compensation paid by the telecoms provider to their customers;
- additional costs of customer service relating to the failure;
- operational costs to the telecoms provider of dealing with Openreach as a result of the failure; and
- damage to reputation.

10.72 We recognise that the methodologies used to calculate SLGs may vary on a case by case basis. As noted above, where industry negotiations do not result in an agreement, BT and its telecom provider customers remain able to refer a dispute to Ofcom. We also note that telecoms providers can make claims for additional losses in addition to those set out in the SLA/SLGs.

10.73 Regarding TalkTalk's concern that the provisions of the 2008 SLG Directions should be included in a single guidance document, the provisions were not intended to be an exhaustive list of principles relating to SLA/SLG negotiations and we do not believe that we will unduly affect negotiations by not including the provisions of the 2008 SLG Directions within one document.

[541] Ofcom, 2008. *Service Level Guarantees: incentivising performance, Statement and Directions*, paragraph 3.49. https://www.ofcom.org.uk/__data/assets/pdf_file/0020/33617/statement.pdf.

[542] 2008 Statement of the SLG Directions, Annex 2, paragraph 1.c.

[543] Telecoms providers whose level of provision orders meets the forecast threshold level as set out by BT in their Forecasting manual, see Openreach, 2015, *Contract for WLR3 Schedule 3 – Forecasting.* https://www.openreach.co.uk/orpg/home/products/wlr3/contracts/contracts/downloads/wlr3schedule3issue14050315.pdf.

[544] 2008 Statement of the SLG Directions, paragraphs 4.29 and 5.28.

10.74 When we proposed amendments to the Reference Offer condition in the March 2017 QoS Consultation to include key principles from the 2008 SLG Statement, we also added a service level commitment for ISDN30 relating to "availability of an appointment for the provision of the service'. This was because we noticed that there was no appointment availability provision in the Reference Offer for ISDN30 but there was for other products, such as WLR and MPF. In our consultation, we said we could not find any evidence or reasoning for this discrepancy. BT has since said that it does not currently have an appointment availability SLA/SLG for ISDN30 due to the complex nature of the product. BT said that the provision of ISDN30 requires detailed planning and timing is determined by customer requirements, with a minimum lead time of 30 days. In light of this, we do not consider that it would be justifiable to add the proposed service level commitment, especially given that we are removing most of our remedies on new ISDN connections after the transitional period. Therefore, we have decided not to proceed with our proposal to amend the Reference Offer to include a service level commitment for ISDN30 relating to 'availability of an appointment for the provision of the service' and have set out revised conditions in Annex 9.

Conditions

10.75 We have concluded that it is not necessary or appropriate to re-impose the 2008 SLG Directions for WFAEL, ISDN30 and ISDN2[545] in the next market review period, but to include certain key provisions of these Directions in BT's SMP Reference Offer condition for these markets.

10.76 We consider that the reasons BT's contracts for certain services must provide for proactive compensation payments to telecoms providers remain relevant today. We have decided to include in the SMP condition a requirement that SLG payments are made on a proactive basis by BT. This is reflected in the definition of "Service Level Guarantees" in SMP Condition 6.11(b).[546]

10.77 We also consider that the Reference Offer SMP condition for WFAEL, ISDN30 and ISDN2 should include 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). This is reflected in SMP Conditions 6.2A (WFAEL), 6.2B1 and 6.2B.2 (ISDN30), and 6.2C1 and 6.2C2 (ISDN2).

Legal tests

10.78 For the reasons set out below, we are satisfied that the conditions imposed on BT in respect of each of the WFAEL, wholesale ISDN30 and wholesale ISDN2 markets in the UK excluding the Hull Area meet the relevant tests set out in the Act.

[545] The draft legal instrument in Annex 8 of the March 2017 QoS Consultation did not remove the 2008 Directions from ISDN30 and ISDN2. This has been corrected in the SMP Conditions at Annex 9.

[546] In making these amendments, we are also correcting an omission. In paragraphs 6.2B2 and 6.2C2, the list of service level commitments should have been preceded with "(a) Service Level Commitments in respect of at least the following aspects of that service".

SMP Condition and maintaining existing QoS directions for WLR

10.79 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. We consider that the regulation that we are imposing in relation to quality of service will enable Ofcom to secure that network access is provided within a reasonable period of time and on a fair and reasonable basis.

10.80 In making these decisions, we have taken into account the factors set out in section 87(4) of the Act. In particular, we consider that the imposition of the condition enabling Ofcom to set standards as to quality of service is necessary to ensure an appropriate level of quality of service so as to secure effective competition.

10.81 It will also ensure that there can be an appropriate level of transparency in relation to quality of service (in conjunction with the KPI directions we are re-imposing). Section 87(6)(b) of the Act 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.

10.82 We have considered our duties under section 3 of the Act. We consider that, by ensuring that BT adheres to prescribed quality of service standards in relation to the provisioning and the repair of faults, these regulations will further the interests of citizens in relation to communications matters and further the interests of consumers in relevant markets by promoting competition.

10.83 We have considered the Community requirements set out in section 4 of the Act. We consider that these decisions will promote competition in relation to the provision of electronic communications networks and encourage the provision of network access for the purposes of securing efficient and sustainable competition in the markets for electronic communications networks and services.

10.84 We also consider that the SMP condition and the directions setting QoS standards and KPIs that we are re-imposing for WLR meet the criteria in sections 47(2) of the Act. In particular, our decisions are:

- Objectively justifiable, in that the purpose of the regulation is to ensure mandatory quality of service standards in relation to one of the key services supporting network access. The evidence available to us indicates that, in the absence of other effective incentive mechanisms, continued regulation is necessary to secure an appropriate level of service by BT and our regulation addresses this issue. In advance of concluding a full review of quality of service matters across BT's access network, we consider that maintaining the existing standards is the most appropriate means of securing the level of QoS necessary to ensure effective network access.

- Not unduly discriminatory, in that it will only apply to BT, which we have identified as the only telecoms provider having SMP in the relevant market in the UK excluding the Hull Area.
- Proportionate, in that we have identified the need for continued regulation of BT's quality of service and the condition and direction are targeted specifically to those areas for which regulation is required. We consider that our decisions are the least onerous means of achieving the objective we have identified of securing an appropriate level of quality of service in the delivery of key aspects of network access. We have explained that, without intervention, the level of service by Openreach has previously fallen below what we consider acceptable levels and that, given BT's market power, may do so in future if regulation is not maintained. Further, the standards that we are carrying forward are structured to take account of the impact of events outside BT's control on its ability to meet the standards we are imposing.
- Transparent, in that, in relation to what they are intended to achieve, it is the clear intention of the regulation to ensure that BT maintains a level of quality of service in relation to a number of key factors of importance to telecoms providers that buy these wholesale inputs and it is clear what those standards are.

10.85 For the reasons set out above, we consider that the regulation is appropriate to address the competition concerns, in line with section 87(1) of the Act.

Transparency as to quality of service conditions for ISDN30 and ISDN2 services

10.86 Section 87(6)(b) of the Act authorises the setting of SMP conditions which require a dominant provider to publish, in such manner as Ofcom may direct, all such information, for the purpose of securing transparency.

10.87 We have considered our duties under the Act, including our general duties under section 3, and all the Community requirements set out in section 4, of the Act. We note, in particular, that the SMP condition is aimed at promoting competition and securing efficient and sustainable competition for the maximum benefit of consumers by ensuring that providers have visibility of the quality of service that BT provides to itself and to other providers.

10.88 We also consider that the SMP condition in each wholesale ISDN market meets the criteria in sections 47(2) of the Act. In particular, we consider that each SMP condition is:

- objectively justifiable, in that it aims to prevent undue discrimination in the provision of service by requiring BT to publish quality of service information about the service it provides to itself and to other providers;
- not unduly discriminatory, in that it is imposed only on BT and no other provider has been found to hold a position of SMP in the ISDN markets in the UK excluding the Hull Area;
- proportionate, in that it only requires BT to publish information as directed by Ofcom in the event we consider such information is required to monitor BT's compliance with

its other obligations, which is the minimum condition to ensure the desired objective; and
- transparent, in that it is clear in its intention that BT is required to publish quality of service information.

KPI directions for ISDN30 and ISDN2 services

10.89 We further consider that the KPI Directions that we have imposed in the wholesale ISDN30 and wholesale ISDN2 markets in the UK excluding the Hull Area meet our duties under the Act, including our general duties under section 3, and all the Community requirements set out in section 4, of the Act and also meet the requirements in section 49 of the Act.

10.90 We consider that our decisions are:

- objectively justifiable, in that we have identified a need to publish specific KPIs to ensure that we can monitor quality of service issues, including any undue discrimination in the markets;
- not unduly discriminatory, in that they only apply to BT and it is only BT that is subject to the SMP transparency conditions;
- proportionate, in that BT is only required to publish specific KPI data related to key business processes and, as BT is already supplying such data, already has systems and procedures in place. In relation to ISDN30 and ISDN2 services we no longer require the publication of the KPIs relating to provisions; and
- transparent, in that it is clear from the directions as to what information will be required to be published and supplied by BT.

SLG requirements in the SMP Reference Offer condition

10.91 In Section 8, we set out the legal tests for our decision to impose an SMP Reference Offer condition on BT in the WFAEL, WCO, wholesale ISDN30 and wholesale ISDN2 markets. This assessment takes account of our decisions that the SMP Reference Offer condition should include a requirement that SLG payments are made on a proactive basis 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).

11. Remedies on KCOM: WFAEL, WCO, ISDN30 and ISDN2

11.1 In Section 6, we determine that KCOM has SMP in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area.

11.2 In this section, we set out our decisions to impose certain remedies on KCOM in the relevant markets in the Hull Area. We set out our decisions to impose remedies to address KCOM's SMP in the WCT market in Section 13. We set out our decisions to impose remedies on KCOM's provision of interconnect circuits in Section 17.

11.3 As explained in Section 7, the remedies are designed to address our competition concerns associated with our finding that KCOM has SMP in each of the relevant markets in the Hull Area.

Summary of decisions

11.4 We have decided to maintain a number of the current remedies in the WFAEL, WCO, ISDN30 and ISDN2 markets, as imposed on KCOM in the 2013 NMR and the 2014 FAMR. The remedies we are imposing include the requirement to provide general network access on fair and reasonable terms and conditions, and price regulation in the form of a fair and reasonable charges obligation. We are also reintroducing a cost accounting remedy to support the existing accounting separation requirement.

11.5 We are reducing regulation on KCOM in recognition of market developments and the increased competitive constraints on fixed voice services from mobile and IP services. The changes we are making include:

- removing the requirement not to unduly discriminate in the WCO market;
- removing the new forms of access requests remedy in the WFAEL market;
- removing most remedies on new lines in the ISDN30 and ISDN2 markets (after a transitional period of 12 months); and
- removing the requirement to notify technical information in all four markets.

11.6 Table 11.1 summarises the remedies we are imposing on KCOM in the WFAEL and WCO markets. Table 11.2 summaries the remedies we are imposing on KCOM in the ISDN30 and ISDN2 markets.

Table 11.1: Summary of the remedies imposed on KCOM in the WFAEL and WCO markets in the Hull Area

	2013 NMR and/or 2014 FAMR remedies	Remedies imposed
WFAEL	Provide network access on reasonable request Requests for new forms of network access Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation	Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting
WCO	Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation	Provide network access on reasonable request Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting

Table 11.2: Summary of the remedies imposed on KCOM in the ISDN30 and ISDN2 market in the Hull Area

	2014 FAMR remedies	Remedies imposed in the transitional period	Remedies imposed after the transitional period
ISDN30	**All lines** Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation	**All lines** Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting	**All lines** Accounting separation Cost accounting **Existing lines** Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges
ISDN2	**All lines** Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation	**All lines** Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting	**All lines** Accounting separation Cost accounting **Existing lines** Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges

11.7 We consider that these remedies address the different competition concerns we have identified in Section 7, are consistent with our statutory duties and satisfy the relevant legal tests. In reaching these decisions we have taken account of responses to the 2016 NMR Consultation, recent developments in the relevant markets, the maturity of the technology and expected developments over the course of the review period.

New ISDN lines: definition and transitional period

11.8 In Section 7, we set out our overall approach to regulating ISDN30 and ISDN2, and our decision to distinguish between new and existing lines when applying regulation. In this section, we first explain our definition of new lines and our decision on a transitional period before the new approach is implemented, before setting out each of the remedies we have decided to impose.

Definition of new lines

11.9 We define new ISDN lines as lines which require a new installation at the end customer's premises, rather than the connection of additional channels to an existing installed line. KCOM sells ISDN30 rentals by channel (with a minimum of six channels), with each line providing up to 30 channels, so new channels can be added to existing lines. The case is simpler for ISDN2; each line provides exactly two channels, so any additional channel capacity requires a new ISDN2 line to be installed.

11.10 We will continue to regulate new channels connected on existing lines during the market review period. The number of channels provided over an ISDN30 line can be increased via a configuration change, i.e. without the need to alter the physical connection between the exchange and the customer's premises, including the associated equipment at each end. KCOM's current charging structure for new ISDN30 channels is not designed to reflect cost causation. Therefore, given that the per channel connection cost could have been instead recovered through the installation charge and/or annual line rental, the latter of which is covered by our regulation of existing lines, we consider it appropriate to continue to regulate channel connections.

Transitional period

11.11 We will continue to regulate new ISDN lines for a transitional period of 12 months from the start of the market review period in order to provide telecoms providers with the opportunity to complete any ongoing contract negotiations (i.e. negotiations that have started before publishing this statement). Such a period is designed to limit the potentially negative impact on providers that currently use wholesale ISDN services and prevents KCOM stopping downstream competitors from accessing services or those competitors having their access suddenly restricted or provided on less favourable terms. Specifically, a transitional period is important to ongoing contract negotiations as it stops KCOM from changing the terms and conditions during the negotiations, thereby preventing the cost of negotiations from increasing. KCOM agreed that a period of 12 months is appropriate and proportionate.[547]

11.12 For the transitional period, we will maintain the general access remedy, including a fair and reasonable charges obligation, for all ISDN lines. However, from 1 December 2018, the remedies below (with the exception of accounting separation and cost accounting) will only apply to existing ISDN lines. New lines ordered within the transitional period will be treated as existing lines for the remainder of the review period.

[547] KCOM response to 2016 NMR Consultation, paragraph 2.9.

Stakeholder responses

11.13 KCOM was the only stakeholder to specifically respond to the 2016 NMR Consultation and comment on our proposed remedies for the Hull Area.[548]

11.14 KCOM considered that the SMP remedies on KCOM in the WFAEL, WCO, ISDN30 and ISDN2 markets which we proposed in the 2016 NMR Consultation will address our competition concerns.

11.15 KCOM welcomed our proposals to remove most remedies on new lines in the ISDN30 and ISDN2 markets, and to remove the r new forms of access requirement in the WFAEL market.

11.16 KCOM agreed that it is appropriate and proportionate for Ofcom to apply a 12-month transitional period from the start of the market review period before removing most remedies on new ISDN30 and ISDN2 lines installed in the Hull Area.

11.17 KCOM said the proposed cost accounting remedy in the WFAEL, WCO, ISDN30 and ISDN2 markets did not present a regulatory burden, due to its established practice in meeting its accounting separation obligation and the investments it is making in its accounting systems that generate its Regulatory Financial Statements.

Approach to imposing remedies in the WFAEL market

11.18 In deciding on our remedies for the WFAEL market in the Hull Area, we have taken account of KCOM's roll out of a fibre network. It has already rolled its fibre network out to 137,000 homes and business premises, and is expecting to reach 150,000 premises (equivalent to more than 75% of the Hull Area) by December 2017.[549] [✂]. KCOM has suggested that it might [✂].[550]

11.19 However, at this stage, voice services are still provided over copper in the WFAEL market to most consumers in the Hull Area and KCOM has [✂]. We therefore consider that it remains appropriate to impose remedies that address our competition concerns in relation to KCOM's SMP in the WFAEL market in the Hull Area. The aim of our regulation is to promote competition and protect consumers of retail voice services in the Hull Area and we have therefore decided to retain a number of current remedies on KCOM in the WFAEL market.

---

[548] [✂] said that its comments in relation to our proposed remedies on BT also apply to KCOM. We have addressed these comments in Section 8.
[549] KCOM, 2017. *Unaudited preliminary results for year ended 31 March 2017*, http://www.kcomplc.com/media/1622/kcom-preliminary-results-rns-fy17-final.pdf.
[550] KCOM's response dated 31 July 2017 to the 6th NMR s.135 notice.

11.20 In the 2017 WLA & WBA Hull Consultation[551], we proposed to retain the requirement on KCOM to provide network access on reasonable request in the WLA and WBA markets.[552] We also proposed new requirements on KCOM in relation to requests for new forms of network access, with the aim of improving the process for retail providers to request appropriate wholesale access services suitable for their needs. We note that these proposals may in due course promote competition in voice over fibre services, in addition to broadband services, by allowing other telecoms providers to access KCOM's fibre network.

Remedies on KCOM

11.21 In this subsection, we set out the remedies we impose on KCOM in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area.

11.22 We set out each remedy in turn, explaining:

- our proposals as set out in the 2016 NMR Consultation;
- the aim and effect of the regulation we are setting;
- our decisions; and
- our consideration of the relevant legal tests for the regulation we are setting.

Requirement to provide network access on reasonable request

Proposed remedies

11.23 We proposed an SMP obligation requiring KCOM to provide network access where a third party reasonably requests it in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the transitional period and subsequently for existing lines only). The proposed condition would require KCOM to provide network access on fair and reasonable terms, conditions and charges.

11.24 With regard to the fair and reasonable charging obligation in the WFAEL, WCO, ISDN30 and ISDN2 markets, we proposed adopting an approach to the evaluation of costs and margins consistent with the margin squeeze test under ex post competition law. In the ISDN30 and ISDN2 markets, we also proposed for the obligation to protect against excessive pricing.

11.25 In the ISDN markets, we considered the obligation is necessary for all lines for the first 12 months of the market review period (and not for new lines thereafter) to enable telecoms providers which currently use wholesale ISDN services to complete existing contract negotiations. This would prevent KCOM stopping telecoms providers from accessing ISDN services or having their access suddenly restricted or provided on less favourable terms.

---

[551] Ofcom, 2017. *Wholesale Local Access and Wholesale Broadband Access Market Reviews Review of Competition in the Hull Area.* https://www.ofcom.org.uk/__data/assets/pdf_file/0009/103203/wla-wba-hull-consultation.pdf.
[552] We did, however, propose to exclude LLU from the network access requirement proposed in the WLA market. We considered that it is unlikely to be commercially viable for telecoms providers to utilise LLU in the Hull Area, considering that the use of copper-based broadband is declining.

11.26 We did not propose to apply the general network access remedy to new ISDN lines (and subsequent rentals) after the transitional period as we considered that KCOM's market power is weaker for new lines because of the competitive constraint from IP-based services.

Aim and effect of regulation

11.27 An obligation requiring KCOM to provide network access to third parties on reasonable request is necessary to protect effective competition in downstream markets. We consider that, in the absence of such a requirement, KCOM would have an incentive and the ability to refuse access at the wholesale level, thereby benefiting its own downstream operations with the effect of hindering sustainable competition on the corresponding downstream markets, ultimately against consumers' interests.

Our decisions

11.28 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide such network access as Ofcom may from time to time direct. These conditions may, pursuant to section 87(5), 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 in the conditions are complied with within periods and at times required by or under the conditions. Section 87(9) of the Act authorises the imposition of SMP conditions on the dominant provider which include: such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network or with the availability of relevant facilities; and such rules as they may make in relation to those matters about the recovery of costs and cost orientation. In each case, in setting such conditions Ofcom must be satisfied that the conditions about network access pricing set out in section 88 of the Act are also satisfied.[553]

11.29 We have decided that it is appropriate to impose an SMP condition requiring KCOM to provide network access where a third party reasonably requests it in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only). We consider that the obligation is necessary to protect effective competition in downstream markets by ensuring that KCOM cannot refuse access at the wholesale level, thereby hindering competition and ultimately against consumers' interests.

[553] Section 88(1) requires that an SMP condition falling within section 87(9) can only be imposed where (a) it appears to Ofcom from the market analysis carried out for the purposes of setting the condition that there is a relevant risk of adverse effects arising from price distortion and (b) it also appears to them that setting the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on end-users of public electronic communications services. Section 88(2) requires that Ofcom takes account of the extent of investment in the maters to which the condition relates by the person to whom it is applied. Section 88(3) states that there is a relevant risk of adverse effects arising from price distortion if the dominant providers (a) fixes or maintains some or all of its prices at an excessively high level or (b) imposes a price squeeze, in each case, so as to have adverse consequences for end-users of public electronic communications services.

11.30 The condition will require KCOM to provide network access and reasonably necessary ancillary services on fair and reasonable terms, conditions and charges. Regarding charges, we are adopting an approach to the evaluation of costs and margins consistent with that which would be adopted under ex post competition law.

11.31 For all relevant markets, we consider that it is appropriate for this SMP condition to include 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, where applicable, charges for providing third parties with network access. The condition therefore includes a requirement for the dominant provider to comply with any such direction(s).

Fair and reasonable charges

11.32 In the WFAEL, WCO, ISDN30 and ISDN2 markets, we consider that a fair and reasonable charges obligation is necessary to protect against the risk of a price squeeze. In light of our market analysis our primary ex ante concern is in relation to the risk of adverse effects arising from KCOM fixing and maintaining its wholesale charges at a level that imposes a price squeeze (see Section 7).

11.33 We consider that a fair and reasonable charges obligation remains the appropriate approach to regulating wholesale charges, rather than imposing a charge control in these markets. This is because our regulatory objective in relation to these markets is primarily around the protection, rather than the promotion, of competition. Taking into account this objective, we would, in the event of assessing KCOM’s compliance, adopt an approach to the evaluation of costs and margins consistent with that adopted under ex post competition law.

11.34 In addition, we consider that a fair and reasonable charges obligation remains necessary in the ISDN30 and ISDN2 markets to address our concern that KCOM might fix and maintain its charges at an excessively high level for existing services in the ISDN markets (see Section 7). We consider that a fair and reasonable charges requirement on KCOM is sufficient to deal with our concerns regarding excessive pricing for its wholesale services in these markets

Legal tests

11.35 For the reasons set out below, we are satisfied that the network access condition for KCOM in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, sections 87(3), (5) and (9) authorise the SMP condition we are imposing.

11.36 In setting these conditions, we have taken into account the factors set out in Section 87(4) of the Act. When considering the imposition of such conditions in a particular case, we must take into account the following six factors set out in section 87(4):

- the technical and economic viability (including the viability of other network access products, whether provided by the dominant provider or another person), having regard to the state of market development, of installing and using facilities that would make the proposed network access unnecessary;
- the feasibility of the provision of the proposed network access;
- 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 (taking account of any public investment made);
- the need to secure effective competition (including, where it appears to Ofcom to be appropriate, economically efficient infrastructure-based competition) in the long-term;
- any rights to intellectual property that are relevant to the proposal; and
- the desirability of securing that electronic communications services are provided that are available throughout the Member States.

11.37 In reaching our decision that KCOM should be subject to a requirement to provide network access on reasonable request, we have taken all of the above six factors into account. In particular, having considered the economic viability of building access networks to achieve ubiquitous coverage that would make the provision of network access unnecessary, we consider that the SMP condition is required to secure effective long-term competition in the WFAEL, WCO, ISDN30 and ISDN2 markets. The requirement for KCOM to meet only reasonable network access requests ensures that due account is taken of the feasibility of the proposed network access, and of the investment made by KCOM initially in providing the network.

11.38 In imposing a fair and reasonable charges obligation, we are also required to ensure that each condition satisfies the tests set out in section 88 of the Act.

11.39 Section 88(1)(a) of the Act requires that Ofcom must not impose pricing conditions unless it appears, from the market analysis carried out for the purpose of setting that condition, that there is a relevant risk of adverse effects arising from price distortion. As discussed above, we consider that there is a relevant risk of adverse effects arising from price distortion in that KCOM might:

- in all four markets impose a price squeeze; and
- in the ISDN30 and ISDN2 markets fix or maintain some or all of its prices at an excessively high level;

in each case so as to have adverse consequences for end-users of public electronic communications services.

11.40 Section 88(1)(b) of the Act requires that the pricing condition should be appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on consumers of public electronic communications services.

11.41 We consider that the obligation will prevent KCOM from setting a price squeeze in the WFAEL, WCO, ISDN30 and ISDN2 markets, and from charging excessively high wholesale prices in the ISDN30 and ISDN2 markets. In this way, this condition supports the aim of improved efficiency and sustainable competition.

11.42 We consider that the provision of network access on fair and reasonable terms will protect sustainable competition by ensuring that other telecoms providers can effectively compete at the downstream level. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on consumers of the services.

11.43 We are also required, under Section 88(2) of the Act, to take account of the extent of KCOM's investment in the matters to which our condition relates. We believe that a fair and reasonable charges obligation will not impact on KCOM's investment in any of the WCO or wholesale access markets in that it allows KCOM's costs to be taken into account and also provides for common cost recovery.

11.44 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

11.45 We have considered our duties under section 3 of the Act. We consider that each condition furthers the interests of consumers in relevant markets by the promotion of competition.

11.46 We also consider that each condition meets the Community requirements as set out in section 4 of the Act. Each condition will promote competition in relation to the provision of electronic communications networks and encourage the provision of network access and service interoperability in markets for electronic communication networks and services.

11.47 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

11.48 In the WFAEL and WCO markets, and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that in each of the markets it facilitates access to KCOM's network and therefore protects competition to the ultimate benefit of consumers;
- not unduly discriminatory, in that the condition applies to KCOM which is the only telecoms provider which we find has SMP in these markets in the Hull Area;
- proportionate, in that it is targeted at addressing the market power that KCOM holds in these markets, and does not require it to provide access if it is not technically feasible or reasonable; and
- transparent, in that the condition is clear in its intention to ensure that KCOM provides access to its network in order to facilitate effective competition.

11.49 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it enables a period of access to KCOM's network under the current regulatory framework in order to allow the completion of existing contract negotiations;
- not unduly discriminatory, in that it is imposed on KCOM and no other telecoms provider has been found to hold a position of SMP in these markets in the Hull Area;
- proportionate, in that it is imposed for a limited time only, is targeted at addressing the market power that KCOM holds in these markets and does not require KCOM to provide access if it is not technically feasible or reasonable; and

- transparent, in that the condition is clear in its intention to ensure that telecoms providers have the opportunity to complete any ongoing contract negotiations.

11.50 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding markets, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

Proposed remedies

11.51 This obligation has different forms of implementation:

- a strict form of non-discrimination which would result in the SMP operator providing identical products and 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, known as EOI; and
- a less strict interpretation of non-discrimination allowing for flexibility in cases where it is justified, which we refer to as no undue discrimination.

11.52 We proposed to retain the condition on KCOM not to unduly discriminate in relation to the provision of network access in the WFAEL, ISDN30 and ISDN2 markets.

11.53 We did not propose to apply the no undue discrimination obligation to the provision of new ISDN lines after the end of the transitional period as we did not propose a general network access obligation in relation to such lines. We also did not propose an EOI obligation in any of the markets.

11.54 We proposed to remove the no undue discrimination obligation in the WCO market.

Aim and effect of regulation

11.55 A non-discrimination obligation is intended to prevent the dominant provider from discriminating in favour of its own downstream divisions and, more generally, to ensure that competing providers are placed in an equivalent position. An EOI obligation removes any degree of discretion accorded to the nature of the conduct.

Our decisions

11.56 Section 87(6)(a) of the Act authorises the setting of an SMP 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 the provision of network access.

11.57 We have decided that it is appropriate to retain the condition on KCOM not to unduly discriminate in relation to the provision of network access in the WFAEL, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

11.58 The no undue discrimination obligation does not apply to the provision of new ISDN lines after the end of the transitional period as we are not imposing a general network access obligation in relation to such lines.

11.59 We consider that imposing an EOI obligation on KCOM would be disproportionate in respect of the scale and competitive conditions in the WFAEL, ISDN30 and ISDN2 markets in the Hull Area. We consider that imposing EOI requirements on KCOM would impose costs on KCOM which might be passed onto its customers without our being clear that, in doing so, the Hull Area would derive competition benefits.

11.60 We have also decided not to apply the no undue discrimination remedy (or any other form of non-discrimination remedy) in the WCO market based on our SMP analysis of the WCO market and our conclusion that KCOM faces greater indirect competitive pressures than at the time of the last review. Our reasoning is set out in more detail at the end of this section.

Legal tests

11.61 For the reasons set out below, we are satisfied that condition for KCOM in each of the WFAEL, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, sections 87(6)(a) authorises the SMP condition we are setting.

11.62 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

11.63 We have considered our duties under section 3 of the Act. We consider that each condition furthers the interests of consumers in relevant markets by the promotion of downstream competition.

11.64 We also consider that each condition meets the Community requirements as set out in section 4 of the Act. Each condition encourages the provision of network access and service interoperability by ensuring that KCOM does not unfairly favour its own retail businesses or particular third parties and therefore distort competition.

11.65 Section 47(2) requires such conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

11.66 In the WFAEL market and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that it provides safeguards to ensure competitors, and hence consumers, are not disadvantaged by KCOM discriminating in favour of its own downstream activities or between competing providers;
- not unduly discriminatory, in that the condition applies to KCOM which is the only telecoms provider which we find has SMP in the relevant markets in the Hull Area;
- proportionate, in that it seeks to prevent discrimination that would adversely affect competition and ultimately cause detriment to consumers, is only applied in the WFAEL market and to existing ISDN lines; and
- transparent, in that the conditions are clear in what they are intended to achieve.

11.67 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it provides a period of protection for the completion of contract negotiations to ensure competitors, and hence consumers, are not disadvantaged by KCOM discriminating in favour of its own downstream activities or between competing providers;
- not unduly discriminatory, in that the condition applies to KCOM which is the only telecoms provider which we find has SMP in the relevant markets in the Hull Area;
- proportionate, in that it seeks to prevent discrimination that would adversely affect competition and ultimately cause detriment to consumers, and is only applied for a limited period of time; and
- transparent, in that the conditions are clear in their intention to ensure that telecoms providers have the opportunity to complete any ongoing contract negotiations.

11.68 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Transparency

11.69 The requirements for the transparency of charges, terms and conditions in markets in which one operator is dominant are complementary remedies to ensure that third party telecoms providers are able to make effective use of the dominant providers' network access.

11.70 KCOM is currently subject to three transparency obligations in respect of its SMP in each of the relevant markets. They are:

- a requirement to publish a Reference Offer;
- a requirement to notify changes to charges in advance; and
- a requirement to notify technical information.

11.71 In the following subsections, we set out the requirements to publish a Reference Offer and to notify changes to charges. As we explain at the end of this section, we are not imposing a requirement on KCOM to notify technical information.

Publish a Reference Offer

Proposed remedies

11.72 We proposed to retain the condition on KCOM to publish a Reference Offer for its services in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

11.73 We did not propose a requirement to publish a Reference Offer with regard to the provision of new ISDN lines after the end of the transitional period as we proposed a general network access obligation in relation to existing lines only.

Aim and effect of regulation

11.74 The main reason for requiring the publication of a Reference Offer is to give visibility to the terms and conditions on which other providers would be able to purchase WFAEL, WCO, wholesale ISDN30 and wholesale ISDN2 services, which complements the general network access remedy.

Our decisions

11.75 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. Section 87(6)(c) of the Act 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. 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.

11.76 We have decided that it is appropriate to retain the condition on KCOM to publish a Reference Offer for its services in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) in the Hull Area. We are retaining the obligation to give visibility to the terms and conditions on which other providers can purchase wholesale services in order to enable faster negotiations and to help avoid possible disputes.

11.77 As we are giving KCOM more flexibility on terms and conditions in the WCO market by removing the no undue discrimination remedy, we consider that the requirement to publish a Reference Offer should apply to KCOM’s standard contract in this market. While we acknowledge that some telecoms providers may negotiate terms and conditions that differ from KCOM’s standard contract for the same services, we expect that others may continue to use the standard terms and conditions, and therefore consider it is important for transparency for changes to KCOM’s standard contract to be published.

11.78 The published Reference Offer in the WFAEL, WCO, ISDN30 and ISDN2 markets should include:

- a clear description of the services on offer including technical characteristics and operational processes for service establishment, ordering and repair;
- the locations of points of network access and the technical standards for network access;
- conditions for access to ancillary and supplementary services associated with the network access including operational support systems and databases etc.;
- contractual terms and conditions, including dispute resolution and contract negotiation/renegotiation arrangements;
- charges, terms and payment procedures; and

- SLAs and SLGs.

11.79 Except in the WCO market, where KCOM provides its downstream divisions with network access that is different to the network access provided to other telecoms providers, and set out in a Reference Offer, KCOM must publish a Reference Offer setting out the details of the network access it provides to itself

11.80 We retain the condition in relation to existing ISDN30 and ISDN2 lines after the transitional period so as to give visibility to any amendments to the terms and conditions of KCOM's network access. However, we are not imposing the condition on the provision of new ISDN lines after the end of the transitional period. This is because we recognise that the main purpose of a Reference Offer is to give visibility to the terms and conditions on which other providers can purchase new services and we are imposing a general network access obligation in relation to existing lines only after the transitional period.

11.81 We consider the obligation is necessary for all lines in the first 12 months to enable telecoms providers which currently use wholesale ISDN services to transition to the new regulatory framework and provide sufficient time for them to complete ongoing contract negotiations.

Legal tests

11.82 For the reasons set out below, we are satisfied that the condition for KCOM in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, sections 87(6)(b), (c), (d) and (e) authorise the SMP condition we are setting.

11.83 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

11.84 We have considered our duties under section 3 of the Act. The requirement to publish a Reference Offer will facilitate service interoperability and protect existing entrants to a market by ensuring that services, and any changes, are transparent. Further, the obligation will enable purchasers to adjust their downstream offerings in competition with KCOM, in response to changes in KCOM's terms and conditions. Finally, the obligation will make it easier for Ofcom and other telecoms providers in the relevant markets to monitor any instances of discrimination. Therefore, we consider that each condition in particular furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.

11.85 We also consider that each condition meets the Community requirements as set out in section 4 of the Act. In particular, each condition will protect competition and encourage the provision of network access and service interoperability. The publication of a Reference Offer will mean that other telecoms providers will have the necessary information readily available to allow them to make informed decisions about entry into and participation in the market.

11.86 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

11.87 In the WFAEL and WCO markets, and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that it requires that terms and condition are published in order to encourage competition and provide stability in markets;
- not unduly discriminatory, in that the condition applies to KCOM which is the only telecoms provider which has SMP in the relevant markets in the Hull Area;
- proportionate, in that only information that is considered necessary to allow telecoms providers to make informed decisions about competing in downstream markets is required to be provided; and
- transparent, in that the condition is clear in its intention that KCOM publish details of its wholesale service offerings.

11.88 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it provides regulatory and market stability by supporting a period of access under the current regulatory framework;
- not unduly discriminatory, in that the condition applies to KCOM which is the only telecoms provider which has SMP in the relevant markets in the Hull Area;
- proportionate, in that only information that is considered necessary to allow telecoms providers to make informed decisions about competing in downstream markets is required to be provided for the appropriate period of time; and
- transparent, in that the condition is clear in its intention to support telecoms providers to complete any existing contract negotiations.

11.89 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Notify changes to charges

Proposed remedies

11.90 We proposed that KCOM should be subject to an obligation to notify (by means of a written notice) changes to standard charges for wholesale network access in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only). We considered that the notice periods imposed previously remain appropriate and proposed to apply the same notice periods to KCOM in the next market review period.

11.91 As we did not propose any form of price regulation on KCOM's provision of new ISDN lines after the transitional period, we did not consider it appropriate to propose an obligation to notify changes to charges for these lines after the transitional period.

Aim and effect of regulation

11.92 Notification of changes to charges at the wholesale level has the joint purpose of assisting transparency for the monitoring of potential anti-competitive behaviour and giving advance warning of charge 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.

11.93 There may be some disadvantages to notifications, particularly in markets where there is some competition. It can lead to a 'chilling' effect where other telecoms providers follow KCOM's prices rather than act dynamically to set competitive prices. However, we do not consider, on balance, that this consideration undermines the rationale for imposing a notification of charges condition. Each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area is characterised by a large degree of competitor reliance on the provision of wholesale access products and services from KCOM. We therefore consider that the advantages of notifying charges are likely to outweigh any potential disadvantages.

Our decisions

11.94 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish all such information in such manner as Ofcom may direct for the purpose of securing transparency. 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.

11.95 We consider it appropriate to retain an obligation on KCOM to notify (by means of a written notice) changes to standard charges for wholesale network access in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only).

11.96 As we are giving KCOM more pricing flexibility in the WCO market, for example, by removing the no undue discrimination remedy, the requirement to notify changes to charges only applies to KCOM's published standard wholesale charges in this market. While we acknowledge that some telecoms providers may negotiate WCO charges that differ from KCOM's standard wholesale charges for the same services, we expect that others may continue to rely on the standard wholesale charges. We therefore consider it is important for transparency for changes to KCOM's standard wholesale charges to be notified in advance. Regarding changes to charges which differ from KCOM's standard wholesale charges, we would expect telecoms providers to agree terms for changes to these charges on a commercial basis.

11.97 In relation to ISDN30 and ISDN2, we consider the obligation is necessary for existing lines throughout the market review period and for all lines in the first 12 months only (and not to new ISDN lines thereafter). Retention of the notification requirement on all lines during the first 12 months will enable telecoms providers which currently use wholesale ISDN services to complete ongoing contract negotiations. If KCOM makes any changes to its

ISDN charges (including connection charges) during this first 12 months, the notification requirement will provide certainty to telecoms providers about the wholesale charges during this time period.

11.98 A notice must include the following:

- a description of the network access in question;
- a reference as to where the terms and conditions associated with the network access in question can be found in the dominant provider's Reference Offer;
- the date on which the new charges take effect (or the period over which the new charges will apply);
- the current and proposed charge; and
- other charges for services that would be directly affected by the proposed charge.

11.99 Table 11.3 below details the specific notice periods we are imposing on KCOM in each market.

Table 11.3: Notice period requirements

	Relevant notice periods by market
WFAEL	**90 days** for changes to the WLR rental charge; **28 days** for price reductions and price changes relating to the end of a temporary[554] price reduction; and **28 days** for changes to charges for all other services
WCO	**56 days** for changes to charges for standard wholesale charges
ISDN30	**28 days** for changes to charges for all services
ISDN2	**28 days** for changes to charges for all services

Notice periods in WFAEL

11.100 In light of our review of the WFAEL market, we consider that the existing notification periods remain appropriate. A 90-day notification period for increases in KCOM's WLR rental charge provides telecoms providers with the opportunity to plan for price increases in respect of the ongoing monthly charge, while a reduced notification of 28 days for all other services provides flexibility.

Notice periods in WCO

11.101 In light of our decision to allow KCOM more pricing flexibility in the WCO market, we continue to consider that a 56-day notification period is appropriate, so that KCOM's

[554] A 'temporary' price means a price reduction for a particular product or service, applicable to all customers on a non-discriminatory basis, which is stated to apply for a limited and predefined period and where the price immediately on expiry of that period is no higher than the price immediately before the start of that period.

notified price changes can be reflected in downstream prices by telecoms providers that rely on KCOM's standard wholesale charge.

Notice periods in ISDN30 and ISDN2 markets

11.102 In the ISDN30 and ISDN2 markets we have imposed a notice period of 28 days since 2003. We consider that the existing notice period remains appropriate.

11.103 As we are not setting any form of price regulation on KCOM's provision of new ISDN lines after the transitional period, we do not consider it appropriate to impose an obligation to notify changes to charges for these lines after the transitional period.

Legal tests

11.104 For the reasons set out below, we are satisfied that the SMP condition for KCOM in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area (for all ISDN lines in the first 12 months and subsequently for existing ISDN lines only) meets the relevant tests set out in the Act. As explained above, Sections 87(6)(b) and (d) authorise the SMP conditions we are setting.

11.105 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

11.106 We have considered our duties under section 3 of the Act. The obligations will promote competition by ensuring that the interests of purchasers of wholesale services have the necessary information about changes to terms, conditions and charges sufficiently in advance to allow them to make informed decisions about competing in downstream markets. Finally, the obligations will make it easier for Ofcom and competitors to KCOM to monitor any instances of discrimination.

11.107 We also consider that the conditions meet the Community requirements set out in section 4 of the Act. In particular, the conditions promote competition by ensuring that providers have the necessary information to allow them to make informed investment and entry decisions.

11.108 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent.

11.109 In the WFAEL and WCO markets, and in relation to existing ISDN30 and ISDN2 lines, each condition is:

- objectively justifiable, in that there are clear benefits from the notification of changes in terms of ensuring that providers are able to make informed decisions within an appropriate time frame when competing in downstream markets;
- not unduly discriminatory, in that the condition applies to KCOM which is the only telecoms provider which we find has SMP in the relevant markets in the Hull Area;
- proportionate, in that only information that other telecoms providers will need to know in order to adjust for changes would have to be notified, and the notification periods are intended to be the minimum required to allow changes to be reflected in downstream offers; and

- transparent, in that each condition is clear in its intention and implementation.

11.110 In relation to new ISDN30 and ISDN2 lines installed in the transitional period, each condition is:

- objectively justifiable, in that it enables a period of access to KCOM's network under the current regulatory framework in order to allow the completion of existing contract negotiations;
- not unduly discriminatory, in that the condition applies to KCOM and no other telecoms provider has been found to hold a position of SMP in these markets in the Hull Area;
- proportionate, in that it is imposed for the appropriate period of time only; and
- transparent, in that the condition is clear in its intention to ensure that telecoms providers have the opportunity to complete any ongoing contract negotiations.

11.111 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding markets, in line with Section 87(1) of the Act.

Approach to regulatory financial reporting

11.112 In the 2014 Regulatory Reporting Statement, we considered the purposes of regulatory reporting. Although the 2014 Regulatory Financial Reporting Statement did not explicitly apply to KCOM, we consider that some of the principles from that statement are relevant when considering the regulatory financial reporting we require from KCOM. As noted in section 8, in that statement, we said that regulatory reporting "should provide us with the information necessary to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues and investigate potential breaches of SMP conditions and anti-competitive practices". In addition, we said that it "should provide reasonable confidence to stakeholders that the SMP provider has complied with its SMP conditions and add credibility to the Regulatory Financial Reporting Regime".[555] Requiring KCOM to publish financial information on its regulated activities supports transparency by providing a greater detail of information on the relevant markets than that derived from its statutory financial statements and gives visibility, and thus reassurance, to stakeholders that KCOM has complied with its SMP conditions and allows them to contribute to the regulatory regime.

11.113 Transparency is an important element of regulatory financial reporting. For example, the 2005 EC Recommendation says that one of the objectives of imposing reporting obligations is to improve transparency, recommending that relevant accounting information is published at a sufficient level of detail, having due regard for commercial confidentiality.[556]

[555] Ofcom, 2014. *Regulatory Financial Reporting – Final Statement.* https://www.ofcom.org.uk/__data/assets/pdf_file/0025/78460/financial-reporting-statement-may14.pdf.
[556] Recital 4 and Point 5, 2005 EC Recommendation.

We note that section 87(6)(b) of the Act also allows us to impose a condition requiring the dominant provider to publish information to secure transparency and Article 9(1) of the Access Directive specifies that such information can include accounting information.[557]

11.114 In the following subsections, we set out our decisions to impose accounting separation and cost accounting obligations in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area. We will implement these obligations by way of a single SMP Condition (SMP Condition 10).

11.115 Our accounting separation and cost accounting obligations are underpinned by detailed requirements for regulatory financial reporting which specify what information we require KCOM to prepare and provide in each of these markets, as discussed in Section 20.

11.116 As discussed in Section 7, our approach in the two ISDN markets is to discontinue most remedies in respect of new lines after the transitional period. However, we have decided to retain accounting separation and cost accounting obligations in respect of all ISDN lines for the whole period of the review.

11.117 We consider that KCOM continues to have SMP in both ISDN markets; while the competitive constraints may be greater for new customers, we do not consider that they form a separate market. To understand the financial performance of both existing and new ISDN lines and the impact and effectiveness of our remedies in the ISDN markets, we need to understand how costs and revenues are attributed to services in the market, including between new and existing lines.

11.118 The 2005 EC Recommendation states that "the imposition of accounting separation may cover markets where the operator does not have SMP, e.g. to ensure the coherence of data".[558] We consider that the principle of ensuring the coherence of data also applies here, where we determine that KCOM has SMP across all ISDN lines, even though competitive constraints are greater for new ISDN customers. We consider this applies equally to cost accounting obligations given that cost accounting supports the requirements to account separately for different markets and services and helps to ensure that the attribution rules are fair and do not unduly discriminate between different services or groups of customers.

Accounting separation

Proposed remedies

11.119 We proposed to maintain an accounting separation obligation on KCOM in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area.

[557] Article 9 (Obligation of transparency) says that "National regulatory authorities may, in accordance with the provisions of Article 8, impose obligations for transparency in relation to interconnection and/or access, requiring operators to make public specified information, such as accounting information, technical specifications, network characteristics, terms and conditions for supply and use, and prices".
[558] Recital 5, 2005 EC Recommendation.

11.120 We proposed that the purposes of regulatory reporting set out in that 2014 Regulatory Financial Statement would also apply to KCOM.

Aim and effect of regulation

11.121 Paragraph 3 of Point 1 of the 2005 Recommendation states that:

> "The purpose of imposing an obligation regarding accounting separation is to provide a higher level of detail of information than that derived from the statutory financial statements of the notified operator, to reflect as closely as possible the performance of parts of the notified operator's business as if they had operated as separate businesses, and in the case of vertically integrated undertakings, to prevent discrimination in favour of their own activities and to prevent unfair cross-subsidy"

11.122 In the 2014 Regulatory Reporting Statement we considered the purposes of regulatory reporting, which is supported by the imposition of an accounting separation obligation. In that statement, we said that regulatory reporting "should provide us with the information necessary to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues and investigate potential breaches of SMP conditions and anti-competitive practices".[559] In addition, we said that it "should provide reasonable confidence to stakeholders that the SMP provider has complied with its SMP conditions and add credibility to the Regulatory Financial Reporting Regime".[560] Although the 2014 Regulatory Reporting Statement did not explicitly apply to KCOM, we consider that the purposes of regulatory reporting set out in that statement would also apply to KCOM. We consider that our decision to impose an accounting separation obligation, together with a cost accounting obligation (see below), will help ensure that these regulatory reporting objectives are met.

11.123 To carry out our duties, it is important that financial information is available on the services and markets that we regulate. The availability of this information helps us to understand the volumes, revenues, costs and returns of services and markets. It allows us to monitor the impact and effectiveness of, and (for certain remedies) compliance with, the remedies imposed as part of a market review.

11.124 The accounting separation obligation also requires KCOM to account separately for internal and external sales, which allows Ofcom and other stakeholders to monitor the activities of KCOM to ensure that, where relevant, in the WFAEL, wholesale ISDN30 and wholesale ISDN2 markets it does not discrimination unduly in favour of its own downstream business. In practice these obligations require KCOM to produce financial statements that reflect the performance of the regulated wholesale markets as though they were separate businesses.

11.125 Requiring KCOM to produce financial statements on each regulated wholesale market, combined with an obligation to attribute costs in a fair, objective and transparent way (via

[559] Ofcom, 2014. *Regulatory Financial Reporting Statement*, paragraph 2.28.
[560] Ofcom, 2014. *Regulatory Financial Reporting Statement*, paragraph 2.41.

the cost accounting obligation) can help monitor the possibility of unfair cross-subsidy by ensuring that costs are not inappropriately loaded onto one set of regulated products to the benefit of another set of regulated products or unregulated products.

Our decisions

11.126 Under sections 87(7) and 87(8) the dominant provider may be required to maintain a separation for accounting purposes between such different matters relating to network access or the availability of relevant facilities. Section 86(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.

11.127 We consider it appropriate to retain an accounting separation obligation on KCOM in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area. We consider that this obligation is necessary to monitor the overall impact and effectiveness of the other remedies set out in Tables 11.1 and 11.2. The obligation is also necessary to support transparency by providing a greater detail of information on the relevant markets than that derived from KCOM's statutory financial statements and give visibility, and thus reassurance, to stakeholders that KCOM has complied with its SMP conditions and allow them to contribute to the regulatory regime.

Legal tests

11.128 For the reasons set out below, we are satisfied that imposing accounting separation requirements for KCOM in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area meet the relevant tests set out in the Act. As explained above, sections 87(7) and (8) authorise the SMP condition we are imposing.

11.129 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act. In particular, we consider that the imposition of an accounting separation obligation promotes competition in relation to the provision of electronic communications networks and services, and encourages the provision of network access and service interoperability. This is because the imposition of the obligation will ensure that other obligations designed to curb the potentially damaging leverage of market power, in particular the fair and reasonable charging obligation and the requirement not to unduly discriminate (in the markets where we are imposing this), can be effectively monitored.

11.130 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. In relation to the WFAEL, WCO, ISDN30 and ISDN2 markets we consider each condition is:

- objectively justifiable, as it relates to the need to ensure competition develops fairly to the benefit of consumers;
- not unduly discriminatory, as it is only imposed on KCOM, which is the only telecoms provider with SMP in the relevant markets in the Hull Area;

- proportionate, in that it is the least onerous obligation necessary as a mechanism to allow us and third parties to monitor the impact and effectiveness of the remedies imposed, specifically the fair and reasonable charging and non-discrimination obligations; and
- transparent, in that it is clear the intention is to monitor the impact and effectiveness of the remedies imposed.

11.131 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Cost accounting

Proposed remedies

11.132 We proposed cost accounting requirements on KCOM in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area.

Aim and effect of regulation

11.133 Recital 2 of the 2005 Recommendation states that the purpose of imposing the accounting separation and cost accounting obligations is "to make transactions between operators more transparent and/or to determine the actual costs of services provided". Also, paragraph 2 of Point 1 of the 2005 Recommendation states that:

> "The purpose of imposing an obligation to implement a cost accounting system is to ensure that fair, objective and transparent criteria are followed by notified operators in allocating their costs to services in situations where they are subject to obligations for price controls or cost-oriented prices."

11.134 The imposition of cost accounting obligations ensures that KCOM has in place a system of rules that support the attribution of revenues and costs to individual markets and services. It therefore supports the accounting separation obligation, which requires KCOM to prepare and report financial information relating to individual markets and services, by ensuring that the rules attributing revenues and costs to individual markets and services are fair, objective and transparent. The cost accounting obligation is an important means of ensuring that:

- Ofcom and stakeholders can have confidence in the financial information prepared and provided by KCOM on individual markets and services since the attribution processes and rules supporting that financial information are fair, objective and transparent. Where we do not consider that the attribution process and rules are fair and objective, transparency (via publication of the processes and rules followed by KCOM) allows us to challenge them effectively.
- Revenues and costs are attributed to individual markets and services in a consistent manner. This mitigates the risk that costs might be unfairly loaded onto particular products or markets.

- KCOM records all information necessary for the purposes listed above at the time that relevant transactions occur, on an ongoing basis. Absent such a requirement, there is a strong possibility that the necessary information would not be available when it is required, and in the necessary form and manner.

Our decisions

11.135 Section 87(9)(c) authorises conditions imposing such rules as we may make for the purposes of matters connected with the provision of network access to the relevant network, or with the availability of relevant facilities about the use of cost accounting systems. Such conditions include conditions requiring the application of presumptions in the fixing and determination of costs and charges for the purposes of the price controls, rules and obligations imposed by virtue of that subsection (section 87(10)). Where such conditions are imposed, section 87(11) imposes a duty on us to set an SMP condition which imposes an obligation: to make arrangements for a description to be made available to the public of the cost accounting system used in pursuance of that condition; and to include in that description details of:

- the main categories under which costs are accounted for; and
- the rules applied for the purposes of that system with respect to the allocation of costs.

11.136 Section 86(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.

11.137 We consider it appropriate to impose cost accounting requirements on KCOM in the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area. In response to the 2016 NMR Consultation, KCOM said the proposed cost accounting remedy in the WFAEL, WCO, ISDN30 and ISDN2 markets did not present a regulatory burden. We consider that this obligation is necessary to ensure that the processes and rules used by KCOM to attribute revenues and costs to individual markets and services are fair, objective and transparent.

11.138 In respect of the specific form of the cost accounting requirements we impose for KCOM in these markets, we impose the form of condition set out in the 2004 Regulatory Reporting Statement. This includes the re-imposition of paragraphs (a) to (c) and (f) of condition OB23 which ensure that KCOM maintains sufficient accounting records to enable it to operate an appropriate cost accounting system. We refer to the 2004 Regulatory Reporting Statement in which we set out our reasoning and decisions on the specific form of the cost accounting requirements we are setting for KCOM in these markets.

Legal tests

11.139 For the reasons set out below, we are satisfied that the cost accounting requirements for KCOM in each of the WFAEL, WCO, ISDN30 and ISDN2 markets in the Hull Area meet the relevant tests set out in the Act. As explained above, sections 87(9), (10) and (11) authorise the SMP condition we impose.

11.140 In setting such conditions, we must be satisfied that the conditions about network access pricing set out in section 88 are also satisfied.

11.141 We consider our decisions meet the conditions in section 88, in that they will address the risks of a price squeeze and/or excessive pricing, and promote efficiency and sustainable competition, to the benefit of consumers, and will not undermine investment by KCOM. We are imposing a fair and reasonable charges obligation on KCOM in the relevant markets.

11.142 We consider that imposing a cost accounting obligation is necessary for our price regulation obligations to work, and that imposing a cost accounting obligation is consistent with section 88.

11.143 We consider that each condition fulfils our duty under section 87(11) in that the cost accounting obligation requires the publication of a description of the cost accounting system used and the main categories of cost and the cost allocation rules applied.

11.144 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act. In particular, we consider that the imposition of the cost accounting obligation is justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services and to encourage the provision of network access (including supporting ancillary services) and service interoperability. This is because the imposition of the obligation will ensure that other obligations designed to curb the potentially damaging leverage of market power – in particular the setting of prices at excessive levels or price squeeze – can be effectively monitored and enforced.

11.145 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. In relation to the WFAEL, WCO, ISDN30 and ISDN2 markets we consider that each condition is:

- objectively justifiable, in that it is necessary to ensure that the processes and rules used by KCOM to attribute revenues and costs to individual markets and services are fair, objective and transparent;
- non-discriminatory, in that KCOM is the only telecoms provider on which we impose a cost accounting remedy in the Hull Area;
- proportionate, in that the obligation is the minimum required in order to ensure that the processes and rules used by KCOM to attribute revenues and costs to individual markets and services are fair, objective and transparent; and
- transparent, in that it is clear in its intention to ensure the appropriate maintenance and provision of accounts for the purposes set out above and the particular cost accounting requirements on KCOM are clearly documented.

11.146 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in each corresponding market, in line with section 87(1) of the Act.

Remedies on KCOM that we are removing

Requests for new forms of network access

11.147 In previous market reviews we imposed a process for requests for new forms of network access in the WFAEL and WCO markets. In the 2016 NMR Consultation, we proposed to remove this remedy.

11.148 We have decided to remove these remedies in recognition of the maturity of KCOM's TDM network and the provision of calls over it, and its roll-out of a fibre network. The remedy in relation to requests for new forms of network access is intended to support access seekers and ensure that there is a reasonable and transparent process for assessing requests from them. However, as KCOM's TDM network is mature and well established, the case for requiring KCOM to set out a process for new requests is weaker than at the time of previous market reviews because innovations in narrowband network access are unlikely to be a necessary aspect of competing in the WCO and access markets going forward. Therefore, we no longer consider it necessary to prescribe the process that KCOM should follow in responding to such requests in order to protect downstream competition. In the event that an access seeker does require a new form of WFAEL or WCO access, the access seeker will still be able to request this under the general access remedy and KCOM will be required to assess if the request is reasonable.

11.149 As noted above, in the 2017 WLA & WBA Hull Consultation, we proposed that telecoms providers should be able to request access to KCOM's fibre network, and so proposed to strengthen the requests for new forms of network access remedy by imposing additional requirements in the WLA market and imposing it for the first time in the WBA market. In due course, this may facilitate the development of competitive voice over broadband services in the Hull Area.

No undue discrimination in WCO

11.150 In the 2016 NMR Consultation, we proposed not to apply the no undue discrimination obligation (or any other form of non-discrimination remedy) to KCOM in the WCO market. This was on the basis of greater competitive constraints now acting in this market, most notably the indirect constraint of mobile call origination.

11.151 In Sections 4, 6 and 7 we set out our assessment that KCOM faces increasing indirect competitive constraints at the retail level.

11.152 Given the increased competitive constraints on KCOM, we consider it is appropriate to remove the no undue discrimination obligation for WCO in the Hull Area. We consider that KCOM is unlikely to discriminate in the provision of WCO to an extent which will restrict or distort competition and thus require additional ex ante regulation (i.e. beyond the requirement to price in a fair and reasonable way for WCO).

Notify technical information

11.153 In previous market reviews, we imposed an obligation on KCOM to notify technical information in the WFAEL, WCO, ISDN30 and ISDN2 markets. In the 2016 NMR Consultation, we proposed to remove this requirement.

11.154 The notification of technical information remedy was designed to ensure that competing providers had sufficient time to respond to technical changes that may affect them. We have now decided to remove this remedy as we do not think it is necessary in recognition of the maturity of KCOM’s TDM network and the provision of calls over it.

12. Market definition and SMP analysis: WCT

12.1 In this section we consider the issues of market definition and market power in relation to wholesale fixed geographic call termination services, referred to in this document as wholesale call termination (WCT).

12.2 With regard to market definition, we have decided that the relevant service markets are:

> "wholesale call termination services that are provided by [named fixed communications provider] (CP) to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP."

12.3 Where termination services are considered to be:

> "the conveyance of all signals (including relevant control signals) required to terminate calls to a customer[561] from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another CP."

12.4 Based on the above, we have identified a total of 285 separate markets for wholesale WCT services.

12.5 With regard to market power, we have decided that each telecoms provider has SMP in WCT within the relevant market applicable to that provider, i.e. in relation to the geographic numbers to which they provide WCT.

12.6 In this section we first briefly discuss the relevant regulatory background. We then set out our proposals in our 2016 NMR Consultation, stakeholder responses to it and our conclusions on:

- the relevant market for wholesale call termination; and
- market power.

12.7 We set out our competition concerns in the WCT markets and our decisions on remedies for WCT in Section 13 and our decisions on charge controls for WCT (including a control on all telecoms providers) in Sections 14-16.

Market definition

Proposals in the 2016 NMR Consultation

12.8 In the 2016 NMR Consultation we proposed that the relevant service markets are:

[561] For the avoidance of doubt, calls to fixed geographic numbers delivered over IP are included within the wholesale call termination market for the relevant fixed communications provider.

> "termination services that are provided by [named fixed communications provider] (CP) to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP."

12.9 Where termination services are considered to be:

> "the conveyance of all signals (including relevant control signals) required to terminate calls to a customer[562] from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another CP."

12.10 We considered the current market context and provisionally concluded that call termination to non-geographic numbers (including call termination to 03 numbers) was a distinct service subject to different competitive constraints and which did not form a common pricing constraint with call termination to geographic numbers. As such, we did not consider it appropriate to consider it to be part of the same product market.

12.11 We proposed that hosted numbers were part of the product market of the number range holder, and not part of the product market of the host provider. We proposed that, with respect to ported numbers, termination services provided by both the donor provider and recipient provider were within the relevant product market.

Stakeholder responses

12.12 Six respondents (BT, [✂], KCOM, Three, Verizon and Vodafone) to the consultation commented specifically on the market definition for wholesale call termination. All agreed with our proposed market definition.

12.13 We received more detailed comments from BT, Three and [✂]. Although BT agreed with our proposed market definition, it noted that the constraint of switching to mobile and or OTT VoIP services could increase over time. Three welcomed our consideration of the issue of VoIP bypass, and proposed that we should monitor the volume of calls being terminated by VoIP bypass, both in respect of its impact on future market definition and any associated consumer harm from lower quality calls.

12.14 [✂] said that we should clarify that our market definition of WCT relates to calls to the geographic number dialled, rather than to the administrative unit (blocks) as allocated by Ofcom.[563] It said that the former definition relates better to how a next generation network operates[564], and would allow it to recover the incremental cost of conveyance from the point of interconnection with BT to the point of connection with the called customer. We consider this point relates to how a provider of WCT meets its obligation to provide reasonable access to its numbers, and so we respond to this point in Section 13.

---

[562] For the avoidance of doubt, calls to fixed geographic numbers delivered over IP are included within the wholesale call termination market for the relevant fixed communications provider.

[563] [✂]

[564] [✂] notes that, in terms of SIP, it has [✂] points in the network close to the end customer's point of connection which are not tied to a specific geography and can (and often do) host numbers from multiple area codes. [✂]

Our reasoning and conclusions

12.15 We now set out our conclusions with regard to market definition, and the reasoning leading to those conclusions.

12.16 Although we are ultimately seeking to define wholesale markets, we begin with consideration of the relevant retail services. The reason for this is that retail-level behaviour may act as an indirect constraint on wholesale prices, which might imply a broader wholesale market.

Retail services

Focal product for retail services

12.17 We have taken as our starting point voice calls to the called party's fixed geographic number (that is, to numbers beginning 01 or 02).

Demand-side substitution

12.18 We analyse the potential for demand-side substitution by considering whether a hypothetical monopolist supplier could impose a SSNIP above the competitive level without losing sales to such a degree as to make this price rise unprofitable.

12.19 The calling party pays (CPP) principle means that the calling party (and not the recipient) pays the total price of the retail call. As such, we analyse the potential response of the calling party in response to a price rise.

12.20 From a calling party's perspective each number is different, as it has a different receiving party. As a result, a call to one receiving party is not substitutable to calling any other receiving party. The opportunities for demand-side substitution are therefore limited to other methods of contacting a given receiving party. Potential demand-side substitutes at the retail level include calls to mobile, OTT VoIP calls and text-based forms of communication (such as SMS, email and use of social media).

12.21 However, we do not believe that these are sufficiently close substitutes to be included in the relevant market for the following reasons:

- Calls to mobile: there remains a significant (albeit declining) volume of calls to fixed geographic numbers of more than 76 billion minutes in 2016.[565] While volumes of calls to mobiles continue to increase relative to fixed geographic calls[566], these figures suggest that, for many consumers, a preference for calling fixed numbers remains;

---

[565] This corresponds to 42.1 billion minutes from fixed geographic numbers and 34 billion minutes from mobile numbers. See Section 3, Figure 3.9 and paragraph 3.13. This does not include calls from international numbers to fixed geographic numbers, so the total volume of calls to fixed numbers is likely to be higher.

[566] There were over 111 billion minutes of calls to mobile numbers (excluding calls from international numbers). See Section 3, Figure 3.9.

- OTT VoIP: our research shows that certain consumers find that VoIP calls are unsuitable for certain conversations, inconvenient or difficult to use, and can be unreliable or of low quality.[567] Calls to OTT VoIP services typically require that the calling party is also using the same OTT VoIP service, and that both parties are connected at the same time. While use of OTT VoIP services has grown in recent years, and is likely to continue to grow[568], we do not think that high levels of switching (in response to a SSNIP at the retail level) are likely within the time relevant to the current review;
- Text-based forms of communication: text-based communications may lack the immediacy and two-way responsiveness of a voice conversation. Furthermore, the type of conversations held over fixed lines may not be suitable for conversion into text-based communications. Evidence from our market research[569] suggests that end users do not consider text-based communications to be a close substitute to fixed line calls.

12.22 Moreover, above we have considered the impact of price rises above a SSNIP at the retail level. We note that a SSNIP on wholesale charges for WCT would be likely to have a limited effect on retail prices and consumer behaviour, as FTRs make up a small fraction of the cost of retail bundles that can include calls, lines and often other products, such as broadband.[570]

Conclusion on indirect constraints at the retail level

12.23 In light of the analysis above, we conclude that there are no sufficiently close substitutes at the retail level to broaden the retail market beyond the focal product of calls to a fixed geographic number.

Wholesale services

12.24 Having considered indirect constraints at the retail level, we now move to wholesale market definition. In doing so we consider the direct constraints that limit the terminating provider’s ability to increase the price of WCT.

Focal product for wholesale market

12.25 The 2014 EC Recommendation identifies WCT on individual public telephone networks provided at a fixed location. The preceding analysis indicated that from a calling party perspective, a call to a given geographic number is unlikely to be a substitute for another. Given the absence of retail supply-side substitution, this forms the focal product for our analysis of the wholesale market.

---

[567] The most common reasons given by residential survey respondents for not using VoIP for all their calls was that it was “not suitable for certain conversations” (27%) and because it was “difficult to use” (14%). NMR 2017 Residential survey, Q36.

[568] See Section 3, and paragraph 4.145 which notes that unmanaged VoIP volumes are growing at an annualized rate of 40% per year to Q4 2016/17, and that 83% of residential VoIP users said they have used VoIP on at least one occasion when they could have used a landline and half reported doing so in the last week.

[569] See Section 4, and 2016 NMR Consultation paragraph 4.173.

[570] See Section 3, Figure 3.14, which shows the growth in bundling of communications services.

Demand-side substitution

12.26 As wholesale demand for call termination is derived from retail demand, once the originating provider's retail subscriber has chosen to call a particular geographic number, the originating provider has no alternative to purchasing WCT from the provider controlling that geographic number. This is because the provider that controls the geographic number that is being called also controls the termination of calls to that number, even if it does not host them on its own network.

12.27 OTT VoIP bypass is a mechanism whereby calls which are initiated as voice calls to a fixed number are diverted to terminate by an OTT VoIP provider on mobile or internet apps, without the knowledge of the calling party.[571] This is distinct from calls to a geographic number being delivered over IP technology by the fixed termination provider.

12.28 However, such bypass requires the originating provider, or transit provider, to enter a commercial agreement with the OTT provider. The incentive for originating providers to enter such agreements for routing domestic calls is undermined by the ability of terminating providers to retaliate by reciprocating such agreements when themselves originating traffic, which reduces the benefit to any originating provider. We do not have any information to suggest that OTT bypass currently occurs within the UK to a material extent.

Supply-side substitution

12.29 Supply-side substitution could occur if competitors were able to offer call termination to the particular number called. However, such competition could occur only if the provider that controls the geographic number were to grant entry to another provider to terminate calls on their number range. We consider that a provider is unlikely to have an incentive to give up its monopoly on WCT to allow other providers access.[572]

Widening the product market

12.30 The analysis of demand- and supply-side substitution presented above results in a separate product market for WCT being defined for each individual fixed geographic number. However, it may be reasonable to widen the product market by aggregating individual product markets, if at least one of two conditions is satisfied:

- the individual markets face homogeneous competitive conditions, meaning that suppliers' conduct would be the same in each; and/or
- there is a common pricing constraint, which means that suppliers' pricing and behaviour is likely to be the same in each market being considered.

[571] A mobile provider said that it was aware of international calling exchanges selling a "PSTN calls to Viber" service, citing "TelecomsXChange" as an example of this practice.

[572] We note that OTT bypass could be characterised as either wholesale demand-side substitution, wholesale supply-side substitution or potential market entry.

We aggregate WCT markets to encompass termination to all geographic numbers controlled by a particular terminating provider

12.31 Recipients of geographic calls lack the incentive to influence FTRs because the calling party pays principle means they do not bear the cost of the call. Furthermore, recipients of geographic calls lack the ability to influence FTRs. These features are common across fixed geographic numbers controlled by a given terminating telecoms provider – indicating homogeneity of competitive conditions.

12.32 In addition, there is a common pricing constraint at the wholesale level, as it is likely to be costly and complex for terminating providers to charge different termination rates for individual geographic numbers allocated to them. Even when terminating telecoms providers' FTRs were not regulated (i.e. pre-2014), we are not aware of them setting different FTRs for calls to different fixed geographic numbers.

12.33 Therefore, we aggregate the WCT markets for individual numbers into a wider product market encompassing termination to all geographic numbers controlled by a particular terminating provider.

However, we do not extend the product market to include WCT to non-geographic numbers

12.34 For both geographic and non-geographic calls, once the originating provider's subscriber has chosen to call a particular number, the originating provider has no alternative to purchasing WCT from the terminating provider.

12.35 Unlike geographic calls, calls to non-geographic numbers are made to a service provider (SP).[573] The services provided in relation to non-geographic termination by providers include services such as call management, conditional call routing and recorded announcements in addition to WCT, which are valued by SPs and influence their purchasing decisions.

12.36 For all non-geographic numbers apart from 03 numbers, SPs and termination providers are able to enter revenue sharing agreements. These agreements, and the extent that these termination charges are passed through to the originating provider's retail prices, mean that SPs are sensitive to the termination rates levied by terminating providers in a way that subscribers are not usually when choosing their telecoms provider.[574] Calls to all non-geographic numbers are also routed differently to calls to geographic numbers. Geographic calls are routed via 'far-end handover', whereas non-geographic calls are routed via 'near-end handover'. Hence terminating telecoms providers have both the ability (through their billing systems) and incentive (given the different costs, resulting from different routing, and opportunities for revenue sharing in certain non-geographic number ranges) to set

[573] An SP is an individual or organisation using a non-geographic number to provide a service to consumers and is the recipient of the non-geographic call from the consumer wishing to access that service.

[574] Typically, in the case of higher-priced calls or calls to premium rate services, the terminating provider will pass some of the termination revenue to the SP and this pays for the service being provided. In the case of low-priced calls to non-geographic numbers, the terminating provider may not share the termination revenues with the SP but instead may reduce or waive the charges for hosting services that the SP would otherwise pay.

different rates for termination to geographic and non-geographic numbers. Therefore, the competitive conditions are not homogeneous and there is not a common pricing constraint between call termination to non-geographic numbers and call termination to geographic numbers.

12.37 Turning to 03 non-geographic numbers specifically, these are deliberately chosen by SPs taking account of the implications for calling parties, even though the SP could have selected a higher priced non-geographic number range. This responsiveness of SPs to the retail price for being called, and the ability and incentive of terminating providers to charge different wholesale rates for calls to 03 numbers as compared with calls to geographic numbers means that the common pricing constraint and homogeneous competitive conditions that allow us to group calls to geographic numbers within the same market do not carry across to calls to 03 numbers.

12.38 As the competitive conditions across markets for termination to geographic numbers and to non-geographic numbers (including 03) are not homogeneous, and there is no common pricing constraint between calls to geographic and non-geographic markets, we have not extended the product market definition to include WCT to non-geographic numbers.

Hosted and ported numbers

The market is defined in relation to the number range holder

12.39 A number range holder may not always control its own access network and may instead choose to purchase some or all of the network elements required to physically terminate the call from another telecoms provider (hereafter, a hosting provider).[575]

12.40 The relationship between a number range holder and the hosting provider may extend to enabling the hosting provider to conclude termination agreements for all of the numbers held by the number range holder. Therefore, an originating telecoms provider could have no direct commercial relationship with the number range holder. However, we define our market in relation to the number range holder, as it retains ultimate control over the number range.

Termination services provided both by donor providers and recipient providers are within the relevant market

12.41 Calls to ported numbers are usually first routed to the provider that originally held the number being called (the donor provider). The call is then identified as a call to a ported number and routed to the telecoms provider (a system known as onward routing) to which the number has been ported (the recipient provider or gaining provider).

12.42 As a result, ported numbers are part of a number range that was allocated to the donor provider, while WCT to these numbers is ultimately provided by the recipient provider. However, since the originating provider does not know that the number has been ported,

[575] Responses to our s.135 notices indicate that at least 115 providers host their numbers on other providers' networks, corresponding to at least 40% of WCT providers.

it has no option but to purchase WCT from the donor provider, which can set an FTR independently of the recipient provider. We therefore consider that the donor provider as well as the recipient provider should be considered as providing a termination service. Therefore, our market definition refers to geographic numbers in the UK, to make clear that termination services provided by recipient providers are also within the market.

Geographic market definition

12.43 We consider that the geographic extent of each market is defined as the area served by that provider. The competitive conditions a provider faces in providing termination services are not affected by the number of other operators in a particular geographic area since, as set out above, voice termination provided by one provider is not a substitute for termination provided by another. Consequently, we conclude that the relevant geographic market is determined by reference to the area in which the provider offers termination services.

Conclusion on market definition

12.44 We conclude that the relevant service markets are:

> "wholesale call termination services that are provided by [named fixed communications provider](CP) to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP."

12.45 Where termination services are considered to be:

> "the conveyance of all signals (including relevant control signals) required to terminate calls to a customer[576] from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by CP."

12.46 This market definition is in effect the same as the market definition for WCT in the 2013 NMR Statement.

Market power assessment

Proposals in 2016 NMR Consultation

12.47 We proposed that each telecoms provider has SMP in WCT within the relevant market applicable to that provider.

[576] For the avoidance of doubt, calls to fixed geographic numbers delivered over IP are included within the wholesale call termination market for the relevant fixed communications provider.

Stakeholder responses

12.48 We received five specific responses (BT, KCOM, TalkTalk, Verizon and Vodafone) on our market power assessment. Each agreed with our proposal. BT also noted that in the future, as communication methods based on IP addresses, rather than numbers, become increasingly prevalent, it may be possible that the control of a customer's number may not be the determining factor, and so SMP designation for the number range holder may no longer be appropriate.[577]

Our analysis and conclusions

12.49 In Annex 7 we set out the process for assessing market power. We have assessed whether WCT providers have SMP in the provision of WCT according to the following market criteria[578]:

- high current and future market shares;
- high barriers to entry;
- an absence of effective countervailing buyer power (CBP); and
- evidence of pricing above competitive levels.

Each WCT provider has 100% market share for termination of calls to numbers that it controls

12.50 Given our proposed market definition, it follows that each number range holder has 100% of the market for calls terminating to numbers that it controls. Although a high market share alone is not sufficient to establish SMP, very large market shares are usually taken to indicate that SMP is present in the relevant market.

There are high barriers to entry

12.51 In relation to call termination, market entry could only occur if a terminating provider were to grant entry to another provider to terminate calls on its number range. As explained in 12.29 above, we consider that terminating providers are unlikely to have an incentive to allow other providers to terminate calls to their number ranges. As a result, we consider it unlikely that the existing barriers to entry will materially reduce in the near future and, therefore, any threat of entry is insufficient to restrict the SMP of providers.

There is insufficient countervailing buyer power to constrain the ability of terminating providers to charge excessive termination rates

12.52 Countervailing buyer power (CBP) is the degree of constraint that purchasers of termination services are able to place on the terminating provider's ability to charge

[577] BT response to 2016 NMR Consultation, paragraph 5.16.
[578] Our assessment takes due account of the SMP Guidelines, paragraph 78 of which refers to the criteria listed above. We have considered all of the other criteria listed in the SMP Guidelines, but have concluded that these other criteria had less relevance to an assessment of SMP in WCT markets.

excessive termination rates. Whether a buyer has CBP will depend on whether a) it is sufficiently important to the seller, in terms of purchasing a significant proportion of the total volume of call termination from that terminating provider and b) it can credibly threaten to buy less from that supplier, either through switching supplier, self-supply, or refusing to purchase the service. In the context of call termination, the prospect for CBP also arises from the fact that telecoms providers both provide and receive termination services from one another and so (absent regulation) could potentially restrain the termination rates charged by other providers by threatening to raise their own termination rates.

12.53 In assessing CBP, we consider the effectiveness of the potential levers by which providers could attempt to exert CBP. The main levers for providers to exert CBP, which we consider below, are raising their own termination rates and refusing to interconnect.

CBP relative to WCT provided by BT

12.54 Given BT's scale as the largest holder of geographic numbers[579] and the provider whose network terminates the most retail calls[580], we consider that other providers have very little CBP when negotiating to purchase WCT from BT. This is because they require BT's termination service in order to offer a credible service to their retail customers, who expect to be able to contact any other consumer irrespective of which provider they are connected with.

12.55 WCT is also purchased by the largest mobile providers, which have sufficient scale such as they could potentially seek to exert CBP against BT by threatening not to interconnect or raises wholesale mobile call termination rates charged to BT.[581] However, they are limited by network access obligations and charge controls imposed in the markets for MCT.[582] This implies that, in the absence of regulation on WCT, we would not expect other providers to have sufficient CBP to negate BT's SMP in WCT.

BT's CBP relative to other terminating providers

12.56 Any CBP that BT might hold as a result of its scale as the largest holder of geographic numbers is reduced by its end-to-end connectivity obligation.[583] This obligation means that BT cannot refuse to purchase WCT when requested by a Public Electronic Communications Network, as long as the terms offered are reasonable. BT is therefore limited in its ability to

---

[579] In Q4 16/17 BT held a WFAEL share of 54% (see Figure 6.1), a wholesale ISDN30 share of 62% (see Figure 6.3 and paragraph 6.69) and a wholesale IDSN2 share of nearly 100% (see paragraph 6.95).

[580] BT accounts for approximately [✂]% of WCT volumes by minutes (based on BT's RFS and s.135 data collected from a wide range of stakeholders).

[581] The relative importance of mobile providers as purchasers of WCT is increasing given the increase in the proportion of calls to fixed geographic numbers which are originated on mobile networks.

[582] We proposed to continue with this regulation in the MCT market. See Ofcom, 2017. *Mobile Call Termination Review 2018-21 – Consultation.* https://www.ofcom.org.uk/__data/assets/pdf_file/0011/103340/mobile-call-termination-consultation.pdf. We consider this regulation under the modified Greenfield approach. It is also the case that the largest mobile provider, EE, is owned by BT.

[583] Ofcom, 2006. *End-to-end Connectivity Statement.* http://stakeholders.ofcom.org.uk/binaries/consultations/end_to_end/statement/statement.pdf.

demand lower FTRs from smaller providers (for example, by refusing to open the number range of that provider).

Other providers' CBP relative to each other

12.57 BT's end-to-end connectivity obligation means that it is interconnected, either directly or indirectly, to each other WCT provider. This means that if an originating provider attempted to negotiate a lower FTR than the terminating provider had agreed with BT, the terminating provider could refuse the lower rate, because the only alternative for the originating provider would be to transit via BT for a fee. This also means that if a terminating provider asked for a rate higher than the one it had agreed with BT (plus any transit charge), then the originating provider could refuse and instead interconnect indirectly via BT. Therefore, the FTR BT agrees acts as the floor and ceiling (plus a margin for transit) on the rate other purchasers are likely to agree with terminating providers.

12.58 Another option for exerting CBP would be for an originating provider to threaten to block the WCT provider's number ranges. However, the credibility of this threat is weakened by the commercial incentives for providers to offer universal interconnection to their customers, and the potential costs of negotiating with small providers when the option of indirect interconnection via BT is available. Furthermore, even if such incentives did exist, the parties' expectation of Ofcom's potential intervention in these cases (in terms of our current and future views on whether regulatory and industry practices are sufficient to ensure end-to-end connectivity) could further weaken the credibility of this threat.

12.59 Although some small telecoms providers have claimed that BT sets their FTR and constrains them to the rate on BT's Carrier Price List, when we have collected evidence on this issue we have found that some providers charge FTRs above BT's rate. Even if a small number of larger providers might be able to exert CBP over smaller providers in respect of FTRs, there is no mechanism to transmit lower FTRs to other originating providers which do not possess CBP.

Pricing behaviour does not contradict a presumption of SMP

12.60 While the imposition of a charge control on BT means we cannot observe the FTRs which it would set in the absence of SMP regulation, we note that BT has set its FTRs at the maximum permitted level over the course of the current charge control. This suggests its pricing is likely to have been constrained by regulation (even when FTRs were not capped at LRIC).

12.61 Similarly, we cannot observe the FTRs that other providers would set in the absence of SMP regulation, as while not subject to a charge control, other providers' FTRs are required to be fair and reasonable. We have also published guidance that termination rates set above BT's FTR (which we referred to as "the benchmark rate") were unlikely to be fair and reasonable unless they met the three-stage test outlined in the guidance.[584] Our analysis in

[584] Ofcom, 2013. *Guidance in the setting of fair and reasonable fixed termination rates, Annex 10 of the 2013 NMR Statement.* https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.

the 2016 NMR Consultation suggested that a small number of fixed providers were pricing above the benchmark rate, although the majority of providers were pricing at the benchmark rate.

12.62 While this pricing behaviour alone does not conclusively imply SMP, it does not contradict the presumption of SMP given market shares or considering other economic factors such as the absence of, or limits to, CBP by originating telecoms providers.

Hosted and ported numbers

12.63 A number range holder may move numbers they hold between different hosting providers, or may move the numbers onto their own network. The intervention of a hosting provider can only occur with the authorisation of the number range holder. Consequently, WCT cannot occur without, directly or indirectly, the involvement of the number range holder. We therefore consider that it is the number range holder, rather than the hosting network, that holds a position of SMP.

12.64 As noted above, in relation to ported numbers, under the onward routing approach used in the UK, the originating telecoms provider has no choice but to purchase WCT from the donor provider, and the donor provider has no option but to purchase WCT from the recipient provider. As a result, in these cases our view is that both the donor and the recipient provider should be considered as providing a termination service and hold a position of SMP. The role of the donor in relation to providing number portability to the recipient provider is separately regulated under GC18.

Conclusion on market power assessment

12.65 We conclude that each provider has SMP in the market for call termination to geographic numbers in the area served by that provider. This includes those providers whose numbers are hosted by another provider, and both the donor provider and the recipient provider in relation to numbers that have been ported.

WCT providers with SMP

Proposals in the 2016 NMR Consultation and the August 2017 NMR Further Consultation

12.66 In the 2016 NMR Consultation, we published a list of telecoms providers that we proposed have SMP in WCT. In the August 2017 NMR Further Consultation, we published a revised list of telecoms providers that we proposed have SMP in WCT.

Stakeholder responses

12.67 We had three responses to our August 2017 NMR Further Consultation. [✂] supported our proposal and Openreach had no comment on our proposal.[585]

12.68 BT considered that BT's subsidiaries are already captured by Ofcom's proposed SMP remedies in WCT. It further considered that it was unnecessary and inappropriate to include wholly owned subsidiaries of BT. BT therefore considered that EE Limited should not be included within the annex to the legal instrument.[586]

Our reasoning and decision

12.69 We note BT's comments with respect to EE being a wholly owned subsidiary of BT. However, the SMP designation is based on number range allocations. As EE Limited is currently allocated separate number ranges to BT, we consider it should be separately subject to WCT regulation and be included in the list.

12.70 We have adopted this approach to any wholly owned subsidiary in the list. If we were to remove the WCT SMP designation for any wholly owned subsidiary, and it was bought by another telecoms provider, its number ranges would not be subject to WCT regulation. Therefore, we see no consumer detriment to keeping EE Limited (or any other wholly subsidiary) on the list and potential detriment if we removed it.

12.71 Therefore, we conclude that the list of telecoms providers with SMP is the same as that in the August 2017 NMR Further Consultation. The list can be found in Annex 9.

[585] [✂] response to August 2017 NMR Further Consultation, page 1; Openreach response to August 2017 NMR Further Consultation, page 1.
[586] BT response to August 2017 NMR Further Consultation, paragraphs 2-4.

13. Remedies: WCT

13.1 In Section 12, we set out our decision that each telecoms provider has SMP in WCT within the relevant market applicable to that telecoms provider. In this section, we set out our decision in relation to remedies (except charge control remedies) on telecoms providers with SMP in WCT.

13.2 We have decided to impose certain non-pricing remedies that will apply to all telecoms providers with SMP, including BT and KCOM.[587] We have also decided to impose additional remedies that will apply to BT only. These additional remedies on BT only are necessary to address our competition concerns because of BT's scale in the provision of WCT (due to its network reach and number of connected customers at the wholesale level).

13.3 As set out in Section 14, we have also decided to impose a charge control on all telecoms providers with SMP in WCT. Our decisions on pricing remedies for all telecoms providers with SMP in WCT are set out in Sections 13-15.

Summary of decisions

Remedies for WCT: all telecoms providers with SMP

13.4 We have decided to impose a requirement to provide network access on reasonable request[588] and a price notification obligation.

Additional remedies for WCT: BT only

13.5 BT is currently subject to a number of remedies for WCT that do not apply to any other telecoms provider. We have decided to maintain a number of these, specifically:

- a requirement not to unduly discriminate;
- a requirement to publish a Reference Offer;
- accounting separation; and
- cost accounting.

13.6 As discussed in Section 14, we have decided to apply a single maximum rate charge control to all telecoms providers with SMP in WCT. As discussed in Section 16, given the current low level of FTRs relative to other network costs and retail prices, allowing flexibility may do little to incentivise retail customers to use the network more at non-peak times. Therefore, we no longer consider time of day flexibility appropriate. As we have decided to remove time of day flexibility, we have also decided to remove the requirement on BT to include its network tariff gradient when publishing charges.

[587] See Annex 6 for the full list of telecoms providers.
[588] Including fair and reasonable charges in the absence of other pricing regulation.

13.7 In recognition of market developments and the maturity of its current voice technology (TDM), we have also decided to reduce regulation on BT by removing the requirement to notify technical information.

Summary of previous and new remedies

13.8 Table 13.1 summarises the previous and new remedies on all telecoms providers other than BT with SMP in the WCT markets and separately, on BT.

Table 13.1: Summary of previous and new remedies[589] on telecoms providers with SMP in WCT

	NMR 2013 remedies	NMR 2017 remedies
All telecoms providers other than BT	Provide network access on reasonable request Requirement to notify changes to charges	Charge control (including price notification obligation) Provide network access on reasonable request
BT	Charge control Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Requirement to notify charges Requirement to notify technical information Accounting separation Cost accounting	Charge control (including price notification obligation) Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Accounting separation Cost accounting

13.9 We consider that these remedies address the competition concerns we have identified, are consistent with our statutory duties, and satisfy the relevant legal tests. In reaching these decisions we have taken account of recent developments in the relevant markets, the maturity of the technology, expected developments over the course of the review period and views expressed by stakeholders in response to our 2016 NMR Consultation and July 2017 NMR Further Consultation.

[589] Please note that we have included charge control remedies in this table for completeness. Charge control remedies are discussed in detail in Section 14.

Competition concerns and approach to remedies

13.10 In the WCT markets, there are a variety of behaviours in which telecoms providers could engage which might distort competition, including:

- refusing access to termination services, which could reduce the ability of other telecoms providers to offer their customers end-to-end calls to all geographic numbers in the UK; and
- providing access, but setting excessive prices for WCT.

13.11 For these reasons, we have decided to maintain requirements on all telecoms providers with SMP in WCT to provide network access on reasonable request and to notify Ofcom of the maximum FTR charged in the previous year. For all telecoms providers with SMP other than BT, we consider that these remedies (in conjunction with the charge control discussed in Sections 14 and 16) are sufficient to address competition concerns in the WCT markets.

13.12 Overall, we consider that national and EU competition law remedies are insufficient to address the competition problems we have identified. We therefore believe that it is appropriate to impose *ex ante* regulatory obligations on telecoms providers with SMP in WCT and additional obligations on BT's provision of WCT.

Remedies for WCT: all telecoms providers with SMP including BT

13.13 In this subsection, we set out our remedies on all telecoms providers with SMP in the markets for WCT, including BT.

13.14 We assess each remedy in turn by setting out:

- our proposals as set out in the 2016 NMR Consultation and July 2017 NMR Further Consultation;
- the aim and effect of the regulation we are setting;
- stakeholder responses to our proposals;
- our reasoning and decisions; and
- our consideration of the relevant legal tests for the regulation we are setting.

Requirement to provide network access on reasonable request

Proposed remedies

13.15 We proposed that all telecoms providers with SMP in WCT would be required to meet reasonable requests for network access and to provide such access on fair and reasonable terms and conditions.

13.16 We also proposed that telecoms providers with SMP would be required to provide access to WCT on fair and reasonable charges, except where a charge control applies.

Aim and effect of regulation

13.17 The remedy is designed to ensure telecoms providers can offer their customers end-to-end calls to all geographic numbers in the UK, and to promote competition in the provision of retail offers by requiring telecoms providers with SMP to provide WCT. We consider that in the absence of such a requirement, SMP providers could have the ability and incentive not to provide network access.

13.18 A fair and reasonable charges obligation requires telecoms providers to provide network access on fair and reasonable charges.

Stakeholder responses to our proposals

13.19 BT[590] and Three[591] supported our proposal to require telecoms providers to provide network access on reasonable request.

13.20 As we noted at paragraph 12.17, [✂][592] asked us to clarify that our market definition of WCT relates to calls to the geographic number dialled, rather than to the administrative unit (blocks) as allocated by Ofcom. We consider this point relates to how a WCT provider meets its obligation to provide reasonable access to its geographic numbers. Therefore, we address it below.

13.21 Certain telecoms providers, namely: FCS, Magrathea, TalkTalk, Telecom2, UKCTA, Verizon and Vodafone, identified various points in relation to access to IP interconnection, including the use of IP Exchange (IPEX) on the BT network. We deal with IP interconnection in more detail in Section 17, but we address a specific point in relation to WCT access and regulated FTRs below.

Our reasoning and decisions

13.22 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as Ofcom may from time to time direct. These conditions may, pursuant to section 87(5), 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 in the conditions are complied with, within periods and at times required by or under the conditions. Section 89(9) of the Act also authorises SMP services conditions imposing on the dominant provider such rules as they may make in relation to matters connected with the provision of network access about the recovery of cost and cost orientation, subject to the conditions of section 88 being satisfied.

13.23 The condition will require all telecoms providers with SMP in WCT to meet reasonable requests for network access and to provide such access on fair and reasonable terms and conditions.

---

590 BT response to 2016 NMR Consultation, paragraph 5.17.
591 Three response to 2016 NMR Consultation, paragraph 4.
592 [✂] response to 2016 NMR Consultation, pages 24 to 26.

13.24 It will also require all telecoms providers with SMP to provide access on fair and reasonable charges, except where a charge control applies.

13.25 As explained in Section 16, the new WCT charge control will apply to all telecoms providers with SMP from 1 February 2018. BT will be subject to a charge control from 1 December 2017 – 31 January 2018 (WCT transitional period) but other telecoms providers will not. Telecoms providers other than BT will be subject to the fair and reasonable charging obligation, and the 2013 F&R Guidance[593] will continue to apply[594], during the WCT transitional period. Thereafter, the 2013 F&R Guidance on fair and reasonable charging will no longer apply. The fair and reasonable charges obligation would only apply in the event that the charge control was not in effect or otherwise disapplied.

13.26 While BT is currently subject to a requirement to provide access on fair and reasonable terms and conditions, it is not currently required to provide network access on fair and reasonable charges. From the date of our final statement, the requirement to provide access on fair and reasonable charges will also apply to BT whenever a charge control is not in effect or otherwise disapplied.

13.27 We consider that this obligation is necessary to address our concern of a relevant risk of adverse effects arising from a price distortion if telecoms providers were to fix and maintain excessive prices for WCT, thus undermining effective competition in downstream markets.

13.28 In response to [✂], we expect geographic numbers to be used to provide calls to the specific geographic area to which that number is allocated in the National Telephone Numbering Plan.[595] Where a provider serves a particular geographic area code from more than one POI, we recognise that splitting number ranges across those POIs could be valued by the end customer (e.g. a business moving premises) and an efficient use of numbering resources for the terminating provider. However, such divisions of number blocks can increase costs (or routing complexity) to competing providers. Moreover, the greater the incentives on the part of terminating providers to fragment numbers away from their assigned geographic area, the more this runs contrary to the purpose of the National Telephone Numbering Plan in respect of geographic numbers (which should be area specific). As such, we consider that the terminating provider should bear any costs of onward routing associated with this choice of fragmenting blocks of area numbers across more than one POI.

---

[593] Ofcom, 2016. *Supplementary guidance on WCT over the lacuna period*. https://www.ofcom.org.uk/__data/assets/pdf_file/0022/90274/Supplementary-guidance.pdf.

[594] In the supplementary guidance, we explain how lacuna pricing will work for all telecoms providers that provide WCT. Specifically, the charge control rate applied to BT is a reference to the average charge control rate applied to BT for its FTRs in 2015/16. This change to the guidance will apply from 1 October 2016 until the end of the lacuna period. In all other respects, the 2013 F&R guidance will continue to apply.

[595] Ofcom's National Telephone Numbering Plan sets out geographic area codes and applicable geographic areas. See https://www.ofcom.org.uk/__data/assets/pdf_file/0013/102613/national-numbering-plan-june-2017.pdf.

Legal tests

13.29 For the reasons set out below, we are satisfied that the network access condition meets the relevant tests set out in the Act.

13.30 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access. These conditions may, pursuant to section 87(5), 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 in the conditions are complied with, within periods and at times required by or under the conditions. Section 87(9) of the Act also authorises SMP services conditions imposing on the dominant provider such rules as Ofcom may make in relation to matters connected with the provision of network access and about the recovery of costs and cost orientation, subject to the conditions of section 88 of the Act being satisfied.

13.31 In deciding to impose this condition, we have taken into account the factors set out in section 87(4) of the Act. When considering the imposition of such conditions in a particular case, we must take into account the following six factors set out in section 87(4):

- the technical and economic viability (including the viability of other network access products, whether provided by the dominant provider or another person), having regard to the state of market development, of installing and using facilities that would make the proposed network access unnecessary;
- the feasibility of the provision of the proposed network access;
- the investment made by the person initially providing or making available the network or other facility in respect of which there is an entitlement to network access (taking account of any public investment made);
- the need to secure effective competition (including, where it appears to Ofcom to be appropriate, economically efficient infrastructure-based competition) in the long-term;
- any rights to intellectual property that are relevant to the decision; and
- the desirability of securing that electronic communications services that are provided are available throughout the Member States.

13.32 In reaching our decision that telecoms providers will be subject to a requirement to provide network access on reasonable request, we have taken all the above six factors into account. In particular, having considered the economic viability of building access networks to achieve ubiquitous coverage that would make the provision of network access unnecessary, we consider that the SMP condition is required to secure effective long-term competition in the WCT markets.

13.33 In deciding to impose a fair and reasonable charges obligation, we are also required to ensure that the condition satisfies the tests set out in section 88 of the Act.

13.34 Section 88(1)(a) of the Act requires that Ofcom must not impose pricing conditions unless it appears from the market analysis carried out for the purpose of setting that condition that there is a relevant risk of adverse effects arising from price distortion. We consider that, in the absence of regulation requiring charges to be fair and reasonable where there is no charge control, telecoms providers may price excessively. Therefore, we consider that there is a relevant risk of adverse effects arising from price distortion, which would have adverse consequences for end-users of public electronic communication services.

13.35 Section 88(1)(b) of the Act requires that the pricing condition should be appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end users of public electronic communications services.

13.36 We consider that fair and reasonable charges will prevent telecoms providers from charging excessively high wholesale prices where a charge control does not apply. In this way, this condition supports the aim of improved efficiency and sustainable competition.

13.37 We consider that the provision of network access on fair and reasonable terms will promote sustainable competition by ensuring that there is no distortion or restriction of competition and that other telecoms providers can effectively compete at the retail level. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on end users of the services.

13.38 We are also required, under section 88(2) of the Act, to take account of the extent of telecoms providers' investment in the matters to which our condition relates. We believe that fair and reasonable charges will allow telecoms providers' costs to be taken into account. This condition is therefore an appropriate basis upon which to control telecoms providers' prices in the event that the charge control lapses before the completion of the next market review.

13.39 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

13.40 We have considered our duties under section 3 of the Act. We consider that this condition furthers the interests of consumers in relevant markets by the promotion of competition.

13.41 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. The condition will promote competition in relation to the provision of electronic communications networks.

13.42 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- objectively justifiable in that it relates to the need to ensure that competition develops to the benefit of consumers;
- not unduly discriminatory as, in relation to WCT, it is imposed on all fixed telecoms providers who have SMP;
- proportionate, in that it is the least restrictive means of ensuring that an SMP provider is unable to refuse to provide access to WCT to other telecoms providers which would distort competition at the downstream level; and
- transparent, as it is clear in its intention to ensure that telecoms providers provide access to their networks in order to facilitate effective competition.

13.43 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Interpretation of the network access condition

13.44 As discussed in the 2016 NMR Consultation, the network access requirement for WCT makes it clear that telecoms providers must make available, on request, sufficient information to allow other telecoms providers to connect at the POI where they will only have to pay the regulated FTR.[596]

13.45 In Section 14, we noted that FTRs can be combined with charges for unregulated services, such as transit and conveyance.[597] We understand that some fixed telecoms providers may reach a commercial agreement to combine these charges. However, the network access condition addresses any concerns that telecoms providers may have that they are being charged for transit in addition to termination. We expect the network access condition to be interpreted as requiring the terminating telecoms provider to make available a POI where only the FTR is charged.

13.46 We would expect the network access condition to be interpreted as requiring a hosted telecoms provider to ensure its numbers can be reached via at least one POI at the regulated rate. In Section 12, we explain that it is the number range holder which exercises control over the provision of the termination service, and ultimately over the price of WCT. Where telecoms providers have chosen to use a hosting telecoms provider, in accordance with the network access obligation, they must ensure that the regulated rate is charged for termination at a relevant POI to that hosting network.

13.47 Where traffic is routed via BT’s IPEX, if the regulated FTR is available at another POI (for example where a telecoms provider can connect directly to BT’s DLEs and/or to other telecoms providers’ networks but chooses to use IPEX as a transit service), then the service provided by IPEX constitutes a commercial transit service. However, where traffic must be handed to IPEX because no other POI is available, then the regulated FTR should be charged at the point of handover to IPEX. It is the responsibility of the number holder (i.e. the telecoms provider hosting its numbers on BT’s IPEX service) to ensure that the originating telecoms provider is able to hand over traffic to IPEX at the regulated FTR. To the extent that additional conveyance is provided (i.e. transit on BT’s IPEX), this should be subject to commercial agreement between the hosted telecoms provider and BT.

Price notification obligation

Proposed remedies

13.48 In the July 2017 NMR Further Consultation, we proposed that the charge control obligation would include a price notification condition requiring all telecoms providers with SMP in WCT to notify Ofcom annually of the FTR charged in the previous charge control year.[598]

[596] 2016 NMR Consultation, paragraph 12.30.
[597] Conveyance and transit services are unregulated and do not form part of our definition of WCT; as such, we exclude them from consideration of compliance with our F&R Guidance.
[598] This approach is consistent with what we have proposed for MCT.

13.49 This differed to the 2016 NMR Consultation, where we proposed a price transparency obligation, which would have required all providers with SMP to notify changes to charges on or before the day the changes took effect.

Aim and effect of regulation

13.50 The remedy is designed to allow us to effectively monitor compliance and enforce against telecoms providers that do not comply with the charge control. We consider that requiring telecoms providers to submit the maximum FTR they charged in the previous year on an annual basis is the most appropriate and proportionate approach to achieve this objective.

Stakeholder responses to our proposals

13.51 TalkTalk, Telecom2 and Verizon were concerned about the potential compliance burden of an annual notification obligation. Telecom2 considered that it would be time consuming for telecoms providers and Ofcom.[599] Verizon argued that it would be a lot of work and "peaky", requiring considerable resource in a short period.[600] Vodafone considered that an annual return would be preferable to receiving a notice whenever a telecoms provider changes its charge.[601]

13.52 TalkTalk also questioned whether the notification requirement was required. It noted that there are strong incentives on telecoms providers to refer disputes to Ofcom if another telecoms provider charges above the cap. It added that this would make it simple for Ofcom to determine when such breaches occur, leading to more focused use of Ofcom's resources.[602]

13.53 Verizon also expressed a desire for us to provide a clear description of how we want the FTRs reported, in particular what level of detail would be required and whether the notification details would be kept confidential.[603] [✂] agreed with our price notification obligation, but considered that Ofcom should expand the notification requirement to request and publish data relating to the number ranges that the original range holder is hosting on their network or on other networks.[604]

13.54 Verizon considered that requiring telecoms providers to give 30 days' notice of price changes would represent a good balance and reflect what is done in MCT.[605] Three considered that telecoms providers should provide 56 days' notice of any change to prices taking effect. Such advance notice is necessary to provide purchasers of WCT certainty

599 Telecom2 response to July 2017 NMR Further Consultation, pages 1-2.
600 Verizon response to July 2017 NMR Further Consultation, paragraph 14.
601 Vodafone response to July 2017 NMR Further Consultation, page 2.
602 TalkTalk response to July 2017 NMR Further Consultation, paragraph 2.5.
603 Verizon response to July 2017 NMR Further Consultation, paragraphs 10 and 13.
604 [✂] response to July 2017 NMR Further Consultation, page 4.
605 Verizon response to July 2017 NMR Further Consultation, paragraph 6.

over their costs in the near future and allow them to adjust their own retail offerings as appropriate.[606]

13.55 BT welcomed our proposal to change the notification period to the day before or day of the change in charge. However, it noted (as did [✂]) that the notice period in its contracts with other providers is determined by the SIA.[607]

13.56 BT supported our proposal to remove the obligation to publish a network tariff gradient. It also considered that our proposal to publish the maximum permitted WCT charge two months in advance of the change in the FTR cap did not give BT sufficient notice to update all of its prices within the 56-day period. It proposed that Ofcom provides an additional two weeks' notice, i.e. 75 days before the changes take effect.[608]

Our reasoning and decisions

13.57 In the 2016 NMR Consultation, we proposed to require all telecoms providers with SMP in the provision of WCT (including BT) to publish changes to charges on or before the day that the changes take effect. In the July 2017 NMR Further Consultation, we withdrew this proposal because we considered it is no longer necessary, as there is likely to be a high level of transparency of FTRs.

13.58 With the implementation of the charge control on all telecoms providers with SMP in WCT, we will publish the maximum permitted FTR under the charge control on the Ofcom website annually, two months in advance of the change in FTR cap. This will ensure that purchasers of WCT can easily find out the maximum FTR that they can be charged well in advance.

13.59 Moreover, since WCT providers have SMP, we anticipate that they have the incentive and ability to price up to the cap, so in most cases we expect that the FTR published by Ofcom will be the rate that WCT providers charge for WCT. In the event that WCT providers chose to price below the FTR cap, we anticipate that it is likely that interconnecting providers would have a contract with the WCT provider governing the appropriate notification period. Even if they did not, we consider that an unexpected reduction in rates below the cap is likely to be less harmful to purchasers of WCT than an unexpected increase in rates – noting that in any case a single maximum rate cap for WCT at any time of day provides certainty on the maximum exposure of any interconnecting provider.

13.60 Since we have decided we do not need to impose a price transparency obligation, where information published pursuant to this requirement may have been used by Ofcom to monitor telecoms providers' compliance with the WCT charge control, we have decided to put in place a price notification requirement. This requirement will help to ensure that

---

[606] Three response to 2016 NMR Consultation, paragraph 5.
[607] BT response to July 2017 NMR Further Consultation, paragraph 8; [✂] response to July 2017 NMR Further Consultation, page 4-5.
[608] BT response to July 2017 NMR Further Consultation, paragraphs 9 - 11.

Ofcom has available to it the information that it needs to monitor compliance and facilitate enforcement.

13.61 Specifically, we have decided to include in the charge control condition, an obligation requiring all telecoms providers with SMP in the provision of WCT to notify Ofcom annually of the maximum FTR they have charged, by submitting to us this information within a month of the charge control period finishing.[609] We consider that the obligation will help facilitate the monitoring of compliance with the WCT charge control, as it will require all providers with SMP to notify Ofcom annually of the maximum FTR charged in the previous charge control year. If they fail to provide this information, we will consider taking enforcement action where appropriate.

13.62 We do not agree that our price notification obligation will place a significant administrative burden on telecoms providers and Ofcom. We do not expect providers to set out their rates on a call by call by basis to Ofcom, but will require them to provide the maximum rate charged over the previous year.[610] As explained above we expect that in most cases providers will charge at the cap. We therefore do not consider that the administrative burden on Ofcom or telecoms providers is disproportionate to our aim of effectively monitoring compliance with the WCT cap. We do not consider that additional requirements to publish data relating to the number ranges that the original range holder is hosting on their network or on other networks would help to ensure that Ofcom has available to it the information that it needs to monitor compliance and facilitate enforcement.

13.63 We also do not consider that encouraging telecoms providers to refer disputes to us is sufficient to ensure effective compliance with the WCT cap. We further note that in MCT, in contrast to fixed, all telecoms providers currently face a maximum rate charge control cap. In spite of some smaller MCT providers charging above the charge control cap, no disputes have been referred to us. Given the sums involved in fixed are smaller, we see no reason to expect a different outcome.

Notification period

13.64 In response to Three's and Verizon's comments, as we will not require telecoms providers to publish changes to their prices, we have not specified the appropriate amount of notice required in the event of a price change.

13.65 As noted above, BT requested an additional two weeks' notice of the maximum permitted WCT charge from Ofcom. As we have decided to use the index figure published three months prior to the start of each charge control year, we consider this gives BT more than sufficient time to update its rates. Moreover, since we intend publishing the maximum rate

[609] Annual returns would need to be given by all telecoms providers that provide WCT by: 30 April 2019, 30 April 2020 and 30 April 2021.

[610] The rates provided by telecoms providers will be remain confidential to Ofcom. We do not intend to share the rates provided by telecoms providers with any third parties.

three months ahead of each charge control year, this should provide greater clarity on the maximum rate that any telecoms provider can charge.

Legal tests

13.66 The price notification obligation forms part of the WCT charge control conditions. In Section 14, we explain why we consider the WCT charge control conditions in their entirety, including ancillary elements such as the price notification obligation, satisfies the legal tests under the Act.

Additional remedies for BT only

13.67 In this subsection, we outline why we have decided to impose additional remedies on BT and why we have imposed each of them. We also explain why we have decided to remove two remedies that currently apply to BT but not to other telecoms providers.

Proposed remedies

13.68 We proposed certain remedies on BT, in addition to those that we proposed for all other providers of WCT, namely: the requirement not to unduly discriminate, publish a Reference Offer, accounting separation, and cost accounting.

Stakeholder responses to our proposed approach

13.69 BT considered that there was no justification for imposing additional remedies on BT because of its size. It noted that all providers of WCT have SMP, regardless of the volume of lines or calls. In addition, it noted that the source of market power was the terminating provider's control of access to the relevant number range. In this respect, it argued, BT did not differ from any other provider of WCT.[611]

13.70 Three[612], TalkTalk[613], Verizon, Vodafone[614] and [✂][615] agreed with our proposal to impose additional remedies on BT. Verizon considered that additional requirements on BT were justified given its higher share of lines.[616]

Our reasoning and conclusions

13.71 We consider that it is appropriate to impose additional remedies on BT. Unlike other telecoms providers with SMP in WCT, for which we consider the remedies and charge control are sufficient to address our competition concerns, we believe that additional remedies are needed given BT's scale in the provision of WCT (due to its network reach and number of connected customers at the wholesale level, its share of subscribers

---

611 BT response to 2016 NMR Consultation, paragraph 5.19.
612 Three response to 2016 NMR Consultation, paragraph 8.
613 TalkTalk response to 2016 NMR Consultation, paragraph 6.
614 Vodafone response to 2016 NMR Consultation, part 1, page 18.
615 [✂]
616 Verizon response to 2016 NMR Consultation, paragraph 62.

remains well over 50% and hence the volume of calls terminated to numbers controlled by BT exceeds that of any other fixed telecoms provider).[617]

13.72 As a result, not only would BT have the incentive and ability to discriminate between telecoms providers (for example, by setting charges to some telecoms providers lower than to others or otherwise discriminating on terms and conditions of access), but the effect of such conduct on downstream competition would be felt more widely than if exercised by another terminating provider.

Requirement not to unduly discriminate

Proposed remedies

13.73 In the 2016 NMR Consultation, we proposed to maintain a no undue discrimination obligation to BT in relation to the provision of WCT.

Aim and effect of regulation

13.74 A non-discrimination obligation is intended to prevent the dominant provider from discriminating in favour of its own downstream divisions and, more generally, to ensure that competing providers are placed in an equivalent position.

Stakeholder responses to our proposals

13.75 BT considered that a non-discrimination requirement was not justified. It considered that *ex post* competition law should be sufficient, as it is for all other terminating telecoms providers, and would also be consistent with our proposed remedies in WCO.[618]

13.76 Vodafone considered that it is essential that BT is unable to discriminate.[619]

Our reasoning and decisions

13.77 Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to unduly discriminate against particular persons, or against a particular description of persons, in relation to matters connected with the provision of network access.

13.78 We have decided to maintain a condition on BT not to unduly discriminate in relation to the provision of WCT in order to meet our objective to promote efficient and sustainable competition at the wholesale level.

13.79 Where dominant providers are vertically integrated, like BT, they may have an incentive to provide WCT on terms and conditions that disadvantage downstream rivals. Such providers might also discriminate selectively between competing providers by setting different terms and conditions for different telecoms providers. Depending on the availability of

---

[617] In the financial year 2014/15 BT accounted for approximately 50% of WCT volumes by minutes (see Section 12).
[618] BT response to 2016 NMR Consultation, paragraph 5.20.
[619] Vodafone response to 2016 NMR Consultation response, part 1, page 18.

appropriate substitutes, this could have the effect of restricting or distorting competition in downstream markets. Not only does BT have SMP in WCT, but, as noted above, its scale in the provision of WCT (due to its network reach and number of connected customers at the wholesale level) means the effect of such conduct on downstream competition would be felt more widely than if exercised by another terminating provider. Therefore, we do not consider *ex post* competition law is sufficient in these circumstances to address the competition concern in the case of BT. Imposing this *ex ante* obligation should allow us, in the event discriminatory conduct is identified, to respond more quickly to address it than is possible when relying on *ex post* competition law. It also allows us to specify in advance the discriminatory conduct that we are seeking to prevent rather than relying on this being established through *ex post* enforcement.

Legal tests

13.80 For the reasons set out below, we are satisfied that the conditions for BT in respect of its provision of WCT meet the relevant tests set out in the Act. As explained above, section 87(6)(a) authorises the SMP condition we have decided to make.

13.81 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

13.82 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition at the retail level.

13.83 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. The condition encourages the provision of network access and service interoperability by ensuring that BT does not unfairly favour its own retail businesses or particular third parties and therefore distort competition.

13.84 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- objectively justifiable as it ensures that competitors, and hence consumers, are not disadvantaged by BT discriminating in favour of its own retail business or between competing providers;
- not unduly discriminatory in that it reflects the circumstances of BT (i.e. its scale in terms of network reach and connected customers), and its potential for using market power in WCT to distort competition in other related markets;
- proportionate in that it is the least restrictive means of ensuring that BT does not discriminate in favour of its own downstream operations in providing network access in a manner which would distort competition at the downstream level; and
- transparent in that the condition is clear in what it is intended to achieve.

13.85 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Transparency

13.86 The requirements for the transparency of charges, terms and conditions in markets in which one operator is dominant are complementary remedies to ensure that third party telecoms providers are able to make effective use of the dominant provider's network access.

13.87 BT is currently subject to three transparency obligations in respect of its SMP in the WCT market. They are:

- a requirement to publish a Reference Offer;
- a requirement to notify changes to charges in advance; and
- a requirement to notify technical information.

13.88 In the following sub-section, we discuss the requirement to publish a Reference Offer. As set out above, we have decided to impose a price notification obligation instead of a requirement to notify changes to charges in advance and, as we explain at the end of this section, we have decided to remove the requirement on BT to notify technical information.

Publish a Reference Offer

Proposed remedies

13.89 We proposed to maintain BT's obligation to publish a Reference Offer for its provision of WCT.

Aim and effect of regulation

13.90 The main reason for requiring the publication of a Reference Offer is to give visibility to the terms and conditions on which other providers can purchase WCT, which complements the network access and no undue discrimination remedies.

Stakeholder responses to our proposals

13.91 Vodafone[620] agreed that BT should publish a Reference Offer and [✂] considered that reference offers aid transparency and make it clear what terms and conditions are being applied to all.[621]

Our reasoning and decisions

13.92 Section 87(6)(c) of the Act 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. Section 87(6)(e) permits the setting

[620] Vodafone response to 2016 NMR Consultation, part 1, page 18.
[621] [✂]

of SMP services conditions requiring the dominant provider to make such modifications to the Reference Offer as may be directed from time to time.

13.93 We have decided to retain the condition requiring BT to publish a Reference Offer for its provision of WCT. We have decided to retain the obligation to give visibility to the terms and conditions on which other providers can purchase WCT, and to enable faster negotiations and to help avoid possible disputes.

13.94 The obligation specifies that BT's published Reference Offer must include:

- A clear description of the services on offer.
- Terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The Reference Offer should provide sufficient information to enable providers to make technical and commercial judgements such that there is no material adverse effect on competition.
- Conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the Reference Offer, that provide for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion.

Legal tests

13.95 For the reasons set out below, we are satisfied that the condition meets the relevant tests set out in the Act. As explained above, sections 87(6)(c), (d) and (e) authorise the SMP condition we have decided to make.

13.96 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

13.97 We have considered our duties under section 3 of the Act. The requirement to publish a Reference Offer will facilitate service interoperability and protect existing entrants to a market by ensuring that services, and any terms and conditions are transparent. Further, the obligation will enable purchasers to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. Finally, the obligation will make it easier for Ofcom and other telecoms providers in the relevant markets to monitor any instances of discrimination. Therefore, we consider that the condition in particular furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.

13.98 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. In particular, the condition promotes competition and encourages the provision of network access and service interoperability. The publication of a Reference Offer would mean that other telecoms providers would have the necessary information readily available to allow them to make informed decisions about entry into and participation in the market.

13.99 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- objectively justifiable, in that it requires that terms and conditions are published in order to encourage competition and provide stability in the market;
- not unduly discriminatory as it reflects that BT's scale which far exceeds that of any other fixed telecoms provider;
- proportionate, in that only information that is considered necessary to allow telecoms providers to make informed decisions about competing in downstream markets is required to be provided; and
- transparent, in that the condition is clear in its intention that BT publish details of its WCT offering.

13.100 Article 9(4) of the Access Directive requires that, where network access obligations are imposed, NRAs should ensure the publication of a Reference Offer containing at least the elements set out in Annex II to that Directive. We are satisfied that this requirement is met.

13.101 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Approach to regulatory financial reporting

13.102 In the following sub-sections, we explain why we have decided to impose accounting separation and cost accounting obligations on BT for the provision of WCT. We have decided to implement these obligations by way of a single SMP Condition (SMP Condition 9).

13.103 In Section 8, we set out in detail our approach to regulatory financial reporting. In Section 20 we set out our detailed reporting requirements and the directions to implement them.

Accounting separation

Proposed remedies

13.104 We proposed an accounting separation obligation on BT in WCT in the UK excluding the Hull Area.

Aim and effect of regulation

13.105 As set out in Section 8, the accounting separation obligation requires BT to report financial information for individual markets and services, providing a greater level of detail than that derived from statutory accounts. The accounting separation obligation also requires BT to account separately for internal and external sales, which allows Ofcom and other stakeholders to monitor the activities of BT to ensure that it does not discriminate unduly in favour of its own downstream businesses. In practice these obligations require BT to produce financial statements that reflect the performance of the regulated wholesale markets as though they were separate businesses.

Stakeholder responses to our proposals

13.106 BT considered that imposing accounting separation and cost accounting remedies was excessive given the size of the market.[622]

13.107 Vodafone considered that the accounting separation and cost accounting remedies add transparency.[623]

Our reasoning and decisions

13.108 Under sections 87(7) and 87(8) the dominant provider may be required to maintain a separation for accounting purposes between such different matters relating to network access or the availability of relevant facilities.

13.109 We have decided that it is appropriate to impose an accounting separation obligation on BT in the WCT market. We consider that this obligation is necessary to monitor the overall impact and effectiveness of the remedies in Table 13.1 and in particular to monitor BT's activities with regard to our non-discrimination obligations. The obligation is also necessary to support transparency by providing a greater detail of information on the relevant markets than that derived from BT's statutory financial statements and give visibility, and thus reassurance, to stakeholders that BT has complied with its SMP conditions and allow them to contribute to the regulatory regime.

13.110 We do not consider that the relatively small size of the WCT market is itself a reason for removing the accounting separation requirement or that effective regulation is not important in markets of a relatively small size. Accounting separation enables Ofcom and other stakeholders to monitor the impact and effectiveness of the remedies imposed on BT and provides a greater level of detail than that derived from BT's statutory financial statements. Also, it allows Ofcom and third parties to monitor the activities of BT so as to ensure it does not discriminate in favour of its own downstream business.

13.111 We have therefore decided that accounting separation requirements will apply to BT for the provision of WCT.

13.112 In respect of the specific form of the accounting separation requirements we have decided to impose on BT in these markets, we have decided to impose the form of condition set out in the 2014 Regulatory Financial Reporting Statement but modified to remove the reference to the Regulatory Accounting Guidelines. This form of condition implements our policy decisions on regulatory financial reporting set out in that statement.[624] The purpose of the condition is to give Ofcom a greater role in the way that BT prepares its regulatory

---

[622] BT response to 2016 NMR Consultation, paragraph 5.20.
[623] Vodafone response to 2016 NMR Consultation, part 1, page 18.
[624] Ofcom, 2014. *Regulatory Financial Reporting – Final Statement*, page 1.
https://www.ofcom.org.uk/__data/assets/pdf_file/0025/78460/financial-reporting-statement-may14.pdf.

financial statements,[625] improve the presentation of the published regulatory financial statements and supporting documentation,[626] and ensure that Ofcom and other stakeholders have the information they need.

Legal tests

13.113 For the reasons set out below, we are satisfied that our decision to impose accounting separation requirements on BT in the WCT market meets the relevant tests set out in the Act. As explained above, sections 87(7) and (8) authorise the setting of such an SMP condition.

13.114 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

13.115 We have considered our duties under section 3 of the Act. We consider that the imposition of an accounting separation obligation promotes competition in relation to the provision of electronic communications networks and services. This is because the obligation would ensure that other obligations designed to curb potentially damaging leveraging of market power, in particular the requirement not to unduly discriminate, can be effectively monitored and enforced.

13.116 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. In particular, we believe section 4(8) is met, as the obligation has the purpose of securing efficient and sustainable competition in the markets for electronic communications networks and services in that it helps to ensure that dominant providers comply with other obligations, including non-discrimination requirements.

13.117 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- objectively justifiable, as it supports the other remedies we have decided to impose to ensure competition develops fairly to the benefit of consumers;
- not unduly discriminatory, as we have decided to impose a number of remedies on BT as a consequence of its unique position in the provision of both retail and wholesale voice services;
- proportionate, in that it is the least onerous obligation necessary as a mechanism to allow us and third parties to monitor the impact and effectiveness of the remedies and monitor potentially discriminatory behaviour by BT; and
- transparent, in that it is clear that the intention is to monitor the impact and effectiveness of the remedies, and the particular accounting separation requirements of BT are clearly documented within the SMP condition.

---

[625] This included establishing new Regulatory Accounting Principles (including a requirement for consistency with regulatory decisions) and a change control process whereby BT is required to notify us about proposed changes to its regulatory accounting methodology.
[626] This included a requirement on BT to publish annual reconciliation reports that show the impact of material changes and errors.

13.118 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Cost accounting

Proposed remedies

13.119 We proposed cost accounting requirements on BT in WCT in the UK excluding the Hull Area.

Aim and effect of regulation

13.120 The imposition of cost accounting obligations ensures that BT has in place a system of rules that support the attribution of revenues and costs to individual markets and services. Its imposition also supports the accounting separation obligation by ensuring that the rules attributing revenues and costs to individual markets and services are fair, objective and transparent.[627]

Stakeholder responses to our proposals

13.121 Vodafone considered that the accounting separation and cost accounting remedies add transparency.[628] TalkTalk agreed it was appropriate for BT to continue to have a cost accounting obligation. It noted that without the obligation there is a risk of the allocation of costs to WCT and other markets being distorted and undermining our accounting separation proposals.[629]

Our reasoning and decisions

13.122 Section 87(9) to (11) (subject to section 88) of the Act authorises Ofcom to impose appropriate cost accounting obligations on dominant providers, in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities. We have decided to impose cost accounting requirements on BT for its provision of WCT. We consider that this obligation is necessary to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent.

13.123 We consider that the cost accounting obligation is important to support the accounting separation obligations in this market and to ultimately ensure that we can monitor the impact and effectiveness of the remedies we have decided to impose in this market. We therefore have decided to impose a cost accounting requirement obligation on BT in respect of the provision of WCT.

---

[627] For a more detailed explanation of the aim and effect of imposing cost accounting obligations, please refer to Section 8 paragraphs 8.199-8.200.

[628] Vodafone response to 2016 NMR Consultation, part 1, page 18.

[629] TalkTalk response to 2016 NMR Consultation, paragraph 6.3.

13.124 In respect of the specific form of the cost accounting requirements we have decided to impose on BT in this market, we have decided to impose the form of condition set out in the 2014 Regulatory Financial Reporting Statement but modified to remove the reference to the Regulatory Accounting Guidelines.[630] This form of condition implements our policy decisions on regulatory financial reporting set out in that statement. The purpose of the condition is to: give Ofcom a greater role in the way that BT prepares its regulatory financial statements; improve the presentation of the published regulatory financial statements and supporting documentation; and ensure that Ofcom and other stakeholders have the information they need.

Legal tests

13.125 For the reasons set out below, we are satisfied that our decision to impose a cost accounting requirement on BT meets the relevant tests set out in the Act. As explained above, sections 87(9), (10) and (11) authorise the setting of such an SMP condition.

13.126 Section 87(9)(c) authorises conditions imposing such rules connected with the provision of network access, or with the availability of relevant facilities, in relation to the use of cost accounting systems. Such conditions include conditions requiring the application of presumptions in the fixing and determination of costs and charges for the purposes of the price controls, rules and obligations imposed by virtue of that subsection (section 87(10)). Where such conditions are imposed, section 87(11) imposes a duty on us to set an SMP condition which imposes an obligation: to make arrangements for a description to be made available to the public of the cost accounting system used in pursuance of that condition; and to include in that description details of:

- the main categories under which costs are accounted for; and
- the rules applied for the purposes of that system with respect to the allocation of costs.

13.127 In setting such conditions, we must be satisfied that the conditions about network access pricing set out in section 88 are also satisfied. We consider the requirements of section 88 are satisfied in this case for the reasons set out in paragraphs 14.31 to 14.35.

13.128 We consider that the condition fulfils our duty under section 87(11) in that the cost accounting obligation requires the publication of a description of the cost accounting system used and the main categories of cost and the cost allocation rules applied.

13.129 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

[630] As explained in the 2016 BCMR Statement (paragraph 8.175 and Annex 28), we no longer consider that it would be useful to establish high level guidelines and accounting rules in the Regulatory Accounting Guidelines by way of direction. Where we find concerns about BT's detailed application of cost attribution rules, in line with what we have done in the 2016 BCMR, we will direct BT as to the specific reporting requirements consistent with the Regulatory Accounting Principles arising from each regulatory decision. The wording of our condition reflects our decision not to issue the Regulatory Accounting Guidelines. Each condition therefore requires BT to prepare the RFS in accordance with the SMP conditions, the Regulatory Accounting Principles and the Accounting Methodology Documents.

13.130 We have considered our duties under section 3 of the Act. In particular, we consider that the imposition of the cost accounting obligations is justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services. This is because the obligation will ensure that other obligations designed to curb potentially damaging leverage of market power – in particular the setting of prices at excessive levels – can be effectively monitored and enforced.

13.131 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. In particular, the condition would promote competition in relation to the provision of electronic communications networks and encourage the provision of network access and service interoperability.

13.132 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- Objectively justifiable, in that it is necessary to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent. This helps ensure the appropriate maintenance and provision of accounts in order to monitor BT's activities with regard to the pricing remedies we have decided to impose. It also relates to the need to ensure competition develops fairly, to the benefit of consumers, by providing transparency of BT's compliance with rules set to address the risk of excessive pricing.
- Not unduly discriminatory as we have decided to impose a number of remedies on BT as a consequence of its unique position in the provision of both retail and wholesale voice services.
- Proportionate, in that the obligation is required in order to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent.
- Transparent, in that it is clear in its intention to ensure the appropriate maintenance and provision of accounts for the purposes set out above and the particular cost accounting requirements of BT are clearly documented.

13.133 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Remedies on BT that we have decided to remove

Notification of changes to charges – publish a network tariff gradient

13.134 In previous market reviews, we imposed on BT an obligation to publish a network tariff gradient. As discussed in Section 14, we have decided to apply a single flat rate charge control, with no time of day variance, to all telecoms providers with SMP. Therefore, we have decided to not include a requirement that BT publish a network tariff gradient.

Notification of technical information

13.135 In previous market reviews we imposed an obligation on BT to notify technical information in relation to its provision of WCT. The notification of technical information remedy was designed to ensure that competing providers had sufficient time to respond to technical changes that may affect them. We have now decided to remove this remedy as we do not think it necessary in recognition of the maturity of BT's network and the provision of calls over it.

14. Approach to price regulation of WCT

14.1 In Section 12 we considered market definition and market power in relation to WCT. In Section 13 we identified certain competition concerns and our decisions on non-pricing remedies to address them. In this section, we set out our decisions in relation to price regulation of WCT.

Summary of decisions

14.2 In the absence of regulation, we consider that telecoms providers with SMP in WCT would have the ability and incentive to fix or maintain prices for WCT at an excessively high level so as to have adverse consequences for end-users of public electronic communications services and, therefore, there is a relevant risk of adverse effects arising from price distortions.[631]

14.3 In order to address this risk, we have decided that a charge control is appropriate and proportionate, and that this should be imposed on all telecoms providers with SMP in WCT for the termination of all calls to UK geographic numbers, including for calls originated from non-EEA countries.

14.4 We have decided that rates set on a long-run incremental cost (LRIC) standard are preferable for WCT. A LRIC cap is consistent with promoting competition in fixed telephony markets, our current regulation in both fixed and mobile call termination, and the 2009 EC Recommendation.[632]

Competition concerns

14.5 In Section 12 we concluded that each of the telecoms providers listed in Annex 9 has SMP in its relevant market for WCT and hence that these markets are not effectively competitive. Consequently, we need to assess the nature and scale of the problems arising from SMP in these markets, to decide if competition law remedies are sufficient to address the problem and, if not, to impose appropriate *ex ante* remedies.

14.6 Our concern around pricing is that providers of WCT could set excessive FTRs. Doing so would not only increase the margin of the WCT provider, but also harm its rivals on the retail side of the market (by reducing their margins and/or leading them to increase retail prices), all of which could affect competition in retail markets.

---

[631] Section 88(1) of the Act.

[632] The 2009 EC Recommendation stated that NRAs should adopt a LRIC standard for fixed call termination charge controls. This approach only allows for the recovery of those fixed and variable costs which are incremental to the provision of the wholesale call termination service provided to third parties (in contrast to the cost recovery approach of LRIC+, which allows for an allocation of common costs to also be recovered through FTRs). *Commission Recommendation of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU (2009/3359/EC).* http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2009/c_2009_3359_en.pdf.

14.7 We have considered whether these concerns could be addressed via *ex post* competition law but note that in WCT markets the nature of the problem is one of persistent market power. Imposing obligations on an *ex ante* basis in WCT markets would allow consistent and timely intervention as well as legal and regulatory certainty.

14.8 We also note that the Explanatory Note to the 2014 EC Recommendation states that, given the crucial importance of guaranteeing effective and timely interconnection, ex post competition law alone is not able to address bottlenecks in termination markets. Consequently, the use of *ex ante* regulation, "appears indispensable, at least for the time being".[633] We consider that this reflects the position in the UK.

Charge control obligation

Current remedies

14.9 In the 2013 NMR Statement, we imposed a charge control for WCT on BT but not on other telecoms providers with SMP in WCT markets.[634] For the other providers (including KCOM) with SMP in WCT, we imposed a network access obligation with a fair and reasonable charges requirement along with guidance about how we would normally interpret this, which included a rebuttable presumption that charges are fair and reasonable if no higher than the Benchmark FTR (i.e. the charge control rate then applied to BT).[635]

14.10 We explained that rates above the Benchmark FTR were only likely to be fair and reasonable where a telecoms provider was able to demonstrate that:

- charging an FTR equal to the Benchmark FTR would deny it recovery of its actual costs of providing fixed geographic call termination;
- its actual costs of providing WCT were efficiently incurred; and
- charging a higher FTR than the Benchmark FTR would be offset by demonstrable consumer benefit.[636]

Our proposals in the 2016 NMR Consultation

14.11 In the 2016 NMR Consultation, we proposed to apply a charge control on all telecoms providers with SMP in WCT, and consequently proposed that the 2013 F&R Guidance

---

[633] See pages 31 and 32 of the Explanatory Note to the 2014 EC Recommendation. *Commission Staff Working Document Explanatory Note accompanying the document Commission Recommendation on relevant product and service markets within the within the electronic communications sector susceptible to ex ante regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (2014/298/EC)*. http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=7056.
[634] Ofcom, 2013. *Review of the fixed narrowband services markets – Statement on the proposed markets, market power determinations and remedies*, paragraph 6.101. https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.
[635] 2013 NMR Statement, paragraph 6.129; Condition 1, Part 3, Schedule 3, page 321. See Section 10 for the guidance.
[636] 2013 NMR Statement, 'Guidance in the setting of fair and reasonable fixed termination rates', page 501.

would no longer apply. We proposed that this control would be imposed as a single maximum rate with no flexibility to vary charges by time of day.

14.12 We explained that this treatment was consistent with that of mobile termination in our 2015 MCT Statement, which found that many mobile telecoms providers that had previously been subject to a fair and reasonable obligation were pricing considerably above the benchmark rate.[637] Consequently, we proposed to apply a charge control to all telecoms providers with SMP in MCT.

14.13 Since the 2016 NMR Consultation we have also published our 2017 MCT Consultation, which proposes to continue to impose a charge control for all providers of MCT.[638]

Stakeholder responses to our proposals

14.14 A large number of respondents were supportive of our proposal to apply a charge control to all telecoms providers. BT, Magrathea, Three, TalkTalk, Verizon, Vodafone and [✂] all agreed with our approach.

14.15 Vodafone considered that applying a charge control to all providers of WCT is both sensible and practical. It further considered that the current approach has allowed some telecoms providers to game the system. In essence, Vodafone considered that the customers of telecoms providers that follow the rules have subsidised those telecoms providers that do not follow the rules.[639]

14.16 TalkTalk considered that the simplicity of the proposed approach has considerable advantages. For example, it considered that our proposed approach prevents inefficient operators passing on their inefficiencies into the charges paid by the customers of other operators and thereby creates incentives for efficiency.[640]

14.17 TalkTalk stated that implementation compliance costs should be reduced[641] and Vodafone said compliance is easy to understand and therefore likely to be effective.[642]

14.18 BT considered that imposing a charge control on all telecoms providers that provide WCT should reduce the number of commercial and regulatory disputes in relation to termination rates.[643]

14.19 Sky was the only respondent to disagree with our proposal. It considered that we should favour non-intervention.[644] Specifically, it considered that we had failed to provide any evidence to justify departing from our previous approach and that the fair and reasonable obligation was both well understood by industry and effective in preventing excessive WCT

[637] The MTR benchmark being the cap that, prior to 2015, applied only to the 4 largest mobile telecoms providers. See 2015 MCT Statement, paragraphs 4.49-4.54.
[638] See Ofcom, 2017. *Mobile Call Termination Market Review 2018-21 – Consultation*. https://www.ofcom.org.uk/__data/assets/pdf_file/0011/103340/mobile-call-termination-consultation.pdf.
[639] Vodafone response to 2016 NMR Consultation, part 1, pages 2 and 6.
[640] TalkTalk response to 2016 NMR Consultation, paragraph 6.2.
[641] TalkTalk response to 2016 NMR Consultation, paragraph 6.2.
[642] Vodafone response to 2016 NMR Consultation, part 1, page 6.
[643] BT response to 2016 NMR Consultation, paragraph 5.21.
[644] Sky response to 2016 NMR Consultation, paragraphs 32 to 36.

charges. It further considered that imposing a charge control on telecoms providers other than BT would impose a greater regulatory burden on non-BT telecoms providers and said that it was not aware of any material consumer detriment since the obligation was put in place.

Our reasoning and decisions

We have decided to not allow pricing flexibility

14.20 As outlined above, telecoms providers other than BT are currently subject to a fair and reasonable obligation that allows them some degree of pricing flexibility. In the 2016 NMR Consultation, we proposed this flexibility was no longer appropriate. If some telecoms providers were to charge higher termination rates, this could lead to higher prices for retail calls and correspondingly lower usage, and consequently consumer harm. Even if the excess profits that telecoms providers earned from charging FTRs above incremental costs were passed onto consumers, telecoms providers charging higher FTRs might gain an unfair advantage over other telecoms providers, thus distorting competition.

14.21 We have considered whether there are likely to be circumstances in which FTRs above an updated Benchmark FTR would be fair and reasonable, and with the benefit of our experience since the introduction of this policy have been unable to identify any. This is because:

- we do not consider that differences in network topology between different telecoms providers' networks should determine the costs that should be borne by rival telecoms providers;
- we do not consider that calling patterns between originated and terminated traffic justifies asymmetry of WCT charges; and
- we consider that any potential consumer benefit from the flexibility to set FTRs above the Benchmark FTR is likely to be small relative to the potential consumer harm and competitive distortion resulting from higher FTRs.

14.22 In response to Sky's points, while Ofcom operates with a bias against intervention, in developing our proposals we identified that some telecoms providers were charging above the Benchmark FTR,[645] as was also noted by TalkTalk and Vodafone. This indicates that the fair and reasonable obligation had not resulted in symmetric FTRs and we do not consider that it is the most appropriate remedy to address our competition concerns. We address Sky's further point about the regulatory burden in the next sub-section.

14.23 For the reasons outlined above, we do not think that flexibility to charge above the modelled costs of termination for an average efficient national operator is in the interests of competition and ultimately consumers.

[645] See paragraph 13.62 of the 2016 NMR Consultation. Our analysis showed that in 2014/15, a number of telecoms providers charged above the benchmark rate, generating nearly £700,000 (or approximately 5% of total WCT revenues) of revenue without demonstrating consumer benefits.

We have decided to impose a charge control on telecoms providers with SMP in WCT

14.24 In the 2016 NMR Consultation, we considered two options for price regulation: fair and reasonable charging and a charge control.

14.25 In our previous review, we cited concerns with a charge control about the potential costs of information gathering and financial reporting to Ofcom for monitoring and compliance, which supported our decision to adopt the fair and reasonable requirement that currently applies to telecoms providers with SMP other than BT.[646]

14.26 However, these concerns arose largely from the structure of the charge control that we imposed on BT, which gave it the flexibility to vary FTRs by time of day. As set out in our 2016 NMR Consultation and addressed fully in Section 16, we no longer consider that there is a need for time of day flexibility in respect of FTRs. A single maximum rate charge control that applies for all time periods (i.e. is not based on different charges at different times of day) is a simple and transparent approach that much reduces the compliance burden.

14.27 Taking into account these factors, in order to address our concern that telecoms providers would, absent regulation, have the incentive and ability to charge excessive FTRs, we consider that the most appropriate form of pricing regulation for WCT is a charge control setting a single maximum rate that is applied to all telecoms providers and that this approach is appropriate for the purpose of achieving symmetric rates.

14.28 For the avoidance of doubt, our decision to impose a charge control on all fixed telecoms providers designated with SMP means that once the charge control is in place, the 2013 F&R Guidance will no longer apply.

Legal tests

14.29 Section 87(9) of the Act authorises the imposition of SMP conditions on the dominant provider which include: such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network or with the availability of relevant facilities; and such rules as they may make in relation to those matters about the recovery of costs and cost orientation.

14.30 We are required to ensure that the condition satisfies the tests set out in section 88 of the Act. Section 88(1) of the Act requires that Ofcom must not impose pricing conditions unless it appears from the market analysis carried out for the purpose of setting that condition that there is a relevant risk of adverse effects arising from price distortions. We have explained above that we consider that, in the absence of price controls, telecoms providers with SMP in WCT would have the ability and incentive to fix or maintain prices for WCT at an excessively high level so as to have adverse consequences for end-users of public electronic communications services.[647]

[646] 2013 NMR Statement, paragraphs 6.121-6.122.
[647] Section 88(3) of the Act.

14.31 Section 88(1)(b) of the Act requires that the pricing condition should be in Ofcom's view appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on the end-users of public electronic communications services.

14.32 A charge control will prevent fixed telecoms providers from passing on inefficiently incurred costs to other telecoms providers and ultimately callers, through FTRs above the competitive level, and will therefore promote efficiency. A charge control will promote sustainable competition by preventing telecoms providers from setting FTRs above LRIC and benefiting from this in downstream markets, to the disadvantage of other telecoms providers competing in those downstream markets.[648] We also consider that our decision to cap charges for all calls at LRIC is appropriate for the purposes set out in section 88.

14.33 We outlined above the potential competitive distortions and consumer harm that may arise from high FTRs. We consider that the benefits afforded by the flexibility in a fair and reasonable obligation are, at best, limited, and that a charge control, with a single rate maximum cap applied to all providers of WCT, will confer the greatest possible benefit for end-users in terms of preventing excessive pricing and competitive distortion.

14.34 We are also required to consider the extent of fixed telecoms providers' investment in the matters to which the condition relates (in this case, the network assets associated with WCT). We believe that telecoms providers will continue to have the ability and incentive to invest following the imposition of a charge control. A charge control at LRIC ensures that the efficiently incurred operating and capital costs of the service continue to be recoverable (it is only a contribution to costs common with other services which is precluded). Moreover, termination is part of a two-sided market which provides the opportunity to recover costs from the non-terminating side.

14.35 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. We consider the charge control condition to be:

- objectively justified: for the reasons set out above, without a charge control, fixed telecoms providers may price excessively. The benefits expected of a competitive market would not be available to consumers without the imposition of a charge control on all telecoms providers;
- not unduly discriminatory: the charge control will apply to all designated fixed telecoms providers with SMP;
- proportionate: for the reasons set out above, we consider that a charge control based on a single maximum rate is the least restrictive means of addressing our competition concern about excessive pricing and, when combined with our decision to cap charges at LRIC for all termination to UK geographic numbers, is the mechanism most likely to result in efficient FTRs[649]; and

[648] As explained later in this section, we maintain that LRIC is the appropriate cost standard for FTRs.

[649] We have also amended the Charge Control conditions to allow the disapplication of the Charge Ceiling where we have provided written consent. This ensures consistency with a number of the other SMP charge control conditions imposed in other markets.

- transparent: the SMP condition is designed to address the detriments arising from the risk that telecoms providers could set an FTR above the LRIC rate if they were unregulated. As such, we consider that a charge control is transparent as to what it is intended to achieve.

14.36 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act. We consider that the charge control will secure efficient and sustainable competition and the maximum benefits for persons who are consumers of services provided by fixed telecoms providers. This is because the imposition of the obligation, combined with our decision to cap charges for all calls at LRIC, will ensure that charges for WCT are set at the level that will best promote effective competition and further the interests of consumers.

14.37 We note that this approach is consistent with the 2015 MCT Statement[650] and our 2017 MCT Consultation proposals. A charge control on all fixed telecoms providers with SMP is also consistent with the 2009 Recommendation.[651]

Choice of cost standard for the charge control

14.38 Having decided to impose a charge control we must next determine the appropriate cost standard by which to cap FTRs.

Our proposals in the 2016 NMR Consultation

14.39 In the 2016 NMR Consultation, we proposed to use LRIC as the appropriate cost standard rather than LRIC+ (which would allow for a contribution to common costs). We explained that this proposal was consistent with the current charge control and our analysis in the 2013 NMR that setting FTRs at LRIC would remove competitive distortions which would ultimately benefit consumers. It is also consistent with our current regulation of MTRs and our proposals in the 2017 MCT Consultation.

Stakeholders' views

14.40 Most telecoms providers did not specifically comment on this proposal. KCOM[652], UKCTA[653] and Vodafone[654] supported the continued use of LRIC. We did not receive any responses that opposed our proposal.

---

[650] Ofcom, 2015. *Mobile Call Termination Review 2015-18 – Statement on the markets, market power determinations and remedies*, paragraphs 5.121 and 5.134.
https://www.ofcom.org.uk/__data/assets/pdf_file/0029/76385/mct_final_statement.pdf.
[651] *Commission Decision concerning Case UK/2013/1496: Call termination on individual public telephone networks provided at a fixed location in the UK*, pages 7-8. http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/EC_letter.pdf.
[652] KCOM response to 2016 NMR Consultation, page 5.
[653] UKCTA response to 2016 NMR Consultation, page 4.
[654] Vodafone response to 2016 NMR Consultation, part 1, page 2.

Key considerations in the choice of cost standard for fixed termination rates

14.41 We have decided that LRIC remains the appropriate cost standard for the WCT charge control. In reaching this conclusion we have used the framework set out in the 2013 NMR and the 2016 NMR Consultation.[655]

14.42 We continue to believe that LRIC remains the appropriate cost standard. In particular, LRIC facilitates more effective competition. First, FTRs affect the retail price floor for off-net calls[656] as they are an incremental cost of these calls and, therefore, FTRs above LRIC potentially damage retail price competition. This is because if a retail price reduction stimulates more off-net calls, this will not be offset by more inbound calls from other networks. This effect is likely to be more pronounced for smaller telecoms providers since they are likely to have a greater proportion of traffic going off-net. Second, FTRs above LRIC increase the costs for smaller telecoms providers of competing for customer segments that make more calls than they receive.

14.43 We also consider that allocative efficiency considerations do not necessarily point to an optimal FTR which is above LRIC. While it could in theory be efficient for FTRs to contribute to common costs, in practice the correct level of any mark-up over LRIC is highly uncertain – particularly when considering the opportunity to recover common costs on the retail-side of the market through a variety of tariffs. Moreover, WCT is a situation of two-way access because FTRs are charges paid by competing providers and so if traffic were balanced termination payments between WCT providers would net-off. Effective retail competition should give WCT providers an incentive to minimise costs under either cost standard and so productive efficiency provides little to choose between LRIC or LRIC+.

14.44 Finally, the regulation of FTRs at LRIC is consistent with the 2009 EC Recommendation and with both our decision in the 2015 MCT Statement and proposal in the June 2017 MCT Consultation to continue to cap MTRs at LRIC. LRIC has also been adopted as the cost standard for FTRs by 22 EU NRAs.[657]

14.45 For these reasons, we have a strong preference for continuing with LRIC as the appropriate cost standard for setting the WCT charge control.

14.46 We have also considered developments in retail markets since we capped FTRs at LRIC to check whether there have been any market outcomes at odds with our expectations or any adverse effects offsetting the pro-competitive rationale for capping FTRs at LRIC. In principle, we would expect LRIC FTRs to facilitate greater competition for subscribers and

---

[655] 2013 NMR Statement, paragraphs 8.27 to 8.35. This is consistent with our reviews of MCT, in which we have focussed on efficiency, competition effects, distributional effects and commercial & regulatory consequences.
[656] In this context, 'off-net' calls are calls that terminate on a different network to the network on which they originated.
[657] According to Cullen's, Fixed termination rates and cost model publication – Incumbent operators (http://www.cullen-international.com/product/documents/CTTEEU20170152), as of October 2017, six EU countries have not fully implemented the 2009 EC Recommendation regarding FTRs (i.e. Belgium, Cyprus, Estonia, Finland, Latvia and Poland).Moreover, the EC has initiated 17 Article 7 procedures since 2011 regarding fixed termination markets, primarily due to the adoption by member states of cost standards other than LRIC and asymmetric rates to calls originating in different countries.

calls. We might also expect the reduction in FTRs to drive lower prices for calls to fixed lines (e.g. fixed to fixed calls or mobile to fixed calls), but for the waterbed effect to work most on the fixed element of the customer's package, such that line rental might increase, other things equal.[658]

14.47 In relation to competition effects, as shown in Section 3 (Figure 3.3), BT's share of retail fixed analogue lines has continued to fall (albeit slowly), as has the measure of market concentration shown by the HHI. Therefore, the period since the move to LRIC appears to have been characterised by a small increase in competition in the retail market and, although we note that BT's share of retail call origination has increased slightly, it is the share of lines which determines the number of customers served by a given CP (with more revenue being generated by line rental than calls). Nevertheless, BT has maintained a significant share of lines in certain retail customer segments, notably fixed voice only consumers, customers outside the LLU-footprint, SMEs and split purchasers.[659]

14.48 In relation to pricing, it is difficult to draw out trends in the prices of fixed calls due to these services being sold in bundles, including call package allowances, bundles with broadband (i.e. dual-play), and bundles with broadband and pay-TV (i.e. triple-play bundles). As shown in Figure 3.14, dual-play and triple-play bundles make up the large majority of households' telecoms service take-up (around two-thirds). Within these bundles, consumption is shifting towards faster broadband speeds, with consumers spending increasing amounts on data services year-on-year.[660]

14.49 As shown in Table 3.1, the real spend on a basket of residential fixed voice services increased between 2012 and 2016 by just over 7%. The source of this increase is a rising real price for fixed access lines (see Figure 3.16) as well as the rising prices for fixed geographic calls, call connection charges and fixed call bundles.[661]

14.50 Therefore, we have seen the fixed element of retail tariffs increasing, which would be consistent with a waterbed effect, but lack a clear picture of how call prices have evolved. Although we have not seen falling call prices in general, the increase in the bundling of calls with line rental and the increase in bundled minutes in mobile tariffs means that customers

---

[658] The waterbed effect refers to the expected reaction of telecoms providers to raise retail prices to recover the margin lost from incoming international or mobile-to-fixed calls due to lower FTRs. That the waterbed effect might act most strongly on the fixed element of the tariff is supported both theoretically and empirically by the work of Genakos and Valletti (2011) *Seesaw in the air: Interconnection regulation and the structure of mobile tariffs*. Information Economics and Policy, 23, 159–170. While their paper focuses on mobile telephony, the mobile post-paid contracts referred to are most akin to the contracts seen in the fixed sector (where pricing is of the form of a fixed fee (i.e. line rental) and a variable element (i.e. per call charges). That is, pre-paid tariffs are no longer a significant feature of the fixed telephony market (e.g. call card usage and use of payphones has much declined).

[659] For example, BT has a large majority of the market share of fixed voice only consumers (as much as 74% as published in the SLTS Statement published alongside this document).

[660] According to Figures 4.3, 4.12, 4.13 and 4.14 of the 2017 Communications Market Report, households are spending nearly £5 more per month on fixed internet access in 2016 compared to 2012, whereas fixed voice spend (including line rental) fell slightly (by around 35p per month); 44% of connections are >=30 Mbit/s in 2016 compared to 9% in 2012; and data usage has increased from 23 GB/month in 2012 to 132GB/month in 2016.

[661] Ofcom, 2017. *Pricing trends for communications services in the UK*, Figure 1.3. https://www.ofcom.org.uk/__data/assets/pdf_file/0028/98605/Pricing-report-2017.pdf.

taking such tariffs could face lower effective prices. We note, though, that a number of other factors will have been in play over the period since we capped FTRs at LRIC. For example, call volumes from fixed lines have continued to fall significantly (potentially putting upward pressure on unit costs – which might motivate the rising prices for out of bundle calls, for example) and retail competition has focussed on the pricing of broadband, rather than the line rental (which prompted the ASA/CAP to intervene on price advertising).[662]

14.51 Finally, we have also considered the extent to which providers may have been able to recover their common costs, which are no longer recoverable through FTRs since we set them at LRIC in 2013. In the 2013 NMR, we estimated the common cost contribution per line at £2.14 per year in 2012/13 prices.[663] Since then, real spend on voice services per fixed line actually fell (see Figure 4.6 of the Ofcom 2017 CMR) but this is largely driven by the fall in fixed calls (and spend on these) not being off-set by the increasing prices for line rental.

14.52 If we consider spend on the fixed element of the tariff (which is not affected by falling voice usage), it can be seen that expenditure per line increased by much more than the 2012/13 LRIC+ contribution per line per year. Real spend on line rental and bundled calls rose by around £1.30 per line per month from 2012 to 2016, amounting to around £15.70 more per year on the fixed element of customer bills (see Figure 4.6 of the Ofcom 2017 CMR).[664] Even if we do not control for falling fixed voice usage but look at total revenue across all fixed services typically bundled together (i.e. line rental, voice calls and internet access), real monthly spend per household increased by around £4.60 per month, i.e. over £55 per year, between 2012 and 2016 (see Figure 4.3 of the Ofcom 2017 CMR).[665] While some of this will be driven by the need to recover the costs of investing in higher speed broadband lines, the increase in household spend on fixed telecoms services far exceeds the previously estimated contribution to network common costs from LRIC+ FTRs.

Conclusion on the cost standard for regulating termination rates

14.53 Given the arguments in favour of LRIC identified in the previous review and an evolution of retail market outcomes broadly as expected, we continue to believe that FTRs at LRIC will best address the competition concerns relating to SMP in WCT. The regulation of FTRs at LRIC is also consistent with the 2009 EC Recommendation and both our current and proposed regulation of MTRs.

14.54 This decision has implications for the returns reported in BT's Regulated Financial Statements (RFS). Since first setting FTRs on the basis of LRIC in 2014 the ROCE reported on

[662] See the ASA/CAP's press release from 4 May 2016. https://www.asa.org.uk/news/tougher-approach-to-broadband-price-claims-in-ads.html.
[663] 2013 NMR Statement, paragraph 8.31.
[664] Figures here are rounded to the nearest 10p. While VAT would reduce the contribution to an increased margin per line, against a background of flat wholesale costs per line (see the broadly flat real price trend for MPF and WLR in Figure 3.16 of Section 3) and the assumption of constant real costs of retailing, a price increase of £15.70 per line would be worth nearly £12.60 post-VAT. This far exceeds the lost contribution to common costs per line based on the 2012/13 LRIC+ contribution from FTRs.
[665] An increase in revenue per household of £55 would be worth around £44 post-VAT.

a FAC basis in the RFS for WCT has been below the cost of capital while the opposite has been true for WCO. As we are continuing to cap FTRs at LRIC, we expect that the ROCE reported in the RFS for these markets will continue to deviate from BT's cost of capital in this way over the review period.

Application of charge control to all terminated calls, including those from outside the EEA

14.55 The regulation of FTRs using a LRIC cost standard in most EEA (European Economic Area) countries has led to a significant reduction in rates in these countries in recent years. However, in other countries termination rates are often set using different cost standards and approaches, meaning that in some non-EEA countries FTRs are significantly higher than those in the UK.[666] Concerns about this have led some European NRAs to allow different FTRs to apply to termination of non-EEA originated calls.

Our proposals in the 2016 NMR Consultation

14.56 In the 2016 NMR Consultation we recognised that, in principle, there could be benefits from not applying a LRIC cap to calls originated outside the EEA and hence considered the option of excluding this traffic from the cap. We considered on balance that the benefits were likely to be limited and there could also be undesirable offsetting effects. Therefore, we provisionally concluded that we would maintain the same charge controlled rate for the termination of all calls to UK geographic numbers, regardless of their origin.

Stakeholder responses to our proposals

14.57 Responses to the consultation were mixed, but with more respondents favouring no differential regulation. Gamma[667], AT&T[668], KCOM[669], TalkTalk[670], UKCTA[671], Verizon[672] and Vodafone[673] favoured no differential regulation for EEA and non-EEA originated calls, while BT[674] and Three[675] disagreed.

14.58 KCOM, UKCTA and Verizon considered that the introduction of differential regulation would be disproportionate and increase the complexity of regulation and compliance, and AT&T, UKCTA, Verizon, and Vodafone argued that it would create incentives for companies

[666] Some non-EEA countries, do have lower termination rates than those in the UK however.
[667] Gamma response to 2016 NMR Consultation, page 26.
[668] AT&T response to 2016 NMR Consultation, paragraphs 3-5.
[669] KCOM response to 2016 NMR Consultation, paragraph 2.11.
[670] TalkTalk response to 2016 NMR Consultation, paragraph 6.4.
[671] UKCTA response to 2016 NMR Consultation, paragraphs 17-20.
[672] Verizon response to 2016 NMR Consultation, paragraphs 67-68. We note that Verizon also raised, but did not support, the ideas of excluding non-EEA originated calls from the market definition. We do not consider this appropriate because the service provided by the terminating network is the same irrespective of the location of the telecoms provider that seeks to buy the termination.
[673] Vodafone response to 2016 NMR Consultation, part 1, page 19.
[674] BT response to 2016 NMR Consultation, paragraph 5.22.
[675] Three response to 2016 NMR Consultation, paragraphs 12-22.

to manipulate Calling Line Identification (CLI) information which could hinder our goal of reducing nuisance calls.

14.59 AT&T, UKCTA and Verizon also argued that differential regulation would be contrary to the World Trade Organization's General Agreement on Trade in Services (GATS) and EU telecommunication rules and general competition rules. These stakeholders, along with TalkTalk, said that its introduction would result in costly negotiations with overseas telecoms providers and require costly systems changes which would be passed onto consumers.

14.60 Verizon further noted that in other countries where differential regulation has been implemented, there have been increases in the FTRs charged, citing Croatia and Greece as examples.[676]

14.61 In contrast, BT and Three raised arguments for why we should introduce differential regulation. While BT agreed that our proposed approach had the benefit of simplicity and transparency, it noted that many non-EEA telecoms providers charge very high FTRs for UK originated calls. It considered that if UK telecoms providers could apply higher FTRs this could provide an incentive to negotiate a reduction in these rates on a reciprocal basis, and suggested that a reciprocity arrangement might be appropriate.

14.62 Three drew on its experience in MCT to argue that allowing telecoms providers the flexibility to charge a two-tier FTR has the potential to deliver benefits for UK consumers. In terms of consumer detriment, it argued that there are no competition benefits from the application of a LRIC FTR to calls outside the EEA, and potential harm resulting from:

- Loss of allocative efficiency: to the extent that the wholesale costs feed through to retail prices, UK retail prices for international calls will be distorted, consumer surplus will transfer to non-EEA telecoms providers and UK consumers could be priced out of making international calls.
- Loss of dynamic efficiency: to the extent there is not a waterbed effect, UK providers will lose revenue, constraining investment.
- Dampening of competition for international calls: because reductions in prices will result in increased volumes and termination out-payments.
- Barriers to entry and expansion: because larger telecoms providers will be better able to tailor their pricing and retention offers based on non-EEA call volumes.

14.63 Three also questioned the complexity of compliance under a differential regime and suggested that commercial relationships could be developed in order to facilitate negotiations. It urged us to investigate the experiences of other NRAs which have allowed differential treatment of FTRs.

14.64 We note that BT and Three made similar submissions in response to our 2017 MCT Consultation,[677] where views against our proposal not to allow differentiation of MTRs were stronger than those in the present case of FTRs.

[676] Verizon response to 2016 NMR Consultation, paragraph 68.
[677] See https://www.ofcom.org.uk/consultations-and-statements/category-1/mobile-call-termination-market-review.

Other EEA NRAs

14.65 Since the 2016 NMR Consultation we have updated our understanding of the treatment of incoming calls from non-EEA countries by other NRAs. Although the details vary in different countries[678] we find that some form of differential regulation exists in 19 out of 31 EEA countries.[679]

14.66 In response to Three's comments, we have investigated this further by sending a questionnaire to other European NRAs to better understand the impact of differential regulation on charges, arbitrage and other technical difficulties (e.g. nuisance calls) and compliance costs. We received 23 responses, including 16 from countries where there was some form of differential regulation between EEA and non-EEA calls.

14.67 The responses suggest that where price regulation of non-EEA calls has been removed, the FTRs charged to non-EEA telecoms providers have tended to increase, corroborating evidence provided by Verizon, and that in some cases the FTRs charged by non-EEA telecoms providers have increased too. One NRA provided data showing that the increases can be very significant.[680] Some NRAs were unclear what had happened to rates following the introduction of differential regulation, but no examples were cited of lower rates being negotiated.

14.68 In addition, a number of responses said there had been arbitrage or avoidance of the non-EEA rate after the change. [✂][681]

14.69 Finally, we did not find evidence of significant changes to compliance costs after the introduction of differential regulation. However, this appears to be because the regulators in question did not change their approach to compliance after introducing differential regulation.

Our analysis and conclusions

14.70 Our view underpinning termination regulation in the UK is that telecoms providers with SMP have the incentive and ability to charge high termination rates if unregulated, and that the promotion of competition and consumers' interests are better served by cost-based termination rates. This view is reflected in our decision on the choice of cost standard, as explained earlier in this section. In the 2016 NMR Consultation, we considered the case for departing from LRIC in respect of calls originated from non-EEA countries and, on balance, we proposed not to.

---

[678] For example, some countries, such as the Czech Republic, Bulgaria and Croatia, allow commercial freedom over FTRs for calls from non-EEA countries, and in others, including France and Holland, a reciprocity condition is used.
[679] This figure is based on our own assessment and information from Cullen's "Fixed termination rates and cost model – Incumbent operators (July 2017). This suggests that differential regulation exists in: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Portugal and Slovenia.
[680] [✂]
[681] Responses from [✂] to our questionnaire on the impact of differential regulation on FTRs.

14.71 The consultation responses we received on this topic were mixed. We note that amongst those that did not support our proposal, Three does not hold a fixed number allocation and BT provided limited evidence on the likelihood of lower rates being negotiated or the likely consumer benefits.

14.72 We recognise that there are arguments both for and against pricing flexibility in the context of termination for calls from non-EEA countries. However, the weight of responses to the 2016 NMR Consultation were in support of our consultation proposal to maintain a LRIC cap on all traffic. In general, we consider that, consistent with our statutory duties including section 3 of the Act, consumers' interests are unlikely to be furthered by higher termination rates and differential regulation raises implementation challenges – both in terms of the prospect for rates being successfully negotiated down and from a compliance and monitoring perspective. Therefore, we consider that, on balance, it is appropriate to maintain our approach of applying the same charge controlled rate to all fixed calls terminated in the UK (regardless of country of origin). We propose to remain vigilant in relation to this issue and are prepared to review our approach in the future should circumstances change.

15. Cost modelling for WCT charge control

15.1 In Section 14 we explained our decision to impose a charge control on all telecoms providers with SMP in WCT. In this section we summarise the key features and assumptions of the model we have used to calculate the costs of WCT (the 2017 WCT model, which is published alongside this statement). These topics include the technology choice, traffic forecasts, market share and cost of capital.

15.2 We consulted on all aspects of our modelling approach in the 2016 NMR Consultation. Details of the consultation proposals and stakeholder responses to them, as well as full details of the model design, assumptions and implementation, are provided in Annex 4. Annex 5 contains the model sensitivity analysis.

Key features of the 2017 WCT model

15.3 The charge control on WCT implemented in 2013 was set using the 2013 Narrowband Charge Control model (2013 NCC model).[682] Having considered the requirements for the 2017 WCT model, we believe that the 2013 NCC serves as an appropriate starting point for the 2017 WCT model. In particular, we have taken a similar approach to the technology modelled, the use of bottom-up modelling and the way we calculate LRIC. We have sought to only update those parts of the model that have an impact on the WCT LRIC calculation.[683]

Technology choice

15.4 We have decided to continue modelling a hypothetical next-generation network (NGN). We continue to believe that a hypothetical NGN forms a reasonable basis on which to set regulated charges for WCT. Using an NGN for cost modelling aligns with our principles of efficiency and competition (set out in detail in Annex 4 of this document), and is in line with the 2009 EC Recommendation.[684]

Bottom-up modelling

15.5 We have continued to use a bottom-up modelling approach. Bottom-up modelling allows us to:

---

[682] See 2013 NCC model in Ofcom, 2013. *Review of the fixed narrowband services markets – Statement on the proposed markets, market power determinations and remedies*. https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.

[683] Although the model remains capable of calculating LRIC+ costs (and costs of origination) we have only updated the aspects of the model that affect the WCT LRIC results. We have not reviewed the approach to the allocation of common costs and have not verified the LRIC+ or origination results. We therefore do not consider that it would be appropriate to use the 2017 WCT model to calculate the LRIC+ of WCT or WCO, despite its similarity to the 2013 NCC model which did calculate these outputs. http://static.ofcom.org.uk/static/nmr-2017-files/cost-model.zip

[684] As stated in Section 5.1.1 of *Commission Staff Working Document accompanying the Commission Recommendation on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU – Explanatory Note (2009/600/EC).* http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2009/sec_2009_0600_en.pdf.

a) model underlying cost/volume relationships more explicitly than in top-down modelling;

b) create an efficient forward-looking model without being constrained by a single operator's network; and

c) be more transparent by not being overly reliant on a single operator's confidential data.

15.6 The use of bottom-up models to set cost-based charge controls has been an established practice in the regulation of mobile termination rates (MTRs) since 2001 and fixed termination rates (FTRs) since 2013. It is also consistent with the 2009 EC Recommendation.

Calculating LRIC

15.7 We have decided to continue with a decremental approach to calculating LRIC. Consistent with the 2009 EC Recommendation, this involves considering incoming voice traffic as the final increment with no common costs being allocated to WCT.

15.8 The incremental costs associated with incoming voice traffic are derived by first calculating the model outputs (i.e. service demand, asset volumes and cashflows for each network element) with incoming voice traffic included and, second, with incoming voice traffic excluded. This approach is illustrated in Figure 15.1 below. The incremental service demand, asset volumes and cashflows for each element are then used as inputs to the economic depreciation algorithm. The output of this algorithm is the LRIC of an incoming minute of voice traffic.

Figure 15.1: Illustration of the decremental approach to calculating the incremental costs of WCT

Source: Ofcom.

Design and implementation

Overall structure

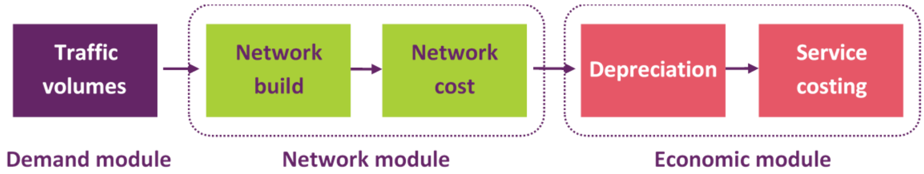
15.9 The model design is very similar to that used in the 2013 NMR. The model calculates unit costs in five steps:

- Step 1: Calculate the network traffic that is carried by the modelled NGN.
- Step 2: Dimension the network capable of carrying this traffic.
- Step 3: Calculate the cost of the assets in the dimensioned network.
- Step 4: Recover the costs of the network over time using an economic depreciation algorithm.

- Step 5: Recover the cost of the network across services based on the routing factors (which map services to equipment requirements) used to dimension the network.

15.10 Figure 15.2 below shows how the Excel model is structured.

Figure 15.2: WCT model structure



Source: Ofcom.

15.11 The outputs of the 2017 WCT model are pence per minute (ppm) unit costs in each year for WCT. The model functions in real rather than nominal terms using CPI inflation, and the outputs are presented in real 2016/17 prices and are stated on this basis throughout this document.

Changes and updates

15.12 The changes that we have made in developing the 2017 WCT model from the 2013 NCC model fall into the following categories:

- Updated traffic volumes;
- Trending the assumed market share down from 33% to 25%;
- Changing the model's inflation index from RPI to CPI;
- Updated the weighted average cost of capital (WACC) assumption;
- Updated asset unit cost trends; and
- Updated the approach to handling incremental administrative costs.

15.13 These issues are discussed in turn in the following sub-sections.

Traffic volumes

15.14 It is necessary to calculate traffic forecasts for the hypothetical NGN in order to calculate how much network equipment will be required. Our traffic forecasts have been updated to account for recent data and include forecasts for both voice and data services. It is necessary to produce forecasts for data services as well as voice services due to the economies of scope in an NGN.

15.15 The traffic module produces the total industry demand for:

- business and residential voice and broadband lines;
- outgoing voice (which is a part of the basis for incoming and on-net voice forecasts in the network build module, as explained in Annex 4); and
- broadband data services.

15.16 Details of these forecasts and our selected base case can be found in Annex 4.

Market share

15.17 Having projected industry-wide traffic volumes, it is necessary to consider the quantity of traffic carried by the modelled network alone. We have decided to maintain a historical market share of 33%, and for this to trend down to 25% over the period 2013/14 to 2024/25 due to a slight increase in Sky and TalkTalk's combined footprint, further national roll-out by Virgin Media over the next three years and the inclusion of telecoms providers offering business ISDN on their own infrastructure, which was not included in our analysis in the 2013 NMR. This is explained in further detail in Annex 4. We believe this to be the most suitable proxy for a fully national hypothetical operator's market share over the modelled period.

Network build

15.18 We have maintained the assumptions of the 2013 NCC model which relate to the deployment of the model, such as the dimensioning assumptions of assets, logical node design and roll-out period. The model considers the period to 2045/46 and has the functionality for network build to start in 2005/06. We assume network build starts in 2007/08 and continues for four years.[685]

15.19 We have also maintained the 'scorched node' approach that was used in the 2013 NCC model, which takes account of existing network topology when dimensioning the cost model. The model uses the location and serving area of BT's network exchanges because we believe that BT's existing local exchange topology provides an appropriate proxy for an efficient national network.

Network cost

Inflation index

15.20 We have switched from using RPI to using CPI as the inflation index used in the model, consistent with our other charge control models. To do this we have used CPI data from the ONS for the financial years ending in March.

WACC

15.21 As explained in greater detail in Annex 4 we have decided to use the WACC calculated in the March 2017 WLA Consultation in the 2017 WCT model. Specifically, we have used the WACC corresponding to 'other UK telecoms'. This was estimated to be 9.5% on a pre-tax nominal basis for the period up to 2019/20 and 9.4% on a pre-tax nominal basis for the period 2020/21 onwards. This accounts for a scheduled reduction in the corporation tax rate in 2020. During the charge control period we have used a real rate consistent with the 9.5% pre-tax nominal value as this covers most of the control period and ensures we use a

[685] This assumption is intended to reflect a plausible date for initial roll-out of an NGN by a hypothetical entrant and is based on information gathered from telecoms providers in the 2013 NMR.

consistent single value for the discount rate over this period. Thereafter, i.e. from 2021/22, we have used a real rate consistent with the 9.4% pre-tax nominal WACC proposed in the March 2017 WLA Consultation.

15.22 The real pre-tax real WACC series used in the model, accounting for CPI inflation, is presented in Figure 15.3 below. From 2017/18 onwards, CPI is projected to be 2.0% per annum.

Figure 15.3: Real pre-tax WACC time-series

	2005/06 to 2008/09	2009/10 to 2012/13	2013/14 to 2016/17	2017/18 to 2020/21	2021/22 and after
Pre-tax real WACC	9.2%	7.0%	8.0%	7.4%	7.3%

Source: Pre-tax nominal WACC estimates from August 2005 Ofcom approach to risk, May 2009 OR financial framework, March 2013 LLCC Statement and March 2017 WLA Consultation. Nominal rates converted to real using CPI inflation.

Cost trends

15.23 We have reviewed the cost trends that are applied to asset prices over the review period, and have decided to keep them as in the 2013 NCC model except for that of labour, the prices of which in general appear to be rising slower than was forecast in the 2013 NMR.

15.24 In the 2016 NMR Consultation we proposed to reduce the cost trend for "Active Equipment" in 2013/14 on the basis of information gathered from telecoms providers using our formal powers. We have gathered further information since then and reversed this change, as the faster reduction in prices does not seem to have continued as a longer-term trend. Data from telecoms providers are consistent with the other cost trends used in the 2013 NCC model.

Administrative costs

15.25 In addition to network costs, other non-network (administrative) costs are included in the model. Prior to 2013, administrative costs had been charged as a separate service (product management, policy and planning, or PPP). In the 2013 NMR we decided to model these as a cost of the network to be included in the output charges for regulated services, rather than as a separate charge. Since then, we understand that BT has retired the Element-Based Charging (EBC) system and absorbed its functions into the A-Z Telephony Event Charging (AZTEC) system, resulting in efficiency savings in running these operations. We have decided to reduce the amount of administrative costs considered incremental to WCT in the model, on the basis of these identified efficiency savings.

15.26 We believe a reasonable estimate of these costs for the review period is £0.9m per annum. This is based on data requested from BT under our statutory powers.[686] We have updated the model so that it uses the previous assumption of £3.5m in all years up to 2012/13, and

[686] BT responses to the 7th, 12th and 13th NMRs.135 notices.

trended down to the new assumption of £0.9m in 2016/17. Given the scale of these achieved efficiency savings, we have reduced the forecast cost trend from 2016/17 as we would not expect efficiencies of this scale to be replicated in the near future.[687]

Depreciation and service costing

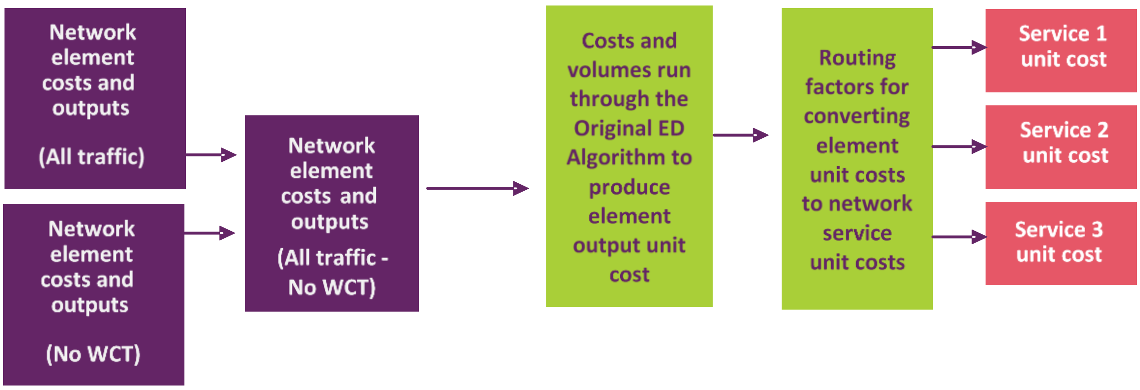
Cost recovery over time

15.27 Once the total costs of the hypothetical NGN have been calculated, we must determine how these costs are recovered over time. Economic Depreciation (ED) remains our chosen approach to cost recovery as we believe it better reflects the forward-looking economic value of an asset. In particular, we continue to use a form of ED known as Original ED, which attempts to match cost recovery of assets in each year to the utilisation of those assets in those years.

Cost recovery between services

15.28 We have decided to recover costs from each service using the same approach as used in the 2013 NCC model. Under this approach, the costs recovered by a particular service are linked to the costs that are driven by that network service. Each network service has a routing factor relating to each piece of network equipment, which drives the amount of network equipment needed to carry a unit of the service. Each network element unit cost is multiplied by the corresponding routing factor for each network service. These are then aggregated for all network elements for each service to give the service unit cost. Figure 15.4 below shows the flow of calculations when costs are being allocated across time and between services. WCT is the weighted average of three services in the model, relating to three categories of how a call may be routed across the network (for calls coming from local, national and international callers).

Figure 15.4: Cost recovery over time and across services



Source: Ofcom.

[687] The cost trend for incremental administrative costs changes from -5.2% per annum in real terms prior to 2012/13 to -1.0% per annum in real terms after 2016/17.

Outputs

15.29 The results for WCT are outlined in Figure 15.5 below. A fuller description of these results, in addition to a sensitivity analysis of the effect that key variables have on the unit costs of each service can be found in Annex 5. We explain our approach to setting charges on the basis of these outputs in Section 16.

Figure 15.5: Current cap and results from the 2017 WCT cost model (pence per minute)

	2017/18	2018/19	2019/20	2020/21
Current cap (nominal terms)	0.0346			
Forecast cost (real 2016/17 terms)		0.0303	0.0286	0.0269

Source: 2017 WCT model.

16. WCT charge control specification

16.1 In Section 14 we explained why we are imposing a charge control for FTRs on all telecoms providers with SMP in the provision of WCT, set using a LRIC cost standard. In Section 15 we explained our approach to cost modelling.

16.2 This section explains our decisions for the implementation of the charge control. In summary we have:

- set a charge control between 1 December 2017 and 31 March 2021, beginning with a two-month transitional period;
- aligned the FTR cap to the forecast LRIC for each charge control period (i.e. not implemented a glidepath);
- indexed the charge control using a CPI-X formulation;
- applied a single maximum rate for the FTR cap (i.e. not setting a weighted average cap applied over different times of day);
- applied this maximum rate cap to all fixed geographic call termination services; and
- taken a similar approach to other aspects of the charge control as we have in other fixed and mobile termination charge controls.

Charge control design

Duration and effective date for new FTRs

16.3 In the 2016 NMR Consultation we proposed a charge control lasting three years from 1 October 2017 to 30 September 2020. As we will now publish our final statement after the beginning of the proposed control, we must decide how to adjust the charge control duration. In this section we consider whether to shorten or extend the charge control period and whether the charge control should begin immediately or whether there should be a transitional period.

Charge control period duration

16.4 In previous narrowband market reviews we have set the charge control on BT to begin on 1 October of the year of publication. That is not possible given the date of publication of our final statement, so it is necessary for us to delay the start of the charge control period. As billing cycles generally run from the start of each month we consider it appropriate to accommodate this by setting new FTRs on the first day of a month, and so have decided to begin the next charge control for BT on 1 December 2017 (i.e. the first day of the month after the publication of the final statement).

16.5 Given this delay we have considered three options in deciding the duration of the charge control:

i) Maintain a three-year charge control;

ii) Shorten the charge control, ending as proposed in the 2016 NMR Consultation on 30 September 2020; and

iii) Extend the charge control, ending on 31 March 2021.

16.6 Our priorities in deciding the duration of the charge control are:

- Incentives and regulatory certainty; and
- Practicality, particularly with regards to commercial arrangements and regulatory reporting.

16.7 Generally, longer charge controls provide stronger incentives to reduce cost as there is a longer period over which the regulated firm(s) can benefit from this. Conversely, shorter control periods weaken these incentives.

16.8 Shortening the charge control also reduces regulatory certainty – both for the regulated firm(s) and customers (in this case purchasers of termination). As discussed earlier in this document, telecoms markets are currently in a period of convergence and technology change, which we expect to continue into the next market review. Lengthening the charge control slightly would align this charge control with the controls proposed for WLA services (such as LLU and VULA) and MCT, which is advantageous when common (or related) competition, investment or migration issues arise between markets. While this could potentially increase the burden on Ofcom and our stakeholders due to running several reviews concurrently, we believe the benefits of being able to consider issues across multiple markets is likely to outweigh this burden. Therefore, on this criterion a slightly longer charge control would be preferable to a three-year control or less.

16.9 We also believe that a three-year charge control in this instance would cause some practical difficulties, as the charge control years would not align with commonly-used accounting periods such as calendar quarters or financial years. Both shortening and extending the charge control would alleviate these difficulties by aligning with calendar quarters and either the start of (in the case of extending) or the mid-point of (in the case of shortening) financial years which, for many, run from 1 April to 31 March. This will make regulatory reporting and commercial arrangements somewhat easier than a charge control starting part way through the year.

16.10 In light of the above, we have decided to extend the charge controls to finish on 31 March 2021 (i.e. to extend to three years and four months duration) as this provides the greatest benefit to regulatory certainty and has the practical benefit of aligning with the financial years reported in BT's RFS, improving the transparency of BT's compliance.

Choice between an immediate start and a transition period

16.11 In the 2013 NMR Statement we allowed a period of three months from the start of the charge control before FTRs were set at LRIC, which applied from 1 January 2014. We allowed this period for a variety of reasons relating to contractual arrangements and practicability.[688]

16.12 We recognise that contractual limitations mean that moving to the new rates will require a transitional period. Although we no longer propose to require price notification[689] we note that the current notice period of 56 days is included in contractual agreements across the industry and so believe that it would be appropriate to maintain an interim period of at least 56 days between publication of our statement and commencement of the new charge control.[690]

16.13 Furthermore, as explained below we have decided to set rates using a single maximum cap rather than an average basket cap that allows for time of day pricing. This means that the overall effect of the new charge control on any given provider depends on that provider's specific traffic profile. An interim period will allow providers to adjust not only to the overall reduction in FTRs but to the specific changes to each of the rates and the aggregate effect that each of these changes will have on their costs.

16.14 In keeping with this and the timing of billing cycles described above, we will allow a transitional period of two calendar months from the start of the charge control period. We are therefore setting rates to the newly-calculated estimates of LRIC from 1 February 2018. The first charge control period will run until 31 March 2019, with the second charge control period beginning on 1 April 2019. Therefore, the first charge control period will run for a total of 14 months, with the second and third periods being 12 months as usual.

16.15 The previous WCT charge control expired on 30 September 2016. To cover the period between the two charge controls, BT has made voluntary commitments to maintain the basket-level cap on termination services at CPI minus CPI. In effect this means keeping the cap the same in nominal terms as in the final year of the previous charge control.[691] In current prices, this basket-level cap is 0.0346ppm. All other CPs are subject to a condition for their rates to be fair and reasonable, with a rebuttable presumption that rates no higher than those charged by BT will be considered fair and reasonable. We have clarified that this condition applies to the average charge control rate applied to BT in the third year of the previous charge control, which is equal to the cap to which BT has voluntarily committed.[692]

16.16 During the WCT transitional period, we will cap BT's FTR using the same basket of products as were used in the previous charge control. This transitional basket-level cap will be set at

---

[688] Ofcom, 2013. *Review of the fixed narrowband services markets – Statement on the proposed markets, market power determinations and remedies* paragraphs 11.4 to 11.18. https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.

[689] As explained in Section 13.

[690] This issue is also discussed in Section 13.

[691] This is set out in the correspondence between BT and Ofcom published on our website: https://www.ofcom.org.uk/phones-telecoms-and-internet/information-for-industry/telecoms-competition-regulation/narrowband-broadband-fixed.

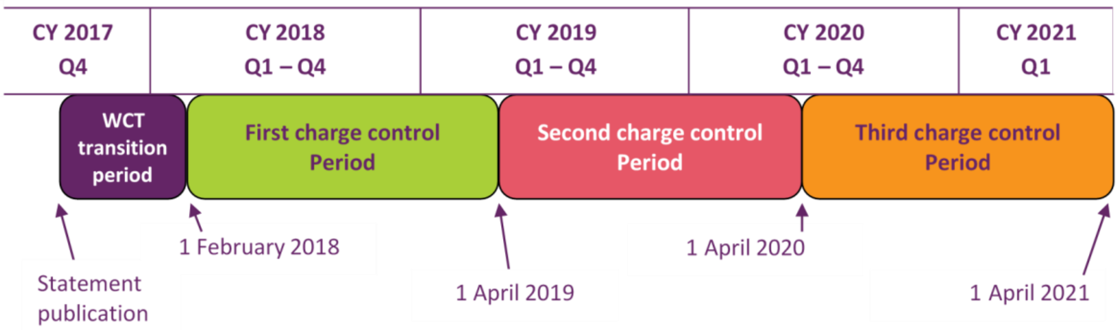
[692] At Annex 10 to the 2013 NMR Statement we published guidance setting out a presumption that charges no higher than BT's charge controlled "benchmark" rate are fair and reasonable. We have also published Supplementary guidance on WCT over the lacuna period on our website: https://www.ofcom.org.uk/__data/assets/pdf_file/0022/90274/Supplementary-guidance.pdf.

the level of the third year of the previous charge control on BT, held flat in nominal terms. This is consistent with BT's voluntary commitments and will provide stability over the transitional period to give the industry time to adjust to the new charge control rates that will take effect on 1 February 2018.

16.17 On all other CPs, during the WCT transitional period a fair and reasonable charging obligation will apply to FTRs. During that period, we will apply the 2013 F&R Guidance, as updated by the supplementary guidance, meaning that we would presume rates that are no higher than the cap set on BT's rates during this period to be fair and reasonable. This maintains the approach in the final year of the previous charge control and over the lacuna period to provide stability over the WCT transitional period.

16.18 The timeline for the WCT charge control is illustrated in Figure 16.1 below:

Figure 16.1: Illustration of the timeline for the WCT charge control, calendar years (CY)



Source: Ofcom.

Alignment of charges to projected costs

16.19 For the reasons set out in Section 14, we have decided that we will continue to set FTRs at LRIC. We have considered two possible price paths to achieve this:

- a one-off adjustment: i.e. FTRs would be reduced to the newly-calculated LRIC and track the LRIC forecast produced by the 2017 WCT model in each subsequent charge control period; or
- a glidepath: i.e. FTRs would reduce by a fixed percentage at the start of each charge control period and reach the 2017 WCT model's projected LRIC on 1 April 2020.

16.20 In 2016 NMR Consultation we proposed setting FTRs using a one-off adjustment. We based this proposal on wanting to realise the benefits to competition from setting FTRs at LRIC as quickly as practically possible, noting that in any case there was little difference between the two price paths presented in the consultation. During the consultation period we noted that these paths were based on too low a starting value of the current LRIC of FTRs (0.029ppm), and that starting with the correct value (0.035ppm) would result in a larger difference between the two options. However, we considered this difference to be too small in absolute terms to warrant favouring a glidepath over a one-off adjustment.[693]

16.21 Vodafone agreed with our proposal using the corrected rate.[694] BT disagreed with our proposal, saying instead that "Ofcom should implement a glidepath to the new rates given the role played by efficiency improvements in reducing the estimated LRIC value and because of the significant difference it makes to prices in 2017/18 and 2019/20".[695] It argued that any potential competition benefits from lower FTRs in the short run are so small as to be unlikely to affect pricing in any way, and that a one-off adjustment would harm dynamic efficiency by disincentivising BT from making cost savings similar to those it has made to its billing platform which, it argues, constitute the majority of the cost reduction between 2013 and now. It referenced the framework we set out in the 2016 BCMR Statement and Ofcom's "general preference for glide-paths" as justifying this position.[696]

16.22 We believe that BT has already had ample opportunity to benefit from the efficiency savings made by its changes to its billing platform, both during the latter part of the previous charge control and in the lacuna period between the expiry of the last charge control and the beginning of the new control. We do not believe that BT requires a further two years of benefiting from above-cost FTRs to sufficiently incentivise it to continue to reduce costs in future. BT will also be able to benefit from any cost savings that it is able to make beyond those modelled in the present control for its duration.

16.23 We do not agree with BT that the approach outlined in the 2016 BCMR Statement leads to a general preference for glidepaths in termination markets. While our overall objectives of balancing allocative and dynamic efficiency are the same as set out in the 2016 BCMR Statement, the nature of termination markets are different to that of business connectivity markets such that our conclusion is different. The main aim in regulating termination markets is delivering more effective downstream competition, with dynamic efficiency (in terms of cost reduction incentives) being less important than in situations of one-way access (such as business connectivity markets). In such markets, price regulation plays a more important role in incentives to reduce costs over time than in termination markets. In termination markets, much of the infrastructure is shared with call origination and other services, where for most operators competition provides cost reducing incentives, and even BT (which we have identified as having SMP in WCO) still faces greater competitive constraints on the call origination side of the market than it does in WCT.[697]

---

[693] Update 12 January 2017: Clarifications to the consultation; https://www.ofcom.org.uk/consultations-and-statements/category-1/narrowband-market-review.
[694] Vodafone response to 2016 NMR Consultation, part 1, page 6.
[695] BT response to 2016 NMR Consultation, page 48.
[696] Ofcom, April 2016. *Business Connectivity Market Review Statement*, Volume II, paragraphs 4.93-4.94.
[697] While we note that some of the incremental costs of WCT are not shared with WCO, the majority are. We do not think the loss of dynamic efficiency benefits on the termination-specific assets are sufficient to outweigh the allocative efficiency and competition benefits on the other assets of using a one-off adjustment.

16.24 We therefore continue to believe that a one-off adjustment is the most appropriate price path to use for this charge control. We note more generally that this is consistent with both the approach taken in the 2013 NMR and with the EC's comments regarding delaying the move to newly-estimated LRIC charges in the 2015 MCT Statement.[698]

Inflation index

16.25 In the 2016 NMR Consultation we proposed to adopt CPI rather than RPI as the inflation index against which to base the charge controls (i.e. we proposed a CPI-X charge control formulation). We did not receive any responses disagreeing with our proposal.

16.26 The use of CPI rather than RPI is consistent with decisions in recent market review statements, including the 2014 FAMR, the 2014 WBA, the 2015 MCT and the 2016 LLCC. We maintain that using CPI is preferable to using RPI on the basis that it is an official statistic and independent forecasts are available.[699] We have therefore concluded that the new charge control will be in the form of CPI-X

16.27 In its response to the December 2016 Consultation, BT argued that the specific index figure used in the charge control should be changed from the value in August each year to June, as BT's standard contracts require it to give two months' notice of any changes, and so using the August figure each year would not give BT the time to update prices in advance of the next charge control year.[700]

16.28 While using more recent data would generally be preferable, given the practical disruption this would cause for BT and potentially other telecoms providers we have decided to use the index figure from three months prior to the start of each charge control year in the charge control formulation. Given the change in start date for the second and third years of the control discussed above, this means using the CPI index value from December (as published in January) to calculate the charge control years beginning in April.

Time of day pricing

16.29 The 2013 NMR gave BT the flexibility to vary FTRs by time of day.[701] FTRs have been capped by reference to weighted average charges which allows for differences in charges at different times of the day or the week. So long as the average of different rates charged by BT, weighted by revenues, is within the target cap then the rate changes are considered compliant.

---

[698] Ofcom, 2015. *Mobile Call Termination Review 2015-18 Statement,* paragraphs 8.96-8.97. https://www.ofcom.org.uk/__data/assets/pdf_file/0029/76385/mct_final_statement.pdf.

[699] We also note that in more recent decisions, other UK economic regulators have moved away from using RPI – for example, in May 2016 Ofwat decided to move from RPI to CPI indexation. See Ofwat, 2016. *Water 2020: our regulatory approach for water and wastewater services in England and Wales.* https://www.ofwat.gov.uk/wp-content/uploads/2015/12/pap_pos20150520w2020.pdf.

[700] BT response to 2016 NMR Consultation, page 65.

[701] This flexibility also applied to the F&R charging requirement on all other CPs with SMP; 2013 NMR Statement, pages 220 and 293.

16.30 In the 2013 NMR Statement, we considered that it was appropriate to continue using a weighted average cap. We believed that allowing BT pricing flexibility would enable it to manage peak load traffic. We also noted that there was no evidence of ‘flip-flopping’ of FTRs, a practice that had been seen in MCT.[702] We did not consider that the simplification provided by a single maximum rate was a strong enough reason to remove pricing flexibility for BT.

16.31 The potential benefit of time of day pricing flexibility is that it can incentivise efficient network use.[703] A potential disadvantage of allowing for time of day pricing is greater complexity and lack of transparency. Time of day variation requires the regulated provider(s) to submit greater detail to Ofcom in order for us to assess compliance, and limits the ability of other providers to independently assess compliance where this detail is not publicly available.

16.32 In the 2016 NMR Consultation we proposed to cap FTRs at a single maximum rate rather than allow providers to charge differential rates based on time of day. Verizon[704] and Vodafone[705] agreed with this proposal in their responses, and we did not receive any responses disagreeing with it (although we note that in its response to the 2015 CFI BT maintained that time of day pricing flexibility provided efficiency advantages).[706]

16.33 There are a number of retail packages that continue to distinguish between day, weekend and evening calls, suggesting that pricing signals are being sent to retail customers.[707] However, given the current low level of FTRs (particularly when compared to other call costs and retail prices generally), a higher rate for daytime WCT may do little to incentivise retail consumers to use the network at other times.[708]

16.34 As Vodafone noted in its further submissions, BT has removed time of day pricing for some non-regulated components of wholesale calls[709] which suggests that BT may no longer require time of day pricing flexibility to manage network traffic. We also note that BT has removed time of day prices for some non-regulated services that include WCT (e.g. conveyance that includes termination) which implies that the non-regulated components of these services are in effect set with a negative time of day gradient, such that the two gradients net to zero for the overall service.

---

[702] This refers to the practice of CPs making frequent changes to their termination rates in order to increase revenues while maintaining compliance with a weighted average cap for a given period.
[703] 2013 NMR Statement, pages 289-291.
[704] Verizon response to 2016 NMR Consultation, page 18.
[705] Vodafone response to 2016 NMR Consultation, page 21.
[706] BT response to 2015 CFI, page 9.
[707] Our analysis shows that some fixed telecoms providers use time of day retail pricing (see for example, BT http://www.productsandservices.bt.com/products/phone-packages; TalkTalk http://sales.talktalk.co.uk/pricing/package/eveweekend; Post Office http://www.postoffice.co.uk/home-phone#Overview) while some charge the same rate for these calls (see for example, Sky http://www.sky.com/shop/terms-conditions/talk/code-of-practice/tariff-guide/; Vodafone https://www.vodafone.co.uk/broadband/homephone-features [accessed 20 November 2015].
[708] Vodafone response to April 2015 CFI, page 22; Colt response to April 2015 CFI, page 8.
[709] Vodafone response to April 2015 CFI, ‘Input to Narrowband Markets Review: Technology choice and 24 hour rates’, page 6; and ‘Input to Narrowband Markets Review: BT changes to deregulated services’, pages 2-6.

16.35 As Vodafone also identified[710], the time of day gradient is based on BT's historical retail traffic profile and its relevance to current efficient consumption and network planning is now less obvious.

16.36 We have therefore decided to introduce a single maximum rate for WCT. We will introduce this single maximum rate for WCT with the new rates in the first charge control period, on 1 February 2018. During the WCT transitional period, rates may still be set using time of day pricing in order to maintain pricing stability during this transitional period.

Definition of termination services

16.37 In the 2013 NMR we set the WCT charge control for a variety of termination services. These were differentiated by time of day (day, evening and weekend), network section (segment and stick)[711] and technology used (ISDN and other). These combined to produce twelve separate WCT services which were combined into the WCT basket for the charge control.[712] In the 2016 NMR Consultation we proposed to remove these distinctions and include only a single service in the basket for the WCT charge control. We did not receive any comments from stakeholders on this proposal.

16.38 Further, we do not believe that the distinction between segments and sticks is necessary, as these are BT-specific designations and are not used by other providers. The termination "stick" is not a service that a customer seeking to purchase WCT can purchase as a separate service and is only provided in conjunction with other services (such as WCO).

16.39 We have therefore decided to adopt a single WCT charge control starting from 1 February 2018, covering all external wholesale call termination traffic for a given telecoms provider. During the WCT transitional period, we will maintain the basket of services as used in the WCT 2013 charge control.

Other issues

16.40 In the 2016 NMR Consultation we made certain other specific proposals for the WCT charge controls:

- We proposed that regulated charges for FTRs would be rounded to three decimal places;
- We proposed that the weighted average WCT charge in the Transitional Period be calculated using data over the period from 1 October 2016 to 30 November 2016;
- We proposed to use revenue weights to calculate the average WCT charge during the Transitional Period;
- We proposed that the values of X in the charge control formula would be specified to one decimal place. This is consistent with the definition of the percentage change in CPI as reported by the ONS and our approach in the NCC 2013;

[710] Vodafone response to April 2015 CFI, pages 22-23.
[711] 'Segment' refers to the service sold on a standalone basis. 'Stick' is a different version of the service excluding the costs of switching, such that it can be sold alongside other services without double-counting these switching costs.
[712] These services are listed in the Annex to Schedule 2 of the 2013 NCC, set out in Annex 2 of the 2013 NMR Statement.

- We proposed to measure compliance with the charge control on FTRs by reference to external charges only. This reflected the aim of the charge controls to address the detriment from a telecoms provider exploiting its SMP and overcharging other providers.

16.41 BT responded to the first two of these points. Regarding the issue of rounding, BT argued that the use of three decimal places in assessing charge control compliance would be unduly restrictive and that four decimal places have been used since 1997.[713] It noted that we had previously consulted on the use of three decimal places in 2013, and had decided to allow the use of four decimal places when measuring compliance with the charge control.

16.42 We agree with BT that maintaining the current approach of rounding to four decimal places when measuring compliance would be sensible. Due to the change in form of the charge control to a single maximum cap, we now specify the cap for the first charge control period in ppm terms in the legal condition rather than setting this using a CPI-X formulation as in the 2013 NMR. In order to maintain consistency within the legal conditions we have therefore decided to specify both the WCT model outputs and the compliance measurement to four decimal places. We do, however, note that this involves specifying outputs to a high level of accuracy and we would expect that producing outputs to any greater degree of precision than this would merely result in spurious accuracy.

16.43 Regarding the period used in calculating the weighted average WCT charge in the Transitional Period, BT argued that we should use a consistent period across the calculation of the cap and the calculation for compliance. It argued that this would ensure that no change in prices is required during the Transitional Period. We agree with BT and have chosen to use weights from the period 1 April 2016 to 31 March 2017 to calculate both the Transitional Period cap specified in Condition 5C.1 and the calculation for compliance specified in Condition 5C.2.

16.44 We have also identified an inconsistency in the weightings used between setting the cap and measuring compliance with the cap during the Transitional Period as set out in the 2016 NMR Consultation. The specified cap was calculated using volume weights, but the compliance with the cap was to be calculated using revenue weights. We have changed the compliance calculation specified in Condition 5C.2 to use volume weights rather than revenue weights in order to maintain consistency between these calculations.

16.45 We did not receive any responses from telecoms providers to the other issues listed above. We have therefore decided to implement these proposals unchanged from the 2016 NMR Consultation. We will publish the regulated FTR for each period of the WCT charge control on the Ofcom website once the necessary inflation data are available each January, we will specify the values of X in the charge control to one decimal place, and we will measure compliance with the charge control on FTRs by reference to external charges only.

[713] BT response to 2016 NMR Consultation, page 66.

16.46 BT also commented that condition 5C.4 of the 2016 NMR Consultation legal conditions was unclear and lacked a formula to properly explain how the calculation was to function. We have added formulae into the legal conditions in this document to ensure clarity.

Summary of charge controls

16.47 A summary of the WCT charge controls applicable to all providers identified with SMP is as follows:

Table 16.2 – Current cap and forecast costs (in pence per minute), and values of X[714]

	2017/18	2018/19	2019/20	2020/21
Current cap (nominal terms)	0.0346			
Forecast cost (real 2016/17 terms)	n/a	0.0303	0.0286	0.0269
CPI-X formulation	n/a	n/a	CPI-5.7%	CPI-6.1%

Source: 2017 WCT model.

[714] The ppm real values are in 2016/17 prices. The value for 2017/18 reflects the voluntary commitments made by BT and the transitional period. Charge control periods run from 1 April to 31 March other than first period which runs 1 February to 31 March the following year.

17. Interconnection: approach to regulation

17.1 Having determined that BT and KCOM have SMP in WCO and all providers have SMP in WCT, we now consider if additional, specific, regulation is needed for interconnection, which is required in order for other telecoms providers to access those SMP services.

17.2 All telecoms providers have obligations related to interconnection under General Condition 1 (GC1).[715] BT and KCOM are also currently subject to specific SMP Conditions related to interconnection.

17.3 In this section, we set out our view on how the choice of technology used by the network that has SMP affects interconnection, and our decision to regulate certain interconnection services beyond the requirements of GC1.

17.4 This section is organised as follows:

- We provide an overview of interconnect circuits currently provided by BT and KCOM, and summarise the regulation imposed in the 2013 NMR.
- We consider the question of technology choice for interconnection, which arises when interconnecting networks use different technologies.
- We discuss the cost of conversion, which also arises when interconnecting networks use different technologies.
- We consider issues arising from the fact that different telecoms providers are migrating to IP at different speeds.
- We consider stakeholders' comments regarding transit services.
- Finally, we explain the reasons for requiring the provision of specific interconnect circuits by BT and KCOM.

Summary

17.5 In light of our finding that BT has SMP in the market for WCO in the UK excluding the Hull Area, and in the market for WCT in relation to the geographic numbers that it holds, we have decided to maintain the specific requirement for BT to provide interconnect circuits based on TDM technology at its Digital Local Exchanges (DLEs). As we explain below, our regulation of interconnection provided by BT may be extended to IP-based interconnection services in future, although we do not anticipate that this will happen over the period of this review.

[715] Ofcom, 2015. *Consolidated Version of General Conditions as at 28 May 2015.* https://www.ofcom.org.uk/__data/assets/pdf_file/0026/86273/CONSOLIDATED_VERSION_OF_GENERAL_CONDITIONS_AS_AT_28_MAY_2015-1.pdf. From 1 October 2018, GC1 will be replaced by Condition A1: https://www.ofcom.org.uk/__data/assets/pdf_file/0026/106397/Statement-and-Consultation-Review-of-the-General-Conditions-of-Entitlement.pdf.

17.6 We have concluded that regulation of interconnect circuits provided by KCOM is necessary in light of KCOM's SMP in the market for WCO in the Hull Area. The current requirement on KCOM to provide interconnect circuits is not related to KCOM's SMP in WCT.

17.7 Finally, we conclude that we do not need specific interconnect regulation beyond GC1 on telecoms providers other than BT and KCOM.

17.8 We set out the remedies that will apply to BT's and KCOM's interconnect circuits in Section 18 and the charge control remedy on BT in Section 19.

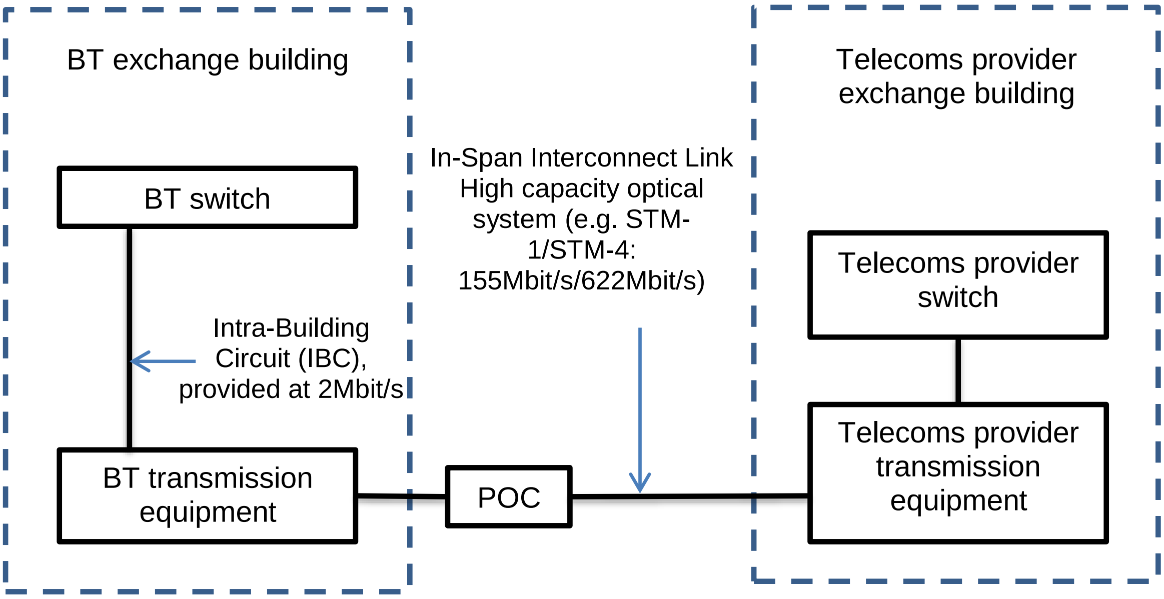
Overview of interconnect circuits currently provided by BT and KCOM

17.9 An interconnect circuit connects the networks of two telecoms providers in order to allow traffic to pass between them. Some telecoms providers may use leased lines to provide transmission between their locations although interconnect circuits differ from leased lines since they include switch ports and, where required, signalling termination.

17.10 In the 2013 NMR, we required BT to provide interconnect circuits at its DLEs based on TDM technology. BT currently supports four types of interconnect circuit, using TDM technology:

- **In-Span Interconnect (ISI)**: to provide ISI, a telecoms provider builds its own network up to a Point of Connection (POC), generally located just outside the BT exchange. BT then connects its network to the POC. Individual interconnect circuits, of 2 Mbit/s capacity, are then provided via the ISI link. An Intra Building Circuit (IBC) is required at each end of this 2 Mbit/s circuit to provide connection onto the interconnecting switches. The ISI configuration is shown below in Figure 17.1.
- **Interconnect Extension Circuit (IEC)**: IECs allow a telecoms provider to extend its interconnection with BT from a POC provided via ISI (as above) to another switch site. IECs are provided at 2 Mbit/s capacity and again require IBCs.
- **Customer Sited Interconnect (CSI)**: CSI does not require any infrastructure build by the telecoms provider. Instead, BT builds to the telecoms provider's site. Individual 2 Mbit/s interconnect circuits are then provided via this CSI link as required. Once again, IBCs are also required. The telecoms provider can use the BT-provided CSI infrastructure to interconnect to other BT exchanges.
- **Virtual Interconnect Circuits (VICs)**: VICs require customers to interconnect using ISI or CSI to a tandem exchange where BT then provides a 'virtual' circuit using the existing BT network to connect to another BT exchange (e.g. a DLE). This virtual circuit is charged for as if it were a physical interconnect circuit. The telecoms provider then pays the rates for conveyance that would be charged by BT as if there was a physical interconnection at the DLE – i.e. the WCO or WCT rate without a charge for Local-Tandem Conveyance (LTC). VICs are essentially capacity based charges, although the capacity is restricted by the underlying BT infrastructure, i.e. the telecoms provider can only connect to DLEs that have a direct route to the tandem exchanges to which the telecoms provider is interconnected.

Figure 17.1: ISI Link Architecture



Source: Ofcom

17.11 Telecoms providers with larger networks and larger traffic volumes are likely to provide some or all of their interconnection via ISI. This minimises ongoing payments to BT, albeit at a higher initial cost to the telecoms provider. Telecoms providers can also buy Nominated ISI from BT, which is similar to an ISI connection, except that BT builds out its network some way in order to meet the telecoms provider's network. The telecoms provider pays for this extension from the BT exchange to the nominated POC.

17.12 In the 2013 NMR, we specifically required BT to provide ISI, IEC and CSI. VICs were agreed through commercial negotiations between BT and telecoms providers without intervention from Ofcom, even though they involve charges referenced to regulated services (i.e. IECs). They were originally put in place to support BT's migration to its 21st Century Network (21CN) but have been used more widely. While BT subsequently suspended its plans to migrate voice services onto 21CN, it has continued to provide new VICs.

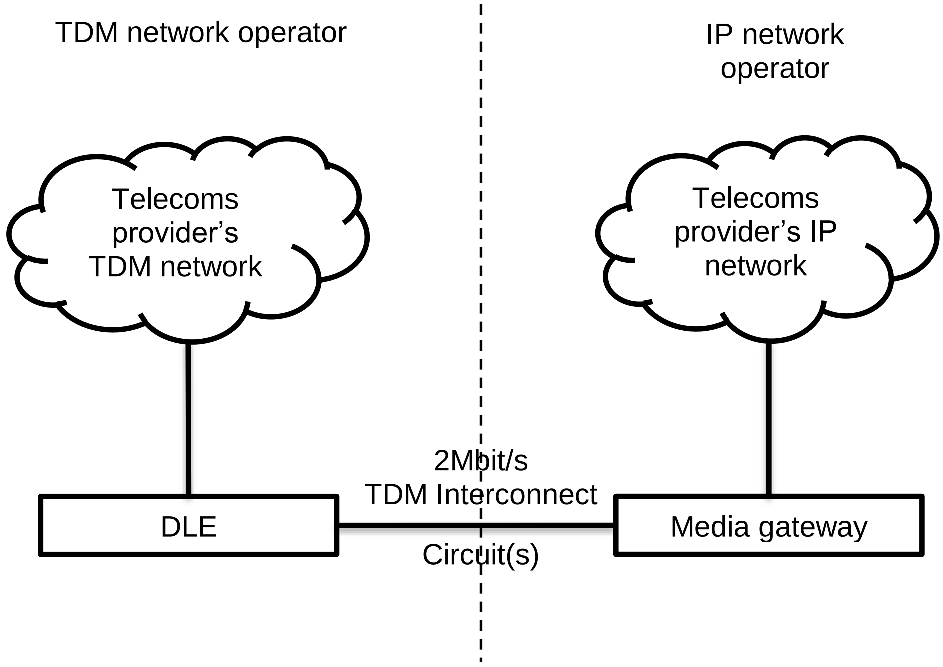
17.13 KCOM provides ISI and IECs; it does not provide CSIs or VICs.

Technology choice for interconnection

17.14 In this sub-section, we explain how network technology and the corresponding network architecture being used for the provision of narrowband services are relevant to the regulation of interconnect circuits.

17.15 The question of technology choice for interconnection arises when two interconnecting networks rely on different technologies, in this case TDM and IP. In these cases, translation between the different communications protocols and data formats is required, adding to the cost of interconnection. This translation is carried out by equipment called a media gateway. This arrangement is shown in Figure 17.2.

Figure 17.2: TDM interconnection between a TDM-based and an IP-based network.

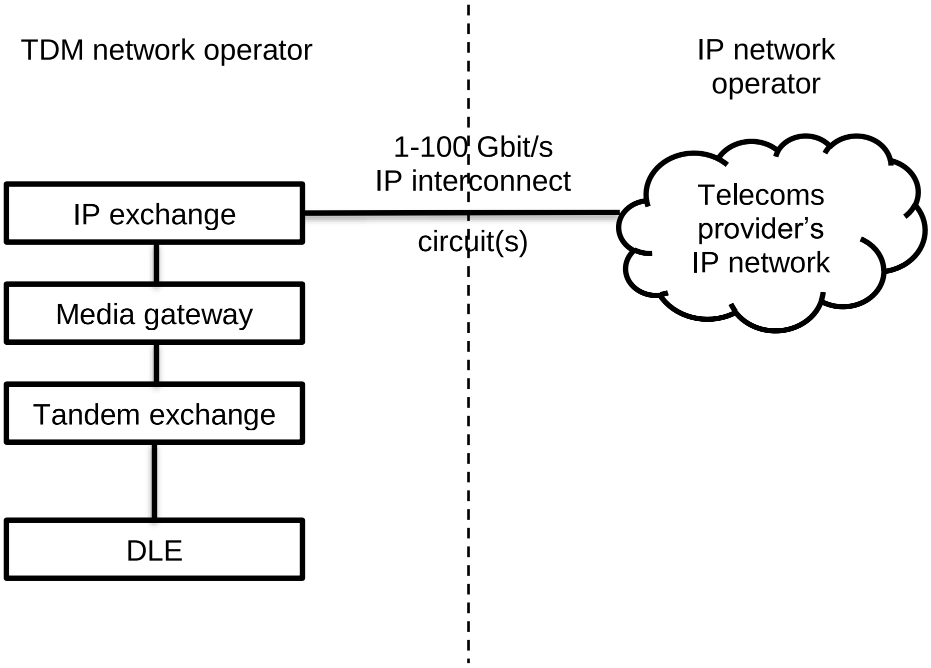


Source: Ofcom

17.16 In the case of BT's network, access to WCT and WCO is provided at its DLEs, where its TDM switches are deployed, and this is the closest point to the end user where access can be provided. BT's network currently includes over 600 DLEs. Hence, where a telecoms provider with an IP network wants to interconnect with BT in order to access WCT or WCO, it needs to connect to each of BT's DLEs and needs to use media gateways to convert between IP and TDM.

17.17 Alternatively, as shown in Figure 17.3 below, the telecoms provider may connect via IP, even where the end customer is connected to a TDM network. For example, a telecoms provider could connect to BT's IP Exchange (IPEX) service. BT would then provide the media gateways and convey the converted traffic to the DLE supporting its customer. This approach minimises the network requirements on the telecoms provider that hands over IP traffic to BT. BT bears the additional costs of conversion and conveyance in this situation (BT currently provides this service on a commercial basis and so may include recovery of these costs in setting charges).

Figure 17.3: IP interconnection between a TDM-based and an IP-based network.



Source: Ofcom

17.18 In defining markets, we have, as far as possible, taken a technology-neutral approach. We have defined WCT services in Section 12 as, "the conveyance of all signals (including relevant control signals) required to terminate calls to a customer from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another communications provider." Therefore, the regulated FTR applies only at that point in the network (i.e. the terminating node) and the originating telecoms provider (or transit telecoms provider on the originator's behalf) incurs the costs of reaching that node.

17.19 Similarly, WCO is defined in Section 4 as, "The conveyance of all signals (including relevant control signals) originating from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another communications provider." Therefore, the regulated rate applies only at the originating node and the provider purchasing WCO (or transit provider acting on the purchaser's behalf) incurs the costs of reaching that node.

17.20 Where the terminating telecoms provider is using TDM, the relevant POI would be the switch to which the called customer is connected. For BT's TDM network, this would be one of its DLEs. The BT DLE would also be the relevant POI for access to WCO services provided by BT.

17.21 IP technology allows the equipment that is used to provide voice services to end customers to be at a different location to the POI. A telecoms provider using IP technology would need to identify the particular POI at which IP interconnect is available for providing termination services to its customers.

Proposals on technology choice

17.22 In our 2016 NMR Consultation, we considered how national standards for IP interconnection had evolved since the 2013 NMR review. We found that the industry, through NICC (the Network Interoperability Consultative Committee), had already standardised most features required for effective interconnection between TDM and IP networks and for interoperability of narrowband services. We considered that barriers due to IP standards had significantly reduced since the last review and that these issues would be resolved by the time we conclude this review.[716]

17.23 We presented data which showed that TDM volumes of traffic between BT and other telecoms providers was decreasing, while IP traffic was increasing. However, the majority of traffic between BT and other providers remained on TDM. BT's forecasts indicated continued steady migration to IP but did not suggest full migration in the review period. A number of providers expressed an intention to migrate voice traffic from TDM to IP and, therefore, we anticipated that migration to IP would continue during the review period.

17.24 Based on this evidence, we proposed that both TDM and IP were efficient technology choices. Given BT's market power in WCO and WCT, we proposed to regulate specifically interconnection to BT using TDM interconnection to its DLEs, to enable other providers to access BT's WCO and WCT and enable them to effectively compete in downstream markets.

17.25 We proposed that we did not need specific interconnect regulation beyond GC1 on CPs other than BT and KCOM. We did not propose to regulate conversion of traffic between TDM and IP.

17.26 In response to our 2016 NMR Consultation, stakeholders raised a number of specific concerns that may arise where we regulate TDM interconnection but where some telecoms providers have migrated, or are migrating to IP, and may seek to interconnect to BT using IP. In light of these responses, the July 2017 NMR Further Consultation proposed to clarify our approach to IP interconnection with BT. In response to the July 2017 NMR Further Consultation, some stakeholders restated the points on technology choice that they had made in response to the 2016 NMR Consultation. Our discussion below takes into account responses to both consultations that relate to our consideration of technology choice. We address other comments on our consultation proposals later in this section.

[716] Meeting between NICC and Ofcom, 21 July 2015, confirmed by email 6 January 2016.

Stakeholder responses on technology choice

17.27 FCS, Magrathea, Sky, TalkTalk, UKCTA, Verizon and Vodafone argued in favour of extending regulation of BT’s interconnect circuits to IP.[717] BT, KCOM and [✂] stated a preference for regulation to be focused on TDM at the DLE for the review period.[718]

17.28 BT considered that only TDM interconnect circuits provided at its DLEs should be regulated and that IP interconnection arrangements can be negotiated freely, as barriers to entry are low.[719]

17.29 Magrathea proposed that, in the absence of a regulated IP interconnect product provided by BT, which would allow telecoms providers to pay the regulated FTR, Ofcom should apply the same cost model to the LTC element of the call or mandate that telecoms providers should be able to obtain the regulated FTR at fewer points of interconnect than BT’s 600+ DLEs.[720]

17.30 TalkTalk suggested that IPEX did not support all traffic types (for example, Carrier Pre-Selection) which provided a further reason to maintain TDM interconnection to the DLEs.[721]

17.31 Vodafone argued that technology choice should focus on the core of the network rather than the retail access mechanism. It estimates that 82% of traffic originates on networks with an IP core, and suggest the “natural” interconnect mechanism is therefore IP.[722] Vodafone argue that in reality the IP operator picks up the costs of conversion.[723]

17.32 Vodafone suggested the regulated termination rate should be available for IP interconnection, regardless of the technology used in the terminating network. It argued the regulated rate should be available at certain handover points (considerably fewer than BT’s DLEs) consistent with migration to IP having taken place, so that other telecoms providers do not face the cost of connecting to hundreds of BT sites, in order to secure the regulated termination rate. Vodafone noted that standards for number portability, emergency calls and call diversion were finalised in 2016.[724]

17.33 Vodafone and TalkTalk argued that BT may offer attractive IP interconnection rates to some telecoms providers but, when these telecoms providers have migrated from TDM to

---

[717] FCS response to 2016 NMR Consultation, page 1; Magrathea response to 2016 NMR Consultation, pages 1-2; Sky response to 2016 NMR Consultation, pages 10-11; UKCTA response to 2016 NMR Consultation, page 6; Verizon response to 2016 NMR Consultation, page 17; and Vodafone response to 2016 NMR Consultation, part 1, pages 16-17.

[718] BT response to 2016 NMR Consultation, page 29; KCOM response to 2016 NMR Consultation, pages 2-3.
[✂]
TalkTalk, 2016, NMR Consultation response, Supplementary submission, 3rd July 2017, page 3.

[719] BT, 2016, NMR Consultation response, page 29.

[720] Magrathea response to 2016 NMR Consultation, page 1 and Magrathea response to July 2017 NMR Further Consultation, page 1.

[721] TalkTalk, Supplementary Submission, 3 July 2017, page 2.

[722] Vodafone response to 2016 NMR Consultation, part 1, page 15.

[723] Vodafone response to July 2017 NMR Further Consultation, page 5.

[724] Vodafone response to 2016 NMR Consultation, part 1, pages 16-21.

IP and decommissioned their TDM assets, it will be difficult for them to move back to TDM interconnect.[725]

Our reasoning and decisions

17.34 To inform our decision on technology choice for interconnection, we considered current IP interconnection standards and looked at evidence of a trend towards IP-based interconnection, current use of TDM and IP by BT and other providers, and migration plans.

17.35 In summary, BT's competitors argued that BT should be required to provide IP interconnect and that the regulated termination rate should apply at this point of interconnection. This would mean that BT would not be able to recover the cost of the media gateway or the transit between the IP exchange and the DLEs. BT's competitors argued that this is because IP is now the efficient technology choice, and BT's choice of TDM is not efficient.

17.36 We do not agree. BT, along with Virgin Media and KCOM, deployed a network using TDM when IP networks were not available. These three networks serve the largest number of fixed voice customers in the UK. We consider that it remains efficient for BT to use its TDM network, and therefore that interconnection to BT should be based on TDM.

17.37 In reaching this view we have considered developments since the last market review and evidence provided by stakeholders of:

- the development of IP interconnection standards;
- trends in migration to IP; and
- how these factors impact our view on technology choice.

17.38 We provide further detail on each of these points below.

IP interconnection standards

17.39 In the 2013 NMR, we considered that further development of IP interconnection standards was required.[726] Since the 2013 NMR, the industry has standardised most features required for effective interconnection between TDM and IP networks and for interoperability of narrowband services. As such, we do not consider that interconnection standards will provide a barrier to migrating to IP interconnection during this review period.[727]

Trends towards IP-based interconnection

17.40 To better understand the pace of migration from TDM to IP technology and to inform our approach to the regulation of interconnection between TDM and IP networks, we gathered

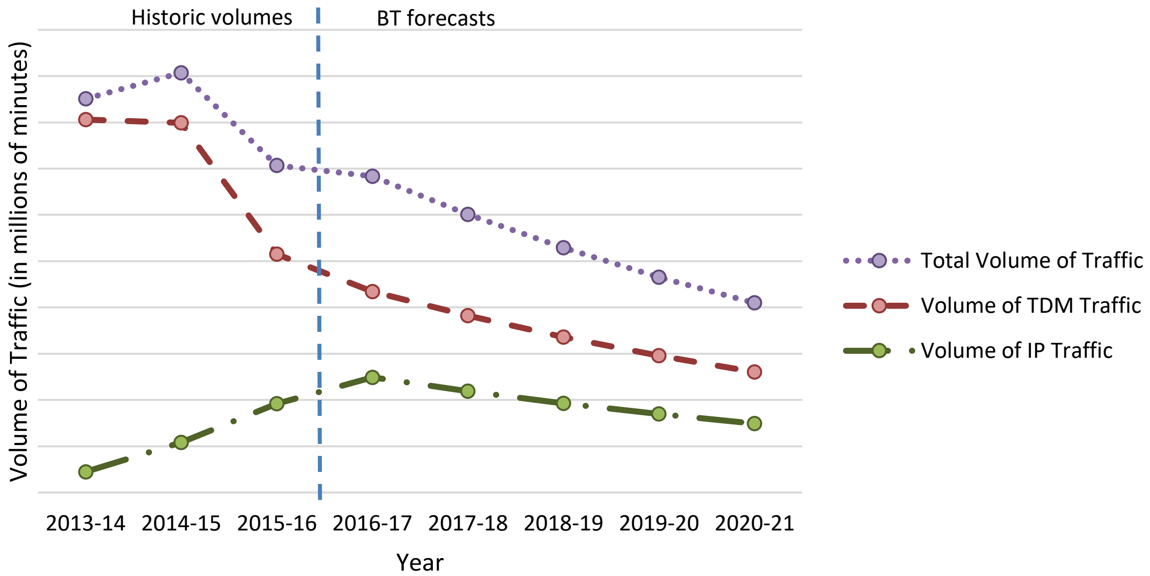
[725] Vodafone response to 2016 NMR Consultation, page 17; TalkTalk response to 2016 NMR Consultation.
[726] Ofcom, 2013. *Review of the fixed narrowband services markets – Statement on the proposed markets, market power determinations and remedies*, paragraph A5.27. https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.
[727] Meeting between NICC and Ofcom, 21 July 2015. Confirmed via email 06/01/2016. Latest version of NICC's ND1035 standard on SIP Network to Network Interface Signalling has been enhanced regarding the Identification and the Handling of Emergency calls (Annex A, page 12), http://www.niccstandards.org.uk/files/current/ND1035V2.1.1.pdf?type=pdf

data on different types of interconnect circuits and volumes of voice traffic carried over these circuits between BT and other telecoms providers.

17.41 BT provided historical and forecast data, clarifying that only short-term forecasts, which cover the current financial year, are agreed with other telecoms providers. BT confirmed it intends to migrate some traffic from TDM interconnect circuits to IP interconnect circuits and provided its estimates with broad assumptions for the financial years 2017/18 to 2020/21.

17.42 Figure 17.4 below shows the volumes of traffic (in millions of minutes, using linear scale) over BT's TDM and IP interconnect circuits separately, as well as the total (i.e. the sum of TDM and IP interconnect traffic) from 2013/14 to 2020/21.

Figure 17.4: Volumes of Traffic (in millions of minutes) between BT and other telecoms providers (figures on y-axis redacted)



Source: Historic data for 2013-14, 2014-15 from BT's response to 3rd NMR s.135 notice.

Historic data and forecasts for 2015-16 to 2020-21 from BT's response to 13th s.135 notice.

17.43 As Figure 17.4 shows, TDM volumes of traffic between BT and other telecoms providers have fallen and are expected to continue doing so. While IP traffic has increased historically, it remains below TDM traffic volumes and BT's forecasts suggest this will remain the case over the period of this review. Most telecoms providers do not appear to forecast migrations of traffic beyond a year or so, therefore the projections shown in Figure 17.4 above represent primarily BT's view.[728]

[728] BT responses to 3rd and 13th NMR notices.

17.44 Based on limited data from other telecoms providers, we observe trends of decreasing volumes of TDM traffic (and TDM circuits) and increasing volumes of traffic over IP interconnect circuits.[729]

17.45 We expect that migration to IP will continue during the review period. We also recognise that the current and forecast interconnection between BT and other telecoms providers is influenced by our regulation and as such, a change in regulatory approach to focus on IP interconnection could accelerate the move to IP interconnection.

Our assessment of technology choice for interconnection

17.46 The pace of migration to IP varies by telecoms provider. Depending on the type of services they provide, market segments they serve and investments in TDM or IP technology already made, each telecoms provider will seek to make the most efficient use of its assets and optimise its migration strategy. During such periods of technological transition, allowing telecoms providers to follow an efficient migration strategy is important, so as to facilitate innovation and effective competition in the long-term.

17.47 BT's and Virgin Media's networks rely on TDM technology to connect their end customers, which represent the majority of the UK's fixed narrowband services customer base. We recognise that both these networks are in the early stages of migration to IP, whereas later entrants and networks are further along the migration path.

17.48 A history of infrastructure-based entry has led to the development of fixed access and calls markets with competing telecoms providers using different technologies to serve their customer bases. Increasing competition has meant that fewer parts of the value chain are now subject to *ex ante* regulation, such that the majority of the revenues earned from serving fixed voice customers are now determined by competition between telecoms providers with their own infrastructure.

17.49 Moreover, fixed call volumes have declined in recent years, such that the costs of providing services to end consumers are increasingly dominated by the costs of the access line (and the provision of broadband), rather than the provision of WCO, WCT and fixed voice interconnection at the terminating or originating node.

17.50 Typically, it is likely to be efficient for telecoms providers to continue to exploit existing infrastructure so long as the forward-looking costs of the existing network with sunk assets are lower than those of migrating to and replacing those assets.

17.51 At this stage, we remain of the view that TDM is likely to be an efficient technology choice for BT for its customers already served from TDM switches at its DLEs, even if IP is what new entrants have deployed. This is because:

- a significant proportion of fixed voice traffic is still carried over TDM networks (and is forecast to remain so throughout the review period);

---

[729] Colt, EE, Gamma, KCOM, Sky, TalkTalk, Telefonica, Three, Virgin Media and Vodafone responses to s.135 notices dated 15 July 2015.

- TDM networks represent a largely sunk asset with low forward-looking marginal costs[730]; and
- while migration to IP is underway, BT is not the only network operator still using TDM.

17.52 Recognising the different starting points of the different competing networks today and based on the continued significant use of TDM, we consider that it remains appropriate for specific regulation of interconnection to be on the basis of the technology used by the terminating telecoms provider for the period of this review.

17.53 Irrespective of the technology choice of the terminating telecoms provider, a point of interconnection (POI) must be made available, at which telecoms providers can interconnect to the termination service without incurring additional transit costs on the terminating network. Where the terminating telecoms provider is using TDM, the relevant POI would be the switch to which the called customer is connected. For BT's TDM network, this is currently the DLE.[731] IP technology allows the equipment which supports voice services to end customers to be separated from equipment providing the POI. As such, telecoms providers using IP technology would need to identify the particular node at which IP interconnect is available for providing termination services to its customers.

17.54 Having determined our approach to technology choice, and set out our decision that for TDM networks such as BT's, TDM interconnect remains an efficient approach, we now consider certain issues that arise from this. These are our approach to the costs of conversion between TDM and IP (and between different IP protocols where relevant) and the treatment of BT's IPEX, which is an IP platform owned and operated by BT. IPEX allows CPs to interconnect to BT using IP and to transit traffic to customers connected to BT's TDM network (with BT providing conversion and conveyance services) and to other telecoms providers.

Cost of conversion

17.55 As explained above, where TDM and IP coexist, conversion is required. Given our proposal to regulate on the basis of the technology used by the telecoms provider providing access to the end customer, we also need to consider the question of how the costs of conversion should be recovered.

17.56 In the 2013 NMR, we explained our approach to the costs of conversion (interworking) between TDM and IP networks (and, to the extent required, between IP networks). We considered that the provision of conversion should, in the first instance, be agreed by commercial negotiation between interconnecting parties and we did not impose obligations related to the provision of conversion.[732]

[730] The Mean Capital Employed (MCE) of BT's TDM assets has been declining steadily for many years and we expect this trend to continue as BT is not investing in replacing these assets as they reach the end of their accounting lives. Operating costs have been reasonably stable and this is only likely to change when the existing equipment begins to fail and require replacement on a significant scale.

[731] The BT DLE would also be the relevant POI for access to call origination services provided by BT.

[732] 2013 NMR Statement, paragraph 10.5, A5.122-A5.124.

17.57 We considered this issue in the context of Ofcom's six principles of pricing and cost recovery: distribution of benefits, cost causation, cost minimisation, effective competition, practicability and reciprocity. As we considered that the market for conversion could be contestable (e.g. for WCT, a telecoms provider other than the terminating network is able to provide conversion on behalf of another telecoms provider), we believed that relying on commercial agreement in the first instance was appropriate. We suggested that this could be on the basis of a cost-sharing approach.

Consultation proposals

17.58 In the 2016 NMR Consultation, we proposed to maintain the approach we took in the 2013 NMR: we considered that the provision of conversion should, in the first instance, be agreed by commercial negotiation between interconnecting parties and we did not impose obligations related to the provision of conversion.[733]

17.59 Similarly, we proposed that in the case of interconnecting IP networks, costs of interworking may arise if the two IP networks support different standards but then, again, we would expect the parties to resolve this via commercial negotiation in the first instance.

Stakeholder responses

17.60 Sky argued that Ofcom should require TDM networks to pay for IP-TDM conversion when interconnecting with an IP network and that Ofcom's current policy does not incentivise legacy SMP networks to become more efficient, as they would do in more competitive markets. Sky considers IP-based telecoms providers are prevented from making efficient use of existing assets as a result of Ofcom's policy.[734]

17.61 In its response to the July 2017 NMR Further Consultation, Vodafone said that our proposed approach of the terminating operator setting the technology is an attempt to clarify how heterogeneous networks interconnect, in such a way that the costs of technology gateways are shared. However, it argued that, while terminating TDM operators apply a surcharge where interconnection is IP, the reverse is not the case and, whatever the regulatory guidance may say, the IP operator is picking up the costs in all cases.[735]

17.62 [✂] considers that Ofcom should not deviate from the principles of cost recovery, efficient routing and cost causation, which are contrary to obliging an IP operator to provide cheap (or even free) conveyance and media conversion from a public-IP interconnect to a remote TDM (or other IP) switch.[736]

[733] 2013 NMR Statement, paragraph 10.5, A5.122-A5.124.
[734] Sky response to 2016 NMR Consultation, pages 10-11.
[735] Vodafone response to July 2017 NMR Further Consultation, page 4.
[736] [✂]

Our reasoning and decisions

17.63 We note submissions from stakeholders that the cost of conversion should be borne by the operator of the legacy technology[737], or left to commercial negotiation.[738] In the 2013 NMR, we noted that in the event that such commercial negotiations were to fail, telecoms providers would potentially be able to refer the matter to Ofcom as a regulatory dispute, which they have not done since the 2013 NMR Statement.

17.64 Our view is that TDM and IP networks are likely to coexist for the duration of this review, and this is unlikely to be inefficient. We therefore consider that it is appropriate to maintain the approach taken in the 2013 NMR, such that the provision of conversion should, in the first instance, be agreed by commercial negotiation between interconnecting parties and so we are not imposing specific *ex ante* obligations in relation to the provision of conversion. Where terminating telecoms providers provide conversion from TDM to IP in order to provide WCT, it is in our view appropriate for the terminating telecoms provider to seek to recover these costs of conversion (to the extent they are reasonable) from the originating telecoms provider.

17.65 Even in the case of interconnecting IP networks, costs of interworking may arise if the two IP networks support different standards. Again, we would expect the parties to resolve this via commercial negotiation in the first instance. We would consider any dispute brought to us on the specific facts, but we would not ordinarily expect telecoms providers seeking to interconnect using the relevant NICC standards to bear the costs of interworking to IP protocols not supported by NICC standards.

Our approach to regulation of IP interconnection to BT

17.66 Above we have concluded that BT's continued use of its legacy TDM network remains an efficient choice and so interconnection to BT would be via TDM interconnection to the DLEs.

17.67 In responses to our 2016 NMR Consultation, stakeholders raised a number of specific concerns that may arise where we regulate TDM interconnection but where some telecoms providers have migrated, or are migrating to IP and may seek to interconnect to BT using IP. We set out below our proposals in the July 2017 NMR Further Consultation to address these concerns, stakeholder responses and our conclusions.

July 2017 NMR Further Consultation

17.68 Our July 2017 NMR Further Consultation addressed our approach in the event that migration to IP during this review period results in telecoms providers no longer being in a position to use TDM circuits to deliver traffic to BT's DLEs. In this event, we proposed to interpret BT's network access obligation as applying to IP interconnection to deliver traffic

[737] Vodafone response to April 2015 CFI, page 27; Sky, 2016 NMR Consultation response, pages 10-11.
[738] BT response to April 2015 CFI, page 9; [✂]; BT response to July 2017 NMR Further Consultation, paragraph 48.

to BT's DLEs, in order to access regulated WCO and WCT services. Consequently, the interconnection requirement would apply to the delivery of traffic to BT's DLEs via IP interconnection, with the effect that it would need to be provided on fair and reasonable terms, conditions and charges. We proposed that the commercial agreements made when telecoms providers had the option of buying TDM interconnection, would provide a suitable starting point for considering this.

Stakeholder responses to July 2017 NMR Further Consultation

17.69 We set out stakeholders' responses under the following headings:

- Whether the concern identified in the July 2017 NMR Further Consultation is likely to arise during this review period.
- Our proposed approach in the event such a concern arises.
- Comments arguing that a different approach to regulating IP interconnection should be taken.
- Comments about BT's migration to IP.

Likelihood of concern identified in July 2017 NMR Further Consultation

17.70 Several stakeholders said that the high price and lack of regulation of IPEX acts as a disincentive to migrate away from TDM.[739]

17.71 Vodafone suggested the concern we set out in the July 2017 NMR Further Consultation was unlikely to occur. Vodafone argued that BT's current IPEX pricing is such that an IP-based provider with existing DLE connections would not rationally use IPEX for geographic traffic. Vodafone said that as it migrates its fixed network to IP, it is deploying gateways to replicate the DLE connections. It also argued that a network that closes down TDM assets would face costs in the short to medium term and unpredictable gains. It therefore considered Ofcom's proposed approach to IP interconnection in the July 2017 NMR Further Consultation is most likely to be invoked in a gaming situation.[740]

17.72 [✂] argued that any such migration would take several years. It added that, if previous migration to IPEX is affected by significant BT price increases, TalkTalk and Sky have sufficient DLE-based broadband footprints to allow them to easily redeploy TDM interconnect circuits using media gateways, and either dual ISI circuits or an internal interconnect circuit, if Ofcom mandates a new product.[741]

17.73 However, TalkTalk noted that the migration process from TDM to IP is a one-way process. It claimed the lack of regulation of IPEX, and the scope for BT to exercise its SMP over captive customers, once providers have switched from TDM to IPEX interconnection, acts

[739] Vodafone response to July 2017 NMR Further Consultation, pages 3-4; TalkTalk response to July 2017 NMR Further Consultation, paragraph 3.3.
[740] Vodafone response to July 2017 NMR Further Consultation, pages 3-4.
[741] [✂].

to impede providers switching from TDM to IPEX.[742] Verizon added that once a telecoms provider has migrated and retired its TDM network it would be left reliant on BT's IP interconnection and BT could exercise its dominance to set high charges and/or unfair terms and conditions.[743]

17.74 BT suggested the concern we set out in the July 2017 NMR Further Consultation was unlikely to occur and that before imposing a fair and reasonable requirement, we should consider the availability of alternatives to IP interconnection from BT and the feasibility of reverting back to TDM interconnection. [744]

Clarity of Ofcom's proposed approach

17.75 Some stakeholders said that Ofcom's proposal did not provide sufficient clarity on how it would interpret the fair and reasonable obligation and/or did not provide sufficient pricing certainty to telecoms providers. As such, they argued it did not provide adequate protection, provided incentives for gaming and for BT to increase IP interconnection charges and that it would lead to Ofcom being asked to consider disputes. [745]

17.76 However, BT and [✂] said there was no need for regulation of IP interconnection.

17.77 BT noted that a wide range of alternatives exist and have evolved without regulatory intervention. It said it was concerned the proposed regulation might impact on the reciprocal nature of its interconnect relationships and said we should consider whether it should also apply to other telecoms providers. It also said that there was a danger regulation of IP interconnection would extend regulation in to competitive markets. BT argued that unnecessary regulation often produces unintended and adverse consequences such as the distortion of investment decisions and the disruption to existing commercial arrangements. In this way, it argued, our proposals risk damaging a competitive market that currently operates effectively.[746]

17.78 [✂] said that while the proposed approach set out in the July 2017 NMR Further Consultation was unlikely to be relevant in this review period, our proposal provided clear guidance as to how we would approach any abuse of dominance should it arise.[747]

---

[742] TalkTalk response to July 2017 NMR Further Consultation, paragraph 3.3.
[743] Verizon response to July 2017 NMR Further Consultation, paragraph 22.
[744] BT response to July 2017 NMR Further Consultation, paragraphs 6 and 13.
[745] Vodafone response to July 2017 NMR Further Consultation, pages 3-5; Verizon response to July 2017 NMR Further Consultation, paragraphs 25-27; Verizon response to July 2017 NMR Further Consultation, paragraph 29; Magrathea response to July 2017 NMR Further Consultation, page 1; TalkTalk response to July 2017 NMR Further Consultation, paragraph 3.10.
[746] BT response to July 2017 NMR Further Consultation, paragraphs 4-48.
[747] [✂]

Our regulation of BT's provision of IP interconnection

17.79 Some stakeholders said that Ofcom should regulate BT's provision of IP interconnection.[748] Vodafone and Magrathea argued that interconnection via TDM at the DLEs is inefficient.[749] We address whether TDM is efficient in the technology choice section above.

17.80 Verizon and Telecom2 were concerned about BT's freedom to discriminate between providers on IPEX pricing.[750] Telecom2 was concerned that absent regulation BT could increase prices for interconnection to IPEX and/or could fail to notify operators about changes to charges in a timely manner.[751] Stakeholders suggested a range of approaches to setting prices for IP interconnection. This included setting cost reflective prices, caps based on the costs that would be incurred where a telecoms provider interconnects to BT's DLEs using TDM, or setting charges that allow for the recovery of some conversion costs, but not conveyance from the IP point of interconnection to the DLE.[752] Verizon said that similar SMP conditions should apply to both TDM and IP interconnection when used to access the DLEs.[753] Vodafone argued while we could allow for the recovery of conversion costs, we should not allow BT to recover the cost of conveyance of traffic from the IPEX to the DLEs; first, because the regulatory cost model for WCT already reflects a limited number of IP interconnects and, second, because to do so would reward BT for its technology choices.[754]

17.81 [✂] considers that BT's IPEX platform is, "as regulated as the tandem layer", noting that the market definitions for WCT and WCO refer to the switch where the local loop for the called party is connected and are therefore technology neutral. It also said there may be a case to consider if BT has SMP for interconnection to a given IP switch to provide true parity with the TDM equivalent (i.e. an In Span Interconnect charge control for interconnection to IP switches).[755]

Transparency and timeframes of BT's migration to IP

17.82 Verizon is concerned that BT is carrying out its migration to IP with minimal transparency, without engaging with the rest of the industry.[756]

---

[748] TalkTalk response to July 2017 NMR Further Consultation, paragraph 3.12; Vodafone response to July 2017 NMR Further Consultation, page 5.
[749] Vodafone response to July 2017 NMR Further Consultation, page 4; Magrathea response to July 2017 NMR Further Consultation, page 1.
[750] Verizon response to July 2017 NMR Further Consultation, page 5; Telecom2 response to July 2017 NMR Further Consultation, pages 2-3.
[751] Telecom2 response to July 2017 NMR Further Consultation, page 2.
[752] Vodafone response to July 2017 NMR Further Consultation, page 5; TalkTalk response to July 2017 NMR Further Consultation, paragraph 3.12; Vodafone response to July 2017 NMR Further Consultation, page 5.
[753] Verizon response to July 2017 NMR Further Consultation, paragraphs 25-27; Verizon response to July 2017 NMR Further Consultation, paragraph 29.
[754] Vodafone response to July 2017 NMR Further Consultation, page 5.
[755] [✂]
[756] BT response to July 2017 NMR Further Consultation, paragraphs 42-43.

17.83 Magrathea considers that we should require BT to show a clearly defined path to migrate from TDM to IP interconnect to access regulated services in the future.[757]

17.84 TalkTalk considers that our proposed approach will delay switching to IP interconnection, may lead to slower development of products based around IP interconnection, will lead to regulatory gaming and an increased volume of disputes, consuming resources for Ofcom, BT and other telecoms providers.[758]

Our reasoning and decisions

17.85 We first address comments related to the need for specific regulation of IP interconnect provided by BT. We then explain our view on the comments related to the transparency and timing of BT's migration to IP, and the impact this may have on interconnection.

Requirement for regulation of IPEX

17.86 As explained above, based on our view that TDM continues to be an efficient choice of technology for now, the focus of our specific interconnection regulation on BT is to allow access to BT's DLEs, for the provision of regulated WCO and WCT services. We consider that this access requirement is currently sufficient to make the WCO and WCT remedies effective.

17.87 For as long as telecoms providers have the option of buying TDM interconnect circuits from BT, our interconnection requirement to provide access that is supported by the charge control on TDM interconnect circuits to BT's DLEs (see Section 19) will provide a degree of constraint on BT's commercial agreements to use IP to deliver traffic to those DLEs (for example, using IPEX).

17.88 However, as telecoms providers further migrate to IP, they may remove their TDM interconnects at BT's DLEs and, ultimately, retire their TDM investments. As explained in our consultations, and in line with the response from TalkTalk to the July 2017 NMR Further Consultation, following a provider's removal of its TDM equipment and circuits, it would be unlikely to be economic (and perhaps not possible) for that provider to reinstate it. The removal of other telecoms providers' equipment and circuits would further reduce the effectiveness of the constraint from TDM DLE interconnect circuits on the pricing of IP interconnection, to deliver traffic to BT's DLEs.

17.89 In the July 2017 NMR Further Consultation, we set out a clarification of our proposed remedies in the event that migration to IP during this review period results in telecoms providers no longer being in a position to use their own TDM interconnect circuits or non-BT transit providers to deliver traffic to BT's DLEs.

17.90 Our clarification set out a possible approach in the event that significant migration to IP takes place in the review period and alternative forms of accessing BT's DLEs are no longer

[757] Magrathea response to July 2017 NMR Further Consultation, page 2.
[758] TalkTalk response to July 2017 NMR Further Consultation, page 6.

available. However, as the responses from [✂] and BT highlighted, this level of migration is unlikely to materialise during the present review period.[759]

17.91 We agree with BT that there is currently a range of options available to other providers when interconnecting to BT. This is why we have decided not to introduce specific IP regulation at this stage, and we are continuing to focus our specific interconnection requirements on TDM.

17.92 However, we have an outstanding competition concern that, in the unlikely event that sufficient migration to IP does occur and there are no viable alternatives available to telecoms providers, BT may have the ability and incentive to price excessively for IP interconnection and thereby undermine the remedies imposed on it as a result of its SMP in the WCO and WCT markets.

17.93 Therefore, were future evidence to arise of BT exploiting its market power in WCT and WCO in the setting of terms and charges for IP interconnection, we would consider, in the context of those future circumstances, the extent to which existing regulation of interconnection with BT remained sufficient. Were it not sufficient, we would consider the extent to which the current network access obligations, in particular the WCO and WCT network access obligations, might require BT to provide some form of IP interconnection to ensure our WCO and WCT remedies are effective.

17.94 In the event of evidence of BT abusing its market power in relation to the use of IP interconnection during the market review period, we would also have other options available to us. These include starting the next market review early or using our Competition Act powers.

Interconnect circuits migration process, transparency and timeframe

17.95 Despite the migration to IP that is underway for some telecoms providers, BT has not yet carried out a migration of its TDM-based narrowband services to IP. It has indicated that it is likely to commence this migration during the review period[760], with an intention to fully migrate to IP from TDM by 2025.[761] This means that BT will be providing WCT and WCO services at its DLEs for the duration of the review period and we expect the majority of BT's WCT/WCO traffic will continue to terminate/originate on its DLEs.

17.96 We consider that an effective process for the migration of voice traffic from BT's TDM to IP interconnect circuits is more likely to be driven by the migration of BT's voice services from its current TDM-based network to IP, coupled with commercially negotiated IP interconnection agreements, rather than by regulatory intervention.

17.97 As BT's customers are migrated from TDM to IP, BT's obligations to provide access to WCO and WCT, as well as to negotiate interconnection under GC1, will be applicable to the

---

[759] Other respondents repeated their response to the 2016 NMR Consultation that we should apply the full suite of interconnection regulation to the use of IP to deliver traffic to BT's DLEs – for a discussion of these comments, see the above paragraphs on technology choice for interconnection.
[760] BT response to 3rd s.135 notice.
[761] BT response dated 27 June 2017 to the 14th NMR s.135 notice.

provision of IP interconnection. Since customers connected to the IP-based network will no longer make or receive calls supported by TDM at the DLE, our regulation of TDM at that point will no longer be relevant for such connections.

17.98 As such, we expect BT to make available fair and reasonable interconnection to its IP connected customers. There is significant advantage of this being via IP interconnect to avoid multiple conversions. We consider that in the first instance BT is best placed to discuss this with other providers, and expect it to do so in a timely manner to allow them sufficient time to plan their interconnection approach. We expect BT's migration to be under way at the next review, when we will revisit our approach to interconnection, including considering the requirement for regulation of interconnection to BT's IP network and services.

Interconnection and transit

17.99 A number of stakeholders expressed concern about the potential impact of IPEX on transit markets.

Stakeholder comments

17.100 The Federation of Communication Services (FCS), Magrathea and Vodafone expressed concerns regarding BT's IPEX being unregulated and its effect on competition in transit services.[762] Magrathea and Telecom2 noted that BT's transit prices have risen dramatically since deregulation.[763]

17.101 Magrathea, UKCTA and Verizon expressed concerns about BT's decision to treat IPEX as a transit layer within its network, which may lead some providers to interconnect at BT's IPEX on commercially negotiated terms.[764]

17.102 Magrathea considers that BT's IPEX is becoming a largely utilised number hosting platform for smaller telecoms providers, which means that there is an increasing number of other providers' ranges to which there is no regulated option to obtain the regulated FTR. It also considers that providers will pass the increased costs on to customers.[765] Verizon is concerned that BT is exerting pressure in other markets to "force" providers to migrate to IP (for example, in the transit markets).[766]

17.103 Magrathea considers that to interconnect via TDM at each DLE has become inefficient, thus very few networks have access to the WCO and WCT service at regulated rates, and BT transit is excessively highly priced, forcing networks to BT's IPEX. It suggested we should

[762] FCS response to 2016 NMR Consultation, page 1; Magrathea response to 2016 NMR Consultation, pages 1-2; Vodafone response to 2016 NMR Consultation, page 19.
[763] Magrathea response to 2016 NMR Consultation, pages 1-2; Telecom2 response to July 2017 NMR Further Consultation, page 2.
[764] Magrathea response to 2016 NMR Consultation, pages 1-2; UKCTA response to 2016 NMR Consultation, page 6; Verizon response to 2016 NMR Consultation, page 16; Verizon response to July 2017 NMR Further Consultation, pages 7-8.
[765] Magrathea response to 2016 NMR Consultation, pages 1-2.
[766] Verizon response to July 2017 NMR Further Consultation, page 4.

consider reducing the quantity of points of interconnect that make up an efficient network, thus making regulated pricing viable for more than just the largest networks.[767]

17.104 Magrathea and Verizon urged us to conduct a review of transit markets.[768]

Our reasoning and decisions

17.105 As discussed in Section 2, transit and conveyance services are not within the scope of the current review and we do not consider that it is appropriate to extend the scope of this review to include them at this time.

Remedies for the provision of interconnect circuits

17.106 Having considered the approach to technology choice and the cost of conversion between TDM and IP, we now consider what this means for the specific regulation of different telecoms providers.

17.107 As noted above, all telecoms providers have obligations related to interconnection under GC1, which states that:

> "The telecoms provider shall, to the extent requested by another telecoms provider in any part of the European Community, negotiate with that telecoms provider with a view to concluding an agreement (or an amendment to an existing agreement) for Interconnection within a reasonable period."[769]

17.108 We now consider whether this is sufficient for telecoms providers seeking to interconnect to BT, to KCOM and to other telecoms providers.

BT

17.109 BT, like other telecoms providers, is subject to GC1. However, we consider that GC1 alone is insufficient to ensure effective competition for calls to (and from) the BT TDM network at the DLEs. In relation to BT, an additional consideration to its SMP in WCO and WCT markets is the network effect deriving from its large customer base served by a very distributed set of terminating nodes. This means that telecoms providers interconnecting with BT for WCO and WCT services need to connect to more than 600 DLEs. Because of this, in the absence of appropriate *ex ante* regulation of interconnect circuits, BT would be able to exercise the SMP it holds in relation to WCT in particular (but also in relation to WCO), through the pricing and/or provision of interconnection to these services. BT would also be in a position to discriminate between telecoms providers by providing interconnect circuits to some telecoms providers on less attractive terms than others.

[767] Magrathea response to July 2017 NMR Further Consultation, page 2.
[768] Magrathea response to 2016 NMR Consultation, pages 1-2; Magrathea response to July 2017 NMR Further Consultation, page 2; Verizon response to July 2017 NMR Further Consultation, page 8.
[769] From 1 October 2018, General Condition 1 will be replaced by General Condition A1.

17.110 Therefore, we conclude that the circuits required to reach the terminating (and originating nodes) on the BT network should be regulated. Specifically, we consider that BT should be subject to regulatory obligations to ensure that it provides interconnect circuits on reasonable request and on terms that are not unduly discriminatory to allow other telecoms providers to effectively compete in downstream markets. We have decided that BT should be required specifically to provide interconnect circuits as follows:

- ISI, as this will allow larger telecoms providers to take advantage of their own infrastructure deployments to provide interconnection;
- IEC, as this will then allow those telecoms providers that have deployed ISIs to maximise their utilisation of these investments; and
- CSI, as this will allow telecoms providers that are not of sufficient size and network reach to viably deploy ISI to provide call services in downstream markets.
- IBC, to support the three circuit types described above.

17.111 As in the 2013 NMR, we do not specifically regulate VICs. VICs are priced by reference to physical interconnect services and we explain our decisions on regulating these services in Sections 18 and 19.

KCOM

17.112 In relation to WCT, we recognise that KCOM has a much smaller network of subscribers (as compared to BT and some other telecoms providers) and has far fewer terminating nodes than BT, even though it operates a TDM network. Furthermore, WCT is a two-way access service and so, in contrast to WCO, KCOM will purchase WCT from other telecoms providers. These features of the WCT market in relation to KCOM suggest it may be less likely to effectively leverage SMP in WCT into the provision of interconnect circuits (in contrast to BT). In light of this, we consider that it is unnecessary to impose obligations requiring KCOM to provide specific interconnect circuits as a result of its SMP in WCT.

17.113 However, due to the potential for KCOM to leverage its SMP in WCO in the Hull Area, we consider that KCOM should nevertheless be required to provide interconnect circuits. We have decided that KCOM should be required to provide ISI and IECs. We do not require it to provide CSI as it would not be reasonable to require KCOM to provide CSI circuits to telecoms providers' locations outside the Hull Area and, where a telecoms provider has a location within the Hull Area, we do not consider CSI would be required if ISI and IECs are available.[770]

[770] As explained for BT above, to the extent that KCOM migrates its network from TDM to IP, we do not propose specific IP interconnect obligations but would expect KCOM to positively engage with other telecoms providers, for the efficient migration of traffic to IP interconnect circuits.

Other telecoms providers

17.114 In theory, other telecoms providers could also seek to leverage their SMP in WCT into the provision of interconnection. However, where two telecoms providers are of similar scale and subject to identical regulatory obligations in the WCT market, and seek to purchase WCT from each other to support their downstream customers, we consider that there is less likely to be a competitive distortion in the provision of interconnection requiring further *ex ante* regulation.

17.115 Therefore, as in the 2013 NMR, we conclude that we do not need specific interconnect regulation beyond GC1 on telecoms providers other than BT and KCOM.

The remedies we are imposing on BT and KCOM

17.116 In Section 18, we explain the general remedies we are imposing on BT and KCOM. In Section 19, we describe our approach to price regulation in relation to TDM interconnect circuits provided by BT.

18. Remedies on BT and KCOM: interconnect circuits

18.1 In Section 17 we explain why we consider it necessary to regulate BT's and KCOM's provision of interconnect circuits. We consider that specific interconnection regulation is needed to address our competition concerns arising out of BT's SMP in the WCO and WCT markets in the UK excluding the Hull Area, and KCOM's SMP in the WCO market in the Hull Area. In this section, we therefore set out a number of specific obligations on BT and KCOM for their provision of TDM interconnect circuits.

18.2 In summary, we regulate BT's provision of interconnect circuits because the scale, extent and topology of its access network in the UK excluding the Hull Area is such that other telecoms providers need to interconnect to it so as to enable the completion of calls to and from their networks. We consider that KCOM's access network in the Hull Area is such that it has the incentive and ability to refuse access to (or price excessively for) the nodes connecting its customers' access lines over which it is required to provide WCO.

18.3 In this section, we set out our decision to impose certain remedies on BT and KCOM in relation to interconnect circuits.

Summary of decisions

18.4 We have decided to maintain a number of the current remedies imposed on BT's and KCOM's provision of interconnect circuits in the 2013 NMR. These include the requirement to provide network access on fair and reasonable terms.

18.5 We also impose a charge control on BT's provision of TDM interconnect circuits, as set out in Section 19.

18.6 We are reducing regulation on BT and KCOM in recognition of market developments and the maturity of the technology used. The changes we are making include:

- removing the new forms of access requests remedy on BT;
- removing the requirement not to unduly discriminate in relation to KCOM; and
- removing the requirement on BT and KCOM to notify technical information.

18.7 Table 18.1 summarises the remedies we are imposing on BT's and KCOM's provision of interconnect circuits.

Table 18.1: Summary of the remedies imposed on BT and KCOM

	2013 NMR remedies	Remedies imposed
BT	Charge control Provide network access on reasonable request Requests for new forms of network access Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Notify technical information Accounting separation Cost accounting Transparency as to quality of service	Charge control Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Accounting separation Cost accounting Transparency as to quality of service
KCOM	Provide network access on reasonable request Requirement not to unduly discriminate Publish a Reference Offer Notify changes to charges Notify technical information	Provide network access on reasonable request Publish a Reference Offer Notify changes to charges

18.8 We consider that these remedies address the competition concerns we have identified, are consistent with our statutory duties and satisfy the relevant legal tests. In reaching these decisions we have taken account of responses to the 2016 NMR Consultation and July 2017 NMR Further Consultation, recent developments in the relevant markets, the maturity of the technology and expected developments over the course of the review period.

18.9 In the remainder of this section, we set out our competition concerns and stakeholder responses to the consultations, before considering in turn the remedies that we are imposing on BT and KCOM. Finally, we discuss the remedies that we are removing.

Competition concerns and approach to regulation

18.10 Our competition concerns in relation to BT's and KCOM's provision of interconnect circuits are set out in Section 17. While GC1 requires telecoms providers to negotiate with a view to concluding an agreement for interconnection, we consider that GC1 alone is insufficient to ensure effective competition for calls to (and from) BT and, in relation to KCOM, calls from its access lines.

18.11 We consider that national and EU competition law remedies would be insufficient to address the competition problems we have identified. We therefore believe that it is appropriate to impose *ex ante* regulatory obligations on BT and KCOM in relation to their provision of interconnect circuits to address these competition concerns and we are imposing a number of remedies as set out below.

Stakeholder responses

18.12 We received few stakeholders responses to the 2016 NMR Consultation on the specifics of the proposed remedies for the provision of interconnection.

18.13 Verizon agreed with the remedies proposed for BT and KCOM.[771] [✂] also agreed with the suite of remedies proposed for BT, particularly the requirement to publish a Reference Offer.[772]

18.14 BT stated its agreement with paragraph 18.11 of the 2016 NMR Consultation that "only BT's TDM interconnect circuits provided at the DLEs should be regulated". BT then raised a concern that, as drafted, tandem level interconnection would be excluded from the charge control, but would remain subject to the other remedies we proposed.[773] We clarify that the other remedies we are imposing on the provision of interconnect circuits do not apply to the tandem layer. We do not consider that regulation of tandem level interconnect circuits is necessary to address BT's SMP in WCT and WCO.

18.15 With regard to transparency as to quality of service, Vodafone noted that BT's approach to fixing faults on interconnect circuits does not include any SLAs or SLGs, and suggested that repair performance is poor as a result.[774] Vodafone also stated that there are no formal SLAs on the management of voice interconnect faults and BT prioritises those service issues which are covered by an SLG. While Vodafone believes BT is right to do so, it suggests that where there are no formal SLAs or SLGs, service quality suffers as a consequence.[775] We address Vodafone's comments below.

18.16 KCOM agreed with our proposal to impose obligations on its provision of interconnect circuits as a result of its SMP in the WCO market in the Hull Area.[776]

Remedies on BT and KCOM

18.17 In this subsection, we set out the remedies we impose on BT and KCOM for their provision of interconnect circuits.

---

[771] Verizon response to 2016 NMR Consultation, paragraph 58.
[772] [✂]
[773] BT response to 2016 NMR Consultation, paragraph 5.27.
[774] Vodafone response to 2016 NMR, part 2, page 33, paragraph 4.41.
[775] Vodafone response to 2016 NMR, part 2, page 46.
[776] KCOM response to 2016 NMR Consultation, paragraph 2.14.

18.18 We set out each remedy in turn, explaining:

- our proposals as set out in the 2016 NMR Consultation;
- the aim and effect of the regulation we are setting;
- our decisions; and
- our consideration of the relevant legal tests for the regulation we are setting.

Requirement to provide network access on reasonable request

Proposed remedies

18.19 We proposed SMP obligations requiring BT and KCOM to meet reasonable requests to provide access to interconnect circuits and to provide such access on fair and reasonable terms and conditions.

18.20 We also proposed that BT and KCOM should be required to provide access to interconnect circuits on the basis of fair and reasonable charges, except where a charge control is in place.

Aim and effect of regulation

18.21 This remedy is necessary as BT and KCOM could have an incentive not to provide interconnect circuits on a fair and reasonable basis, which would reduce the effectiveness of the remedies we are imposing on BT and KCOM for WCO and, on BT for WCT. The ability of competing telecoms providers to request, and be provided with, interconnect circuits will facilitate competition in downstream markets by allowing other providers to offer competing narrowband services.

Our decisions

18.22 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide such network access as Ofcom may from time to time direct. These conditions may, pursuant to section 87(5), 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 in the conditions are complied with within periods and at times required by or under the conditions. Section 87(9) of the Act authorises the imposition of SMP conditions on the dominant provider which include: such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network or with the availability of relevant facilities; and such rules as they may make in relation to those matters about the recovery of costs and cost orientation. In each case, in setting such conditions Ofcom must be satisfied that the conditions about network access pricing set out in section 88 of the Act are also satisfied.

18.23 We have decided that it is appropriate to impose SMP obligations requiring BT and KCOM to meet reasonable requests to provide access to interconnect circuits and to provide such access on fair and reasonable terms and conditions.

18.24 This obligation also applies to charges, except where a charge control is in place (see Section 19 for our decision to charge control BT's TDM interconnect circuits at the DLE). This ensures that, for example, BT provides TDM interconnect circuits on fair and reasonable charges in the event that the charge control lapses before the completion of the next market review.

18.25 We do not consider that it would be appropriate to impose a charge control on KCOM's provision of interconnection circuits given the low volume of supply. Therefore, a fair and reasonable charges obligation will apply to KCOM's provision of interconnect circuits for the entirety of the market review period.

Legal tests

18.26 For the reasons set out below, we are satisfied that the network access conditions for BT's and KCOM's provision of interconnect circuits meet the relevant tests set out in the Act.

18.27 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as Ofcom may from time to time direct.

18.28 In setting these conditions, we have taken into account the factors set out in section 87(4) of the Act. When considering the imposition of such conditions in a particular case, we must take into account the following six factors set out in section 87(4):

- the technical and economic viability (including the viability of other network access products, whether provided by the dominant provider or another person), having regard to the state of market development, of installing and using facilities that would make the proposed network access unnecessary;
- the feasibility of the provision of network access;
- 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 (taking account of any public investment made);
- the need to secure effective competition (including, where it appears to Ofcom to be appropriate, economically efficient infrastructure-based competition) in the long-term;
- any rights to intellectual property that are relevant to the obligation; and
- the desirability of securing that electronic communications services are provided that are available throughout the Member States.

18.29 In reaching our decision that BT and KCOM should be subject to a requirement to provide network access on reasonable request, we have taken all of the above six factors into account. In particular, having considered the economic viability of building access networks to achieve ubiquitous coverage that would make the provision of interconnect circuits unnecessary, we consider that the SMP condition is required to secure effective long-term downstream competition.

18.30 In setting a fair and reasonable charges obligation, we are also required to ensure that each condition satisfies the tests set out in section 88 of the Act.

18.31 Section 88(1)(a) of the Act requires that Ofcom must not impose pricing conditions unless it appears from the market analysis carried out for the purpose of setting that condition that there is a relevant risk of adverse effects arising from price distortion. We have discussed above that we consider that, in the absence of price regulation requiring charges to be fair and reasonable, BT and KCOM may price excessively. Therefore, we consider that it appears to us from the market analysis that there is a relevant risk of adverse effects arising from price distortion in that BT and KCOM might fix or maintain some or all prices at excessively high levels so as to have adverse effects for end users of public electronic communication services.

18.32 Section 88(1)(b) of the Act requires that the pricing condition should be appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on consumers of public electronic communications services.

18.33 We consider that fair and reasonable charges will prevent BT (where the charge control does not apply) and KCOM from charging excessively. In this way, this condition supports the aim of promoting sustainable competition and consumer benefits.

18.34 We consider that the provision of access to interconnect circuits on fair and reasonable terms will promote sustainable competition by ensuring that there is no distortion or restriction of competition and that other telecoms providers can effectively compete downstream. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on end customers of the services.

18.35 We are also required, under Section 88(2) of the Act, to consider BT's and KCOM's investment in the matters to which the conditions we are proposing relate. We believe that fair and reasonable charges will allow costs to be taken into account and will also provide for a contribution to common cost recovery. Each condition is therefore an appropriate basis upon which to control BT's charges (in the event that the charge control lapses before the completion of the next market review) and KCOM's charges.

18.36 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

18.37 We have considered our duties under section 3 of the Act. We consider that each condition furthers the interests of consumers in relevant markets by the promotion of competition.

18.38 We also consider that each condition meets the Community requirements as set out in section 4 of the Act. Each condition promotes competition in relation to the provision of electronic communications networks and services, and encourages the provision of network access for the purpose of securing efficient and sustainable competition.

18.39 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. In relation to the provision of interconnect circuits, each condition is:

- objectively justifiable as its intention is to promote downstream and ultimately retail competition by ensuring third parties are able to acquire wholesale access on fair and reasonable terms where they are unable to replicate BT's and KCOM's networks;

- not unduly discriminatory given the scale, extent and topology of BT's network and its presence in the markets for WCT and WCO and, for KCOM, given its position as the dominant provider of WCO in the Hull Area;
- proportionate since without such an obligation BT and KCOM could refuse to provide access and this would mean other telecoms providers would not be able to effectively compete in relevant downstream markets, but does not require either to provide access where it is not technically feasible or reasonable; and
- transparent as it is clear the intention is to ensure that BT and KCOM provide access to their networks in order to facilitate competition.

18.40 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

Proposed remedies

18.41 We proposed a condition on BT not to unduly discriminate in relation to the provision of interconnect circuits.

18.42 We did not propose to apply the no undue discrimination obligation (or any other form of non-discrimination obligation) to KCOM's provision of interconnect circuits.

Aim and effect of regulation

18.43 We consider that, in order to meet our objective to promote efficient and sustainable competition at the wholesale level, a non-discrimination SMP condition on BT remains necessary.

18.44 BT could have the incentive (and would have the ability given its SMP and the scale and reach of its network) to discriminate selectively between competing providers by setting different terms and conditions for different telecoms providers for the provision of interconnect circuits. For example, where a telecoms provider was a strong competitor in certain conveyance and transit markets or other downstream markets reliant on WCT (and/or WCO), BT could have an incentive to price higher (or hinder the connection or repair of circuits) relative to other telecoms providers that posed less of a competitive threat. This could have the effect of restricting or distorting competition in those downstream markets.

Our decisions

18.45 Section 87(6)(a) of the Act authorises the setting of an SMP services condition requiring the dominant provider not to unduly discriminate against particular persons, or against a particular description of persons, in relation to matters connected with the provision of network access.

18.46 We have decided that it is appropriate to impose a condition on BT not to unduly discriminate in relation to the provision of interconnect circuits.

18.47 We have decided not to apply a no undue discrimination obligation (or any other form of non-discrimination obligation) to KCOM's provision of interconnect circuits. In Section 11 we set out our decision not to apply a no undue discrimination remedy to KCOM in the WCO market and, because the regulation of interconnect circuits is specifically designed to support this remedy in the Hull Area, we have not imposed an obligation of no undue discrimination in relation to KCOM's interconnect circuits.

Legal tests

18.48 For the reasons set out below, we are satisfied that the condition for BT in respect of the provision of interconnect circuits meets the relevant tests set out in the Act.

18.49 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

18.50 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of downstream competition.

18.51 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. The condition encourages the provision of network access and service interoperability for the purpose of securing efficient and sustainable competition in the downstream markets for access and calls by ensuring that BT does not unfairly favour particular third parties and therefore distort competition.

18.52 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- objectively justifiable as it ensures that competitors, and hence consumers, are not disadvantaged by BT discriminating between competing providers;
- not unduly discriminatory in that it reflects the circumstances of BT with regard to the scale, extent and topology of its access network, and its level of vertical integration;
- proportionate in that it is the least restrictive means of ensuring that BT does not discriminate in providing network access in a manner which would distort competition at the downstream level; and
- transparent as it is clear that the intention is to prevent undue discrimination.

18.53 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Transparency

18.54 The requirements for the transparency of charges, terms and conditions in markets in which one operator is dominant are complementary remedies to ensure that third party telecoms providers are able to make effective use of the dominant provider's network access.

18.55 BT and KCOM are currently subject to three transparency obligations in respect of their provision of interconnect circuits. They are:

- a requirement to publish a Reference Offer;
- a requirement to notify changes to charges in advance; and
- a requirement to notify technical information.

18.56 In the following sub-sections, we discuss the requirements to publish a Reference Offer and to notify changes to charges. As we explain at the end of this section, we are not imposing a requirement on BT or KCOM to notify technical information.

Publish a Reference Offer

Proposed remedies

18.57 We proposed to retain the condition on BT and KCOM to publish a Reference Offer for their provision of interconnect circuits.

18.58 The proposed requirement included publishing terms and conditions for provisioning, conditions relating to maintenance and quality of service (SLAs and SLGs), and technical information.

Aim and effect of regulation

18.59 The main reason for requiring the publication of a Reference Offer is to give visibility to the terms and conditions on which other providers can purchase interconnect circuits, which complements the general network access remedy.

Our decisions

18.60 Section 87(6)(c) of the Act 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. 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.

18.61 We have decided that it is appropriate to retain the condition on BT and KCOM to publish a Reference Offer for their provision of interconnect circuits.

18.62 As we are giving KCOM more flexibility on terms and conditions in relation to its provision of interconnect circuits by removing the no undue discrimination remedy, we consider that the requirement to publish a Reference Offer should apply to KCOM's standard contract in this market. While we acknowledge that some telecoms providers may negotiate terms and conditions that differ from KCOM's standard contract for the same services, we expect that others may continue to use the standard terms and conditions, and therefore consider it is important for transparency for changes to KCOM's standard contract to be published.

18.63 We consider it appropriate for the published Reference Offer to include:

- A clear description of the services on offer.
- Terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The Reference Offer should provide sufficient information to enable providers to make technical and commercial judgements such that there is no material adverse effect on competition.
- Conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the Reference Offer, that provides for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion.
- Information relating to technical interfaces and points of interconnection. Such information should ensure that providers are able to make full and effective use of all the services provided.
- Terms and conditions on which BT and KCOM supply their services.

Legal tests

18.64 For the reasons set out below, we are satisfied that the Reference Offer conditions for BT and KCOM in respect of the provision of interconnect circuits meet the relevant tests set out in the Act.

18.65 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

18.66 We have considered our duties under section 3 of the Act. We consider that each condition furthers the interests of consumers in relevant markets by the promotion of competition.

18.67 We also consider that each condition meets the Community requirements as set out in section 4 of the Act. In particular, the conditions encourage the provision of network access and service interoperability for the purpose in particular of securing efficient and sustainable competition.

18.68 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. In relation to the provision of interconnect circuits, each condition is:

- Objectively justifiable in that it requires that terms and conditions are published, allowing competing providers to ensure they are receiving offers that are provided on fair and reasonable terms and, as concerns BT, are not unduly discriminatory. This will encourage competition to the benefit of consumers.
- Not unduly discriminatory as, for BT, it reflects the scale, extent and topology of its network and its presence in the markets for WCT and WCO. It is not unduly discriminatory on KCOM, given its position as the dominant provider of WCO in the Hull Area.
- Proportionate in that BT and KCOM are only required to provide the information necessary to ensure there is no material adverse effect on competition. This

information allows telecoms providers to make decisions about which interconnect circuits to purchase.

- Transparent, in that the condition is clear in its intention that BT and KCOM publish details of their offering for interconnect circuits.

18.69 Article 9(4) of the Access Directive requires that, where network access obligations are imposed, NRAs should ensure the publication of a Reference Offer containing at least the elements set out in Annex II to that Directive. We are satisfied that this requirement is met.

18.70 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Requirement to notify changes to charges

Proposed remedies

18.71 We proposed that BT and KCOM should be subject to an obligation to notify changes to standard charges for the provision of interconnect circuits. We proposed to maintain the current 56-day notice period.

Aim and effect of regulation

18.72 Notification of changes to charges at the wholesale level is important to give advance notice of changes to charges for competing providers who purchase wholesale access services. This ensures that providers have sufficient time to plan for such changes, as they may want to restructure the prices of their downstream offerings in response to changes in charges at the wholesale level. Advance notice of changes to charges therefore helps to ensure stability in markets, without which incentives to invest might be undermined and market entry made less likely, resulting in a detrimental effect on downstream competition.

Our decisions

18.73 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. 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.

18.74 We consider that it is appropriate for BT and KCOM to be subject to an obligation to notify (by means of a published notice) changes to charges for the provision of interconnect circuits. We continue to consider a 56-day period appropriate.

18.75 As concerns KCOM, as we are giving it more pricing flexibility relation to the provision of interconnect circuits by removing the no undue discrimination obligation, the requirement to notify changes to charges would only apply to KCOM’s published standard charges for interconnect circuits. While we acknowledge that some telecoms providers may negotiate charges that differ from KCOM's standard charges for the same services, we expect that others may continue to rely on the standard charges and therefore consider it is important for transparency for changes to KCOM's standard charges to be notified in advance.

18.76 We consider that the notice should include:

- a description of the access service;
- the location of terms and conditions in the Reference Offer;
- the effective date or period from which the changes will have effect; and
- the current and proposed charge.

Legal tests

18.77 For the reasons set out below, we are satisfied that the SMP conditions for BT and KCOM meet the relevant tests set out in the Act.

18.78 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

18.79 We have considered our statutory obligations and the Community requirements under section 3 of the Act. In particular, the obligations would facilitate service interoperability. The obligations would promote the interests of purchasers of interconnect circuits by enabling them to adjust their downstream offerings in competition with BT and KCOM, in response to changes in their charges. Finally, with regard to BT, the obligation would make it easier to monitor any instances of discrimination.

18.80 We also consider that each condition meets the Community requirements set out in section 4 of the Act. In particular, each condition would promote competition for the maximum benefits of consumers by ensuring that providers have the necessary information to allow them to make informed investment and entry decisions.

18.81 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. In relation to the provision of interconnect circuits, each condition is:

- Objectively justifiable, because visibility of BT's and KCOM's charges is necessary to enable competitors to set prices for their services that are based on purchasing the regulated inputs. It also allows Ofcom and other telecoms providers to monitor charges for possible anti-competitive behaviour.
- Not unduly discriminatory as we impose it on BT and KCOM only, for which we consider the provision of interconnect circuits is required to allow remedies imposed in the WCO and (for BT only) WCT markets to function effectively.
- Proportionate, in that only information that other network providers would need (in order to adjust for any changes) would have to be notified. The notification periods are intended to be the minimum required to allow changes to be properly reflected in downstream offers.
- Transparent as it is clear the intention is to ensure that BT and KCOM notify those telecoms providers that purchase interconnect circuits of changes to charges.

18.82 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Approach to regulatory financial reporting

18.83 In the following sub-sections, we explain why we have decided to impose accounting separation and cost accounting obligations on BT for the provision of interconnect circuits. We have decided to implement these obligations by way of a single SMP Condition (SMP Condition 10). We do not require accounting separation and cost accounting obligations on KCOM for the provision of interconnect circuits.

18.84 In Section 8 we set out in detail our approach to regulatory financial reporting. In Section 20 we set out our detailed reporting requirements and the directions to implement them.

Accounting separation: BT

Proposed remedies

18.85 We proposed to maintain an accounting separation obligation on BT for the provision of interconnect circuits.

Aim and effect of regulation

18.86 As set out in Section 8, the accounting separation obligation requires BT to report financial information for individual markets and services, providing a greater level of detail than that derived from statutory accounts. The accounting separation obligation also requires BT to report separately for external sales, which allows Ofcom and other stakeholders to monitor the activities of BT to ensure that it does not discriminate unduly. In practice these obligations require BT to produce financial statements that reflect the performance of the regulated wholesale markets as though they were separate businesses.

Our decisions

18.87 Under sections 87(7) and 87(8), the dominant provider may be required to maintain a separation for accounting purposes between such different matters relating to network access or the availability of relevant facilities.

18.88 We consider it appropriate to retain an accounting separation obligation on BT in relation to its provision of interconnect circuits. We consider that this obligation is necessary to monitor the overall impact and effectiveness of the remedies proposed in Table 18.1 and, in particular, to monitor BT’s activities with regard to our non-discrimination obligations. The obligation is also necessary to support transparency by providing a greater detail of information on the relevant markets than that derived from BT’s statutory financial statements and give visibility, and thus reassurance, to stakeholders that BT has complied with its SMP conditions and allow them to contribute to the regulatory regime.

18.89 We have therefore decided that accounting separation requirements should apply to BT for the provision of interconnect circuits.

18.90 In respect of the specific form of the accounting separation requirements we impose for BT in in relation to interconnect circuits, we are imposing the form of condition set out in the 2014 Regulatory Financial Reporting Statement but modified to remove the reference to the Regulatory Accounting Guidelines.[777] This form of condition implements our policy decisions on regulatory financial reporting set out in that statement.[778] The purpose of the condition is to give Ofcom a greater role in the way that BT prepares its regulatory financial statements[779], improve the presentation of the published regulatory financial statements and supporting documentation[780], and ensure that Ofcom and other stakeholders have the information they need.

Legal tests

18.91 For the reasons set out below, we are satisfied that the condition for BT in respect of the provision of interconnect circuits meets the relevant tests set out in the Act.

18.92 We consider that each condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

18.93 We have considered our duties under section 3 of the Act. The imposition of an accounting separation obligation promotes competition in relation to the provision of electronic communications networks and services. This is because the obligation would ensure that other obligations designed to curb potentially damaging leverage of market power, can be effectively monitored and enforced.

18.94 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. In particular, we believe section 4(8) is met, as the obligation has the purpose, in particular, of securing efficient and sustainable competition in the markets for electronic communications networks and services in that it helps to ensure that the dominant provider complies with other obligations.

18.95 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

---

[777] As explained in the 2016 BCMR Statement, we no longer consider that it would be useful to establish high level guidelines and accounting rules in the Regulatory Accounting Guidelines by way of direction. Where we find concerns about BT's detailed application of cost attribution rules, in line with what we have done in the 2016 BCMR we will direct BT as to the specific reporting requirements consistent with the Regulatory Accounting Principles arising from each regulatory decision. We therefore proposed amending the conditions to reflect our decision not to issue the Regulatory Accounting Guidelines. The conditions therefore require BT to prepare the RFS in accordance with the SMP conditions, the Regulatory Accounting Principles and the Accounting Methodology Documents.

[778] Ofcom, 2014. *Regulatory Financial Reporting Statement,* page 1. https://www.ofcom.org.uk/__data/assets/pdf_file/0025/78460/financial-reporting-statement-may14.pdf.

[779] This included establishing new Regulatory Accounting Principles (including a requirement for consistency with regulatory decisions) and a change control process whereby BT is required to notify us about proposed changes to its regulatory accounting methodology.

[780] This included a requirement on BT to publish annual reconciliation reports that show the impact of material changes and errors

- objectively justifiable, as it relates to the need to ensure competition develops fairly to the benefit of consumers;
- not unduly discriminatory as we are imposing a number of remedies on BT as a consequence of its unique position in WCT and WCO (reinforced by the scale and topology of its network);
- proportionate, in that it is the least onerous obligation necessary as a mechanism to allow us and third parties to monitor the impact and effectiveness of the remedies imposed and monitor potentially discriminatory behaviour by BT; and
- transparent, in that it is clear that the intention is to monitor the impact and effectiveness of the remedies imposed, and the particular accounting separation requirements of BT are clearly documented within the SMP condition.

18.96 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Cost accounting: BT

Proposed remedies

18.97 We proposed to maintain cost accounting obligations on BT for the provision of interconnect circuits.

Aim and effect of regulation

18.98 As set out in Section 8, cost accounting obligations require the dominant provider to maintain a cost accounting system to capture the costs, revenues, assets and liabilities associated with the provision of services and to attribute them in a fair, objective and transparent manner to individual services in order that the costs of individual markets and services may be determined. The cost accounting obligation is an important means of ensuring that:

- Ofcom and stakeholders can have confidence in the financial information prepared and provided by BT on individual markets and services since the attribution processes and rules supporting that financial information are fair, objective and transparent. Where we do not consider that the attribution process and rules are fair and objective, transparency (via publication of the processes and rules followed by BT) allows us to effectively challenge them. In turn, this helps assess the impact and effectiveness of the charge control.
- Revenues and costs are attributed to individual markets and services in a consistent manner. This mitigates the risk of double recovery of costs or that costs might be unfairly loaded onto particular products or markets.
- BT records all information necessary for the purposes listed above at the time that relevant transactions occur, on an ongoing basis. Absent such a requirement, there is a strong possibility that the necessary information would not be available when it is required and in the necessary form and manner.

Our decisions

18.99 Section 87(9) to (11) (subject to section 88) of the Act authorises Ofcom to impose appropriate cost accounting obligations on dominant providers, in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities. We impose cost accounting requirements on BT with regard to its provision of interconnect circuits. We consider that this obligation is necessary to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent.

18.100 In respect of the specific form of the cost accounting requirements we are setting for BT in these markets, we impose the form of condition set out in the 2014 Regulatory Financial Reporting Statement but modified to remove the reference to the Regulatory Accounting Guidelines. This form of condition implements our policy decisions on regulatory financial reporting set out in that statement. The purpose of the condition is to: give Ofcom a greater role in the way that BT prepares its regulatory financial statements; improve the presentation of the published regulatory financial statements and supporting documentation; and ensure that Ofcom and other stakeholders have the information they need.

Legal tests

18.101 For the reasons set out below, we are satisfied that the condition for BT in respect of the provision of interconnect circuits meets the relevant tests set out in the Act. As explained above, sections 87(9), (10) and (11) authorise the SMP condition we impose.

18.102 Section 87(9)(c) authorises conditions imposing such rules as we may make for the purposes of matters connected with the provision of network access to the relevant network, or with the availability of relevant facilities about the use of cost accounting systems. Such conditions include conditions requiring the application of presumptions in the fixing and determination of costs and charges for the purposes of the price controls, rules and obligations imposed by virtue of that subsection (section 87(10)). Where such conditions are imposed, section 87(11) imposes a duty on us to set an SMP condition which imposes an obligation: to make arrangements for a description to be made available to the public of the cost accounting system used in pursuance of that condition; and to include in that description details of:

- the main categories under which costs are accounted for; and
- the rules applied for the purposes of that system with respect to the allocation of costs.

18.103 In setting such conditions, we must be satisfied that the conditions about network access pricing set out in section 88 are also satisfied.

18.104 We impose a charge control on BT’s provision of interconnect circuits. We consider our decision meets the conditions in section 88, in that the remedy would address the risks of excessive pricing, and promote efficiency and sustainable competition, to the benefit of consumers, and would not undermine investment by BT. We also consider that imposing a cost accounting obligation is necessary for our charge control obligation to work.

18.105 We consider that the condition fulfils our duty under section 87(11) in that the cost accounting obligation requires the publication of a description of the cost accounting system used and the main categories of cost and the cost allocation rules applied.

18.106 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

18.107 We have considered our duties under section 3 of the Act. In particular, we consider that the imposition of the cost accounting obligations is justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services. This is because the obligation complements the accounting separation remedy (by ensuring the costs attributed to interconnect circuits are fair, objective and transparent) and will thereby ensure that other obligations designed to curb potentially damaging leverage of market power can be effectively monitored and enforced.

18.108 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. In particular, the condition would promote competition in relation to the provision of electronic communications networks, and encourage the provision of network access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services. Also, the cost accounting obligation can help monitor the impact and effectiveness of the charge control by ensuring that costs attributed to interconnect circuits are fair, objective and transparent.

18.109 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition is:

- objectively justifiable, in that it is necessary to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent. This helps ensure the appropriate maintenance and provision of accounts in order to monitor BT's activities with regard to the pricing remedies we are imposing;
- not unduly discriminatory as BT holds a unique position in WCT and WCO (reinforced by the scale and topology of its network);
- proportionate, in that the obligation is required in order to ensure that the processes and rules used by BT to attribute revenues and costs to individual markets and services are fair, objective and transparent; and
- transparent, in that it is clear in its intention to ensure the appropriate maintenance and provision of accounts for the purposes set out above and the particular cost accounting requirements of BT are clearly documented.

18.110 For the reasons set out above, we consider that each condition is appropriate to address the competition concerns identified in the corresponding market, in line with section 87(1) of the Act.

Transparency as to quality of service: BT

Proposed remedies

18.111 We proposed that BT should continue to provide transparency as to quality of service (QoS) for its provision of interconnect circuits and to publish such QoS information as we may direct.

Aim and effect of regulation

18.112 The intention of the transparency of QoS remedy is to monitor the effectiveness of the access remedy and whether potential undue discrimination is occurring by requiring the publication of data regarding the delivery of wholesale services by BT to other third party telecoms providers. In relation to interconnect circuits, BT may seek to gain competitive advantage in downstream markets through extending provisioning or fault repair times for telecoms providers that compete with it in these downstream markets.

Our decisions

18.113 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 purposes of securing transparency.

18.114 We consider it appropriate to retain a transparency of QoS remedy on BT for its provision of interconnect circuits. We consider that service provision and fault repair are critical areas in which to maintain transparency of BT's service levels. These areas remain key to monitoring the effectiveness of the access and, for WCT, no undue discrimination remedies which we are imposing. This view is supported by Vodafone's response to the 2016 NMR Consultation which highlighted the need for continued scrutiny of BT's interconnection fault repairs.

18.115 We are imposing a requirement on BT, through an SMP condition and associated Direction, to publish data on specified KPIs in relation to the provision of interconnect circuits to all telecoms providers (as an aggregate figure). These are summarised in Table 18.2 below:

Table 18.2: BT's non-discrimination KPIs in relation to interconnect circuits[781]

KPIs to be reported by BT
Percentage of Completed Orders that were completed by the Contract Delivery Date during the Reporting Period.
Average time (in hours) during the Reporting Period for BT to achieve Restored Service after a Fault has been registered.
Total number of Committed Orders that became Completed Orders during the Reporting Period.

[781] See Annex 2 for definitions of these terms.

KPIs to be reported by BT
Number of faults where BT subsequently achieves Restored Service during the Reporting Period.
Percentage of Data Management Amendments for new numbers that become Completed Orders during the Reporting Period.
Total number of Data Management Amendments for new number ranges that became Completed Orders during the Reporting Period.

18.116 We are maintaining the existing quarterly KPIs for interconnect circuits as we believe they provide a useful level of transparency without being overly burdensome on BT as they are only required quarterly.

Legal tests

18.117 For the reasons set out below, we are satisfied that the condition, including the provision maintaining the KPI direction for BT, in respect of the provision of interconnect circuits meets the relevant tests set out in the Act.

18.118 We consider that the condition meets our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

18.119 We consider that, in line with section 3 of the Act, the condition furthers the interests of consumers through the promotion of competition by ensuring that the network access a telecoms provider receives from BT allows them to provide services that compete with those provided by BT in downstream markets.

18.120 We have also considered the Community requirements in section 4 of the Act and believe that the condition promotes competition and encourages the provision of network access for the purpose in particular of securing efficient and sustainable competition by ensuring transparency through giving providers visibility of the quality of service that BT provides.

18.121 Section 47(2) requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The condition (including a provision continuing the KPI Directions on BT's provision of interconnect circuits) is:

- objectively justifiable, because a requirement to publish specific KPIs allows Ofcom and third parties to monitor if there is any undue discrimination in the quality of service provided by BT;
- not unduly discriminatory, in that it is imposed on BT and no other operator holds the same position as BT in relation to WCT and WCO in the UK excluding the Hull Area;
- proportionate, in that it only requires BT to publish information as directed by Ofcom, in the event we consider such information is required to monitor undue discrimination and, with regard KPIs, we are maintaining the existing KPIs which are only required to be reported on quarterly; and

- transparent, in that it is clear in its intention that BT is required to publish quality of service information.

18.122 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Remedies on BT and KCOM that we are removing

Requests for new forms of network access: BT

18.123 In previous market reviews, we imposed on BT a process for requests for new forms of network access in relation to the provision of interconnect circuits. In the 2016 NMR Consultation, we proposed to remove this requirement.

18.124 We have decided to remove this remedy in recognition of the maturity of BT's TDM network and the provision of calls over it.[782]

18.125 The remedy in relation to new forms of network access is intended to support access seekers and ensure that there is a reasonable and transparent process for assessing requests from them. BT's TDM network is mature and well established, so the case for requiring BT to set out a process for new forms of TDM network requests is weaker than at the time of previous market reviews. Therefore, we no longer consider it necessary to prescribe the process that BT should follow in responding to such requests. In the event that an access seeker does require a new form of access, the access seeker will still be able to request this under the general access remedy and BT will be required to provide access if the request is reasonable.

Notify technical information: BT and KCOM

18.126 In previous market reviews, we imposed an obligation on BT and KCOM to notify technical information in relation to their provision of interconnect circuits. In the 2016 NMR Consultation, we proposed to remove this requirement.

18.127 The notification of technical information remedy was designed to ensure that competing providers had sufficient time to respond to technical changes that may affect them. We have decided to remove this remedy as we do not think it is as necessary given the maturity of BT's and KCOM's TDM networks and the provision of calls over them.

No undue discrimination: KCOM

18.128 In the 2016 NMR Consultation, we proposed to remove the no undue discrimination requirement on KCOM.

[782] It should be noted that, if BT intends to migrate its wholesale narrowband services to IP, we would expect it to engage with industry about replacement products in sufficient time. This is likely to be a much longer and more significant process than envisaged under previous, TDM-specific, obligations.

18.129 As explained in Section 11, we are lifting the no undue discrimination remedy in relation to WCO for KCOM. Because the regulation of interconnect circuits is specifically designed to support this remedy in the Hull Area, we have decided not to impose an obligation of no undue discrimination in relation to KCOM.[783] We consider that the fair and reasonable network access obligation, coupled with the transparency obligations described earlier, will provide sufficient protection to effective competition in WCO in the Hull Area.

[783] With regard to BT, the regulation of interconnect circuits is also designed to support the effectiveness of the no undue discrimination remedy in the WCT market.

19. Price regulation of BT's interconnect circuits

19.1 As explained in Section 17, we consider that it is necessary to price regulate BT's TDM interconnect circuits. This is in addition to the obligations to provide interconnection contained in General Condition 1[784] and the general remedies on BT and KCOM explained in Section 18.

19.2 In this section we set out our decisions with respect to price regulation of BT's TDM interconnect circuits at terminating and originating switches, i.e. digital local exchanges (DLEs), in the United Kingdom excluding the Hull Area.

Summary of decisions

19.3 We have decided to implement a charge control in relation to BT's TDM interconnect circuits at the DLE using a LRIC+ cost standard. Specifically, we have decided on:

- a cap on the interconnect services basket (ISB)[785] at CPI+0% annual change in the basket average price; and
- sub-caps on individual ISB services at +10% on top of the ISB cap (i.e. CPI+10%).

19.4 We have decided not to implement charge controls on any other telecoms providers' interconnect circuits, including those of KCOM.[786]

19.5 The rest of this section is set out as follows:

- we first provide background information on current regulation as set out in the 2013 NMR, explain developments since the 2013 NMR, and summarise stakeholder responses to the 2016 NMR Consultation; and
- we then recap the price regulation options set out in the consultation and present our analysis and decisions including the cost standard, the level of charges and other charge control details, and the relevant legal tests.

Introduction

2013 NMR

19.6 In the 2013 NMR, we imposed a charge control for the ISB on BT's external interconnect circuits using a LRIC+ cost standard. We recognised that the majority of interconnect circuits carry both WCO and WCT traffic and in the remedies for WCO considered that it

[784] From 1 October 2018, General Condition 1 will be replaced by General Condition A1.
[785] The ISB includes three types of interconnect circuits that BT provides: ISI, IEC and CSI, plus IBCs which are required for any form of TDM interconnect. See Section 17 for further details. The full list of individual services in the ISB is included in the Annex to Condition 5D, as set out in Annex 9 of this Consultation.
[786] See Section 11 for the remedies on KCOM.

was reasonable for charges for these circuits to contribute to common costs, including those no longer recovered from FTRs at LRIC.

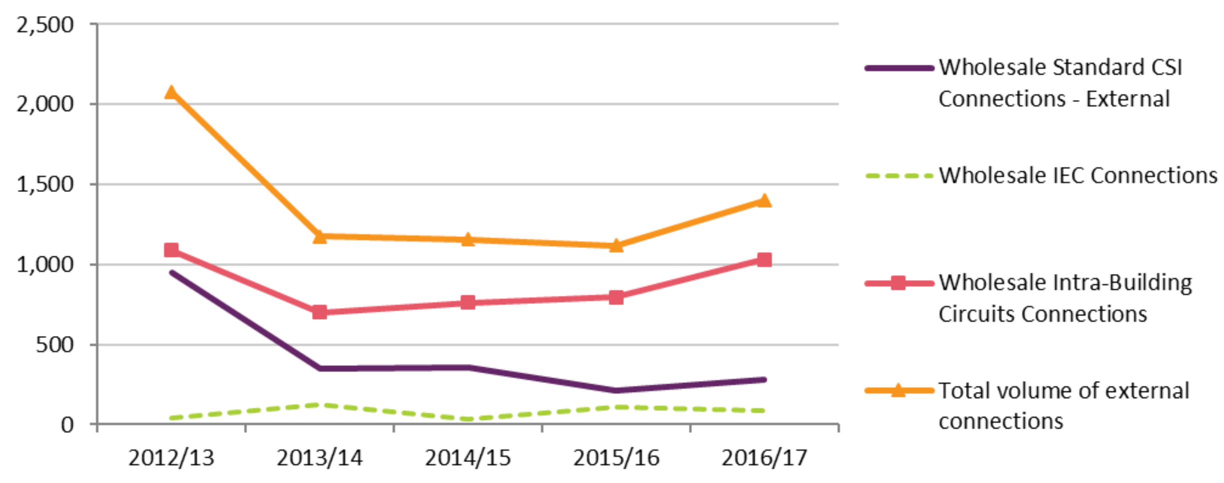
19.7 Given the relatively low level of ISB revenue and the declining volumes of interconnection services, we considered that it would not be appropriate to build a new ISB cost model. We noted that BT was earning returns above WACC on the ISB, which we considered was primarily due to the assets used to provide interconnect services reaching the end of their lives and the associated decline in mean capital employed. Therefore, in 2013, we decided to charge control the TDM interconnect services provided by BT in a basket at RPI-RPI (i.e. restricting any overall price increase to zero).[787]

19.8 Additionally, we implemented a 10% sub-cap on each individual charge in the ISB, as this would provide a safeguard to customers from sudden price shocks on individual charges.[788]

Developments since the 2013 NMR

19.9 Since the 2013 NMR Statement publication we have continued to observe a general decline in the volume of TDM interconnect circuits supplied by BT at all points of interconnection (i.e. not just at the DLE). Figures 19.1 and 19.2 below show the external connection and total rental volumes from 2012/13 to 2016/17. Since 2012/13, the total volumes of external connections and of rentals have fallen by around one-third. However, most of the reduction in external connection volumes was between 2012/13 and 2013/14, remaining largely stable since. For total rentals (Figure 19.2), the largest decline was between 2013/14 and 2014/15, implying that more circuits were ceased than connected over that period.

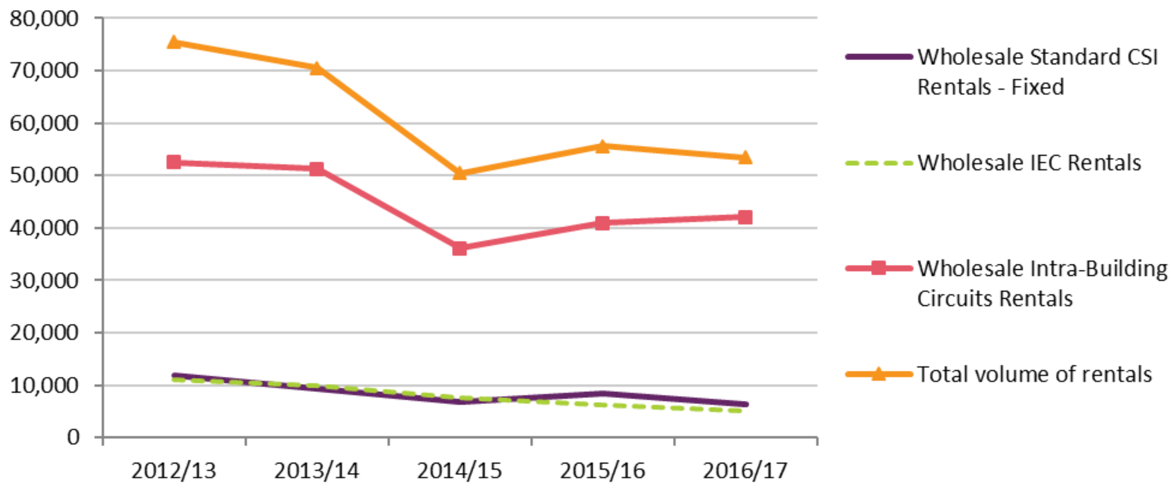
Figure 19.1: Interconnect services external connections (number of circuits)



Source: 2014 BT RFS for financial year 2012/13; 2015 BT RFS for financial year 2013/14; 2016 BT RFS for financial year 2014/15; and 2017 BT RFS for financial years 2015/16 and 2016/17.

[787] RPI refers to the Retail Prices Index.
[788] Ofcom, 2013. *Review of the fixed narrowband services markets – Statement on the proposed markets, market power determinations and remedies,* paragraphs A6.242-A6.248. https://www.ofcom.org.uk/__data/assets/pdf_file/0014/50720/final_statement.pdf.

Figure 19.2: Interconnect services total rentals (number of circuits)



Source: 2014 BT RFS for financial year 2012/13; 2015 BT RFS for financial year 2013/14; 2016 BT RFS for financial year 2014/15; and 2017 BT RFS for financial years 2015/16 and 2016/17.

19.10 As shown in Table 19.3 below, this decline in service volumes has led to BT's revenue from interconnect circuits, operating costs, return, mean capital employed (MCE), and return on MCE (ROCE) falling in absolute terms. Over the forthcoming review period, we expect circuit volumes to decline further as fixed voice traffic on BT's TDM network is expected to decline.

Table 19.3: BT interconnect revenues, operating costs, return, MCE and ROCE

	2012/13	2013/14	2014/15	2015/16	2016/17
Total revenue	£43m	£38m	£36m	£32m	£26m
Total CCA operating costs	£27m	£26m	£25m	£24m	£22m
Return	£16m	£12m	£11m	£8m	£4m
MCE	£51m	£35m	£36m	£27m	£25m
ROCE	30.4%	35.0%	30.9%	30.4%	14.8%

Source: 2012/13 data from BT's 2014 RFS; 2013/14 data from BT's 2015 RFS; 2014/15 data from BT's response to the 13th NMR s.135 notice dated 17 March, 2015/16 and 2016/17 data from BT's 2017 RFS.

19.11 However, the data in Table 19.3 above overstates the relevant interconnect revenues and MCE because they include:

- circuits at both DLEs and tandem switches (whereas the ISB regulation only applies to interconnect circuits provided at BT's DLEs); and

- internal circuits as well as external ones prior to 2015/16 (despite the charge control only applying to and being measured against external circuits).[789]

19.12 Our view is that only BT's TDM interconnect circuits provided at the DLEs should be regulated because the requirement arises from our regulation of BT's SMP in WCO and WCT.

19.13 BT has estimated the external DLE interconnect circuit revenues, fully allocated costs (FAC) and MCE for 2014/15 to 2016/17 as shown in Table 19.4 below. It has broken down revenues, costs and MCE by exchange type by [✂].[790]

Table 19.4: BT's estimates for external revenue, costs and MCE for interconnect circuits at the DLEs

	2014/15	2015/16	2016/17
External revenue	£[✂]m £5m - £10m	£[✂]m £5m - £10m	£[✂]m £5m - £10m
FAC	£[✂]m £5m - £10m	£[✂]m £5m - £10m	£[✂]m £5m - £10m
MCE	£[✂]m £10m - £15m	£[✂]m £5m - £10m	£[✂]m £5m - £10m

Source: 2014/15 and 2015/16 data in BT's response to the 13th s.135 Notice (17 March 2017) - Restated for Corrected Volumes; and 2016/17 data in BT's response to the 16th s.135 Notice (3 August 2017).
Note: FAC includes all operating costs and a return on mean capital employed.

19.14 Comparison of the figures in Table 19.3 to those in Table 19.4 shows that only a relatively small proportion of the total revenues and MCE is related to external interconnect at the DLEs. In particular, the external revenues (DLE only) for 2015/16 and 2016/17 in Table 19.4 represent just under [✂]% of the corresponding total revenue in Table 19.3, while in the case of the mean capital employed the proportion is around [✂]%.

19.15 BT's estimates set out in Table 19.4 suggest that the external revenue at the DLE has been slightly lower than FAC (including a return on capital). However, we note that there is uncertainty around these figures given that BT has had to estimate them (see above).

[789] We do not think that internal sales should be counted in this case because of the nature of interconnection, i.e. BT does not interconnect with itself. In BT's 2017 RFS all interconnect circuits are reported as external regardless of what traffic they carry (including circuits that carry 100% BT traffic). For comparability we have included all circuits (external and, when available, internal) in Table 19.3. See BT's 2017 RFS, page 12, heading 2.1.5 "Change Control Notification – amendments and additional methodologies" for a description of additional methodology changes regarding interconnect volumes both in BT's 2016 and 2017 RFS.

[790] BT response dated 17 March 2017 to the 13th NMR s.135 notice and response dated 3 August 2017 to the 16th NMR s.135 notice.

2016 NMR Consultation

19.16 In the 2016 NMR Consultation we proposed to implement the following charge controls in relation to BT's TDM interconnect circuits at the DLE:[791]

- a cap on the ISB that was in the range 0% to CPI+5% annual change in the basket average price (i.e. CPI+X, where we were consulting on X in the range -CPI to +5%); and
- sub-caps on individual ISB services in the range +5% to +10% on top of the ISB cap (i.e. CPI+X+Y, where we were consulting on Y in the range +5% to +10%).

19.17 We proposed these ranges because DLE cost information did not appear robust and there was uncertainty over whether BT would be able to recover its DLE interconnect costs with charges at the current level. Thus, we consulted on the above ranges and proposed to investigate further.

19.18 We did not propose charge controls on any other telecoms providers' interconnect circuits, including KCOM.

Stakeholder responses to the 2016 NMR Consultation

19.19 We received five stakeholder responses on our proposed charge control for BT's TDM interconnect services.[792]

19.20 BT agreed with our proposal for a charge control on TDM interconnect services at the DLE layer on a LRIC+ basis. It also agreed that it would be disproportionate to build a LRIC model specifically for interconnect circuits given the low and declining revenue. Furthermore, it said that LRIC based charges would risk encouraging operators to stay on the TDM voice platform rather than migrate to IP-based voice services, delaying its closure.[793]

19.21 BT said that the rate of return from interconnect circuits at the DLE was lower than its cost of capital in 2015/16 and that economies of scope will be lost as more SDH costs are allocated to TDM voice services (including interconnect circuits) when the 20CN broadband service (IPStream) is withdrawn around the end of 2018.[794] Also, BT said that it expected the loss of economies of scale as TDM volumes decline. It suggested that we should set the charge control for TDM interconnect circuits at the top of the consultation range, i.e. CPI+5%, and consider individual sub-caps of 10% on top of the basket control.

19.22 Vodafone raised the following points on TDM interconnect circuits:[795]

- WCT charges are controlled on the basis of LRIC, rather than FAC. Given that interconnection is an input to deliver WCT, Vodafone suggested that interconnection charges should be on the same basis as WCT, i.e. LRIC.

---

[791] 2016 NMR Consultation, paragraphs 18.2-18.3.
[792] Further comments on the choice of technology for the charge control are addressed in Section 17.
[793] BT response to 2016 NMR Consultation, pages 30-31 and pages 53-59.
[794] SDH refers to BT's Synchronous Digital Hierarchy platform, which is a legacy platform currently shared by TDM voice services, private circuits and IPstream services.
[795] Vodafone response to 2016 NMR Consultation, part 1, pages 10-13.

- BT's RFS have not shown a reduction in cost over time, and yet BT has not made new investments in TDM interconnect circuits. Vodafone is concerned that interconnect charges may be set above the cost actually incurred by BT. Vodafone suggested that where TDM technologies are deployed, the charges should be limited to a proportionate value representing the cost of an IP interconnection, pro-rated according to the volume of voice channels being conveyed.

19.23 Also, Vodafone said that the FAC should be falling over time and not constant. Vodafone considered that the charge control level on interconnect circuits is an issue that should not be hampered by the time constraints of possible re-consultation, as a safeguard cap could be in place but only while a more detailed analysis is not available.

19.24 [✂] agreed with our analysis on interconnection.[796]

19.25 UKCTA argued that we have overstated the cost of BT's interconnect circuits and, given the transition to IP, suggested to use an efficient IP architecture, rather than TDM.[797] Also, it said that if we continue to use BT's TDM cost base for the charge control, then we should reflect fully depreciated assets and the cost used should be as efficient as possible for this stage in the TDM lifecycle.

19.26 Verizon agreed with the design and level of the charge control on BT for TDM interconnect, including the LRIC+ standard.[798] Also, it said that the TDM assets should be fully depreciated so that there is a true representation of the cost to BT.

19.27 We address these comments in our analysis below.

Decision on the form of price regulation

19.28 Below we set out our reasoning and decision in relation to the form of price regulation. As discussed in the 2016 NMR Consultation we considered fair and reasonable charges and a charge control as options.

Fair and reasonable charges

19.29 Rather than imposing a charge control we could rely on the requirement set out in Section 18 that BT provides network access on fair and reasonable terms, including charges – which is our approach for WCO. However, we do not consider that this would be a sufficient constraint on BT's pricing in the case of interconnect. First, interconnect circuits support both terminating and origination traffic at the DLEs and whereas there appears to be increasing competition in relation to WCO, this is not the case for WCT. Second, the topology and scale of BT's terminating (and originating) network is such that telecoms

[796] [✂]
[797] UKCTA response to 2016 NMR Consultation, paragraph 25.
[798] Verizon response to 2016 NMR Consultation, paragraphs 58-59.

providers need to purchase more (and a different array) of interconnect circuits from BT as compared to other telecoms providers.[799]

19.30 No respondents to the consultation favoured a fair and reasonable approach for interconnection and we remain of the view that requiring interconnect circuit charges to be fair and reasonable, without further pricing obligations, could allow BT to set charges at such a level that would restrict downstream competition and particularly the effectiveness of the SMP remedies for the WCO and WCT markets.

Charge control

19.31 Where there is a risk of excessive charges, as we have identified in Section 18 in relation to interconnect circuits provided by BT, a charge control can help ensure that customers and ultimately consumers are not exploited. As well as seeking to cap charge changes, our approach to charge control regulation based on a standard control period of three years seeks to incentivise cost efficiency, thereby imitating the effect of a competitive market.

19.32 A charge control can help ensure that customers and ultimately consumers are not exploited, incentivise cost efficiency on the part of the dominant provider, and provide greater certainty for customers in relation to the maximum charges they are likely to face (at least on average when charges are controlled in a basket).

Summary of our decision

19.33 For the reasons explained above, and noting that no respondents to the consultation favoured a form of price regulation other than a charge control, we have decided that a charge control for TDM interconnect circuits provided by BT is appropriate.

Decision on the cost standard

19.34 Vodafone suggested that interconnection charges should be capped on the same cost basis as WCT, i.e. LRIC. However, as discussed in Sections 6 and 8, we continue to consider that SMP regulation of WCO is appropriate. Although we have decided not to charge control WCO, we consider that it remains appropriate for charges relating to WCO to make a contribution to common costs – including those previously recovered from WCT. Since interconnect circuits are used for both originating and terminating traffic, we therefore think that the appropriate cost standard for regulating interconnect circuits in this review is LRIC+. BT (paragraph 19.20 above) and Verizon (paragraph 19.26) agreed with a charge control on TDM interconnect services at the DLE layer on a LRIC+ basis.

19.35 Vodafone raised a related concern that interconnection costs do not appear to have fallen despite there being no new investment by BT, and hence charges may now be above BT's actual costs (see above). As explained above, the 2013 NMR capped charges constant in nominal terms and Table 19.3 shows that total interconnection revenues, MCE, operating

[799] This is based on our view on technology choice set out in Section 17 that the continued use of the existing TDM technology is likely to be efficient.

costs and ROCE (in absolute terms) fell over the period 2012/13 to 2016/17, as volumes fell. If costs fall less quickly than volumes, then unit costs will increase, other things being equal. While BT's 2017 RFS does show the return on capital employed (at 14.8% in 2016/17) from interconnection circuits to be above the cost of capital, it is lower than in the previous year (30.4% in 2015/16).[800]

19.36 Of more relevance, given the focus of regulation on WCO and WCT is costs and returns at the DLE level. Table 19.4 shows that, for circuits at the DLE, the total FAC has fallen between 2014/15 and 2016/17, and from 2015/16 and 2016/17 fell at a similar rate as the decline in revenues at the DLE, although these figures are dependent on the cost allocation between BT's tandem and DLE level.

19.37 We therefore do not see much evidence to support Vodafone's argument, as costs have in fact been declining rather than remaining the same and returns have also declined. We now explain our decision on the level of the charge control.

Decision on the level of charges

19.38 Consistent with our overall approach to the regulation of interconnection, our main objective in capping the level of interconnect circuit charges is to provide a stable regulatory environment during the current period of technological change. We do not want to disrupt competition in voice markets with changes that could affect the migration plans of providers and undermine incentives to invest.

19.39 Given the relatively small materiality of the external revenue from interconnect circuits at BT's DLEs (see Table 19.4) and the falling volumes (see Figures 19.1 and 19.2), we think that it would not be proportionate to build a detailed cost model at this stage to set charges for interconnect services. BT (paragraph 19.20 above) agreed with our proposal that it would be disproportionate to build a model specifically for interconnect circuits.

19.40 We note that the approach suggested by Vodafone (paragraph 19.22 above) and UKCTA (paragraph 19.25 above) would require modelling the costs of IP interconnection, which remain uncertain. Further, as explained in Section 17 we did not find that operating a depreciated TDM network is inefficient for providers with such assets, given that most of the costs are sunk and we would expect the forward-looking operating costs to be low. For these reasons, we do not think the time has come to build an IP-interconnect cost model to set interconnect charges.

19.41 Instead, we consider that regulated charges for TDM interconnect circuits should be broadly flat over the control period, consistent with the view that TDM networks are only likely to remain an efficient technology choice if the forward-looking costs are not increasing. In a competitive market, we would not expect a significant increase in prices to be sustainable where existing services are provided using new technology. Therefore, we

[800] BT 2017. *Current Cost Financial Statements 2017 including Openreach Undertakings*, pages 28-29. http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2017/index.htm.

consider that effective competition (and ultimately customers) are likely to be best served if charges for interconnection remain flat.

19.42 However, such an approach should not deny BT the opportunity to recover its efficiently incurred costs of TDM interconnect. Therefore, we have investigated BT's past and likely future returns on interconnect both at the total interconnect level, where we have greater confidence in the reported costs and revenues (although certain issues remain with historically reported financial information) and at the DLE level only (where, as we explain below, the cost and revenue information has proved less reliable).

19.43 BT's returns on total interconnect in the last control period were presented in Table 19.3 above, and it can be seen that ROCE was well above WACC over those four years.[801]

19.44 We then assessed BT's revenues and costs of providing interconnection on its TDM network at the DLE level.[802] As part of this process, BT has on multiple occasions identified and corrected errors in the way in which costs and volumes were previously reported. Given the level of scrutiny they have undergone, we believe that the latest financial data received from BT are likely to be more robust than the data provided at the time of the consultation. However, we note that they remain subject to some uncertainty due to the allocation process described in paragraph 19.13 above.

19.45 On the basis of BT's calculations, there appears to be [✄] at the DLE level, although this may be due to factors we do not consider relevant (such as cost recovery for non-chargeable VICs) and the aforementioned allocation of costs between circuits provided at the tandem layer and those provided at the DLE. Even taking BT's latest estimates of the costs and MCE of DLE-level interconnection in 2016/17, it appears that there are plausible scenarios where [✄] on the basis of constant real prices if volumes decline in keeping with the trend in voice traffic and if past levels of operating cost and capital cost efficiencies can be realised.[803]

19.46 On this basis, we believe that keeping charges flat in real terms would best meet our objective to maintain a stable regulatory environment and should not deny BT the opportunity to recover its efficiently incurred costs of providing TDM interconnect. In regard to the latter we note that the assets are heavily depreciated, BT's ROCE on interconnect has been well above WACC in the last two charge control periods and whether returns are above WACC at the DLE level largely depends on the cost allocation rule between DLE and tandem layer circuits.

19.47 Therefore, we have decided to control BT's TDM interconnect circuit charges at the DLE on the basis of a constant real cap, i.e. CPI+0%.

---

[801] This continues a trend from the preceding control period (for which the financial years 2009/10 to 2013/14 are relevant and all show ROCE well above WACC).
[802] This was investigated through numerous information requests to BT, culminating with BT's response dated 17 March 2017 to the 13th NMR s.135 notice.
[803] This indicative analysis is based on rolling-forward the historical decline in volumes and MCE seen in BT's data and a simple top-down forecast of operating costs and depreciation using the parameters set out in the March 2017 WLA Consultation. We have used the WLA high- and low-case sensitivities on input inflation, efficiencies and cost of capital, as well as flexing the rate of volumes decline to produce a range of plausible outcomes.

Decisions on other charge control details

Duration

19.48 As explained in Section 16, we have decided to implement a charge control on WCT that is slightly longer than three years. Given that interconnect circuit charges are in part regulated to grant providers access to WCT, we consider it important for the charge control on interconnect circuits to be aligned with that on WCT. We have therefore decided to implement the charge control for the ISB from 1 December 2017 to 31 March 2021. Also, we decided to implement the following split per relevant period:

- First Relevant Period: sixteen months beginning on 1 December 2017 and ending on 31 March 2019, so that future relevant years are aligned with BT's financial year making compliance simpler for BT.[804]
- Second Relevant Period: twelve months beginning on 1 April 2019 and ending on 31 March 2020.
- Third Relevant Period: twelve months beginning on 1 April 2020 and ending on 31 March 2021.

Sub-caps

19.49 We consider that sub-caps on each individual service under the ISB basket control provide benefits in that they mitigate the risk of excessive pricing on certain circuits or charges and mitigate the risks of gaming (see below) while allowing BT some pricing flexibility.

19.50 In the 2013 NMR, we imposed sub-caps of 10% on each individual ISB service on top of the ISB cap (then set at 0% – i.e. no nominal increase of the weighted average charge) to address the risk that customers of certain services might be disproportionately affected if charges for individual services increased very significantly within a charge control year.[805]

19.51 As in 2013, we consider that a sub-cap on each charge should be less restrictive than the overall basket control. Given that the sub-caps are designed to apply to every service in the basket, a sub-cap as tight as or tighter than the basket cap would defeat the objective of pricing flexibility within the basket. Therefore, we consulted on a range for the sub-caps between +5% and +10% (on top of the overall ISB cap).

19.52 Only BT commented on this issue in its consultation response and argued that flexibility of 10% on top of the main ISB control is reasonable (paragraph 19.21 above). We do not think that there is a specific concern to be addressed that would require tighter sub-caps to the ISB services.

[804] The relevant CPI for the First Relevant Year will therefore reflect inflation for sixteen months, rather than twelve. The CPI index with base year 2015=100 was at of 100.4 in May 2016 and 103.8 in August 2017. Thus, the relevant CPI for the First Relevant Year is 3.4%, i.e. (103.8-100.4)/100.4 rounded to one decimal place. https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/d7bt/mm23 [accessed 4 October 2017].

[805] 2013 Narrowband Statement, paragraphs A6.242-A6.248. We note though that BT did not increase the charge for any individual service in the ISB by 10% in a year. BT publishes charges for ISB services at www.btwholesale.com.

19.53 We have therefore decided to continue with current regulation on sub-caps for the ISB, i.e. 10% on top of the ISB cap (which will now be CPI). Sub-caps on each ISB service of CPI+10% should suffice to protect customers from large price increases (in real terms) and mitigate the risk of gaming the basket control, while providing pricing flexibility to BT.

Prior year revenue weights

19.54 We have generally preferred to adopt prior year revenue weights within charge controls and we adopted this approach for the 2013 NMR. Since prior year weighting relies on information that is already known at the start of a charge control period, this makes compliance simpler because BT can consider the implications with certainty at the time of setting new charges.

19.55 The risk of using prior year weights in the basket is when the relative volumes of services within a basket change substantially and in a predictable way. In such a scenario, the regulated firm may be able to game the control by increasing the charge of the service that has growing volumes (or volumes declining at a lower rate than on average), since it is given a lower weighting within the basket control.

19.56 In the present context, it seems likely that connections would decline more quickly than rentals, meaning that price increases could be concentrated on rentals, with offsetting reductions in connections. But with the use of sub-caps (see above) we can limit the extent to which relative volume changes can be used to exploit pricing opportunities within the overall basket cap.

19.57 The main alternative to using prior year revenue weights is to use current year revenue weights. However, current year weights cannot be calculated with certainty until after the end of the charge control year. This would mean that, in order to decide how far to adjust prices, BT would have to forecast weights and would need to make retrospective adjustments for errors in forecasting. We believe that this complexity would detract from the predictability of the charge control.

19.58 Based on the reasoning above and noting that no respondents to the consultation commented specifically on this issue, we have decided to use prior financial year revenue weights when testing compliance with the charge control on interconnect circuits. This maintains the approach used in the 2013 NMR formula for the ISB charge control and is consistent with our approach in other charge controls, such as ISDN.[806]

---

[806] BT has previously reported the ISB charge control compliance using prior year revenue weights that consider all TDM interconnect circuits, rather than just those at the DLE. In the forthcoming review period we require BT to comply using prior year revenue weights with consideration only to TDM interconnect circuits at BT DLEs. If BT is unable to break down the revenue by the type of exchange for 2016/17, then it should calculate the revenues at BT DLEs on a pro rata basis based on the number of interconnect circuits to BT DLEs versus the total number of interconnect circuits. Also, should this be the case, BT should provide the underlying calculations in the compliance spreadsheet to be submitted to us. For financial years from 2017/18, BT shall report in its RFS the revenues for interconnect circuits at its DLEs. Therefore, the revenue weights should be known in advance of the Second and Third Relevant Periods.

External charges and revenues

19.59 As noted above, existing regulation applies only to external interconnect services and we will maintain that approach for the forthcoming control period. In the past, BT has reported some revenues for interconnect circuits in the RFS as being "internal".[807] However, this is not the case in the 2016 or 2017 RFS, and BT has explained that, since it does not interconnect with itself, interconnect revenues should not be treated as internal and hence it has removed all internal revenue (as well as all internal FAC) previously published in relation to interconnect services.[808]

19.60 We have therefore decided to use only external revenues for the ISB charge control as the prior year weighting within the charge control formula.

Multiple price changes during a year

19.61 We consider that BT should have the flexibility to make multiple price changes in respect of a particular service (subject to meeting its other regulatory obligations). We have therefore decided to use the same general formula for the ISB charge control as was used in the 2013 NMR. Consistent with the 2013 NMR, the approach will:

- weight all service charges to reflect the proportion of the year during which they were in effect; and
- evaluate charge changes for each service in relation to the weighted average charge that applied during the prior year for that service, rather than based on the charge on the last day of the prior control year.

19.62 This approach will allow BT flexibility over the frequency and timing of charge changes, while preventing potential gaming of the charge control.

Deficiency and excess provisions

19.63 Deficiency and excess provisions have been included in previous charge controls and we have decided to use them for the ISB. These provisions have two functions:

- where BT charges below the cap, it gives the ability to use the 'deficiency' created by setting charges below the cap within the prevailing year towards compliance in the following year. Therefore, the deficiency avoids penalising BT for bringing forward a charge reduction or increasing charges less than the cap; and
- where BT charges in excess of the cap, it is required to make the excess up the following year by charging less than the cap would otherwise have allowed.

---

[807] See, for example, BT, 2015. *Current Cost Financial Statements 2015 including Openreach Undertakings.* http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2015/index.htm.

[808] See BT, 2016. *Change Control Notification*, Section 3.10. http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2016/ChangeControlNotification201516.pdf; and BT, 2016. *Reconciliation Report*, Section 5.1. http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2016/ReconciliationReport2015-16.pdf.

19.64 We think that symmetrical provisions remain appropriate (i.e. symmetrical with respect to whether BT charges below the cap or whether the cap is exceeded). We have therefore decided to continue using deficiency and excess provisions for the ISB charge control.

19.65 We have also decided to continue requiring BT to make repayments to other affected telecoms providers (as soon as is reasonably practicable), in the event that it charges in excess of the cap in any given year for ISB services.

Rounding

19.66 We have decided that interconnect circuit charges should be rounded to the nearest penny for measuring compliance with the ISB charge control, as we did in the 2013 NMR.

Compliance

19.67 We have decided that BT should be required to supply information in order for us to monitor its compliance with the control. BT will be required to provide this information annually to us, no later than three months after the end of the charge control year.[809]

Legal tests

Aim of regulation

19.68 Section 87(9) of the Act authorises Ofcom to set SMP services conditions imposing on the dominant provider, among others, such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network, or with the availability of the relevant facilities provided the conditions set out in Section 88 of the Act are satisfied.

19.69 As discussed in Section 17, telecoms providers are dependent on the provision of interconnect circuits by BT to make the remedies imposed in the WCO and WCT markets effective. As such, BT has the ability and the incentive to set prices above the competitive level and we have decided that a charge control on interconnection is necessary as a result.

The condition

19.70 The charge control condition aims to ensure that BT does not price excessively for external TDM interconnect circuits provided at its DLEs.

19.71 Based on our analysis in this section, we decided that charges for the ISB should be subject to a CPI+0% cap and that individual charges should be subject to a sub-cap of CPI+10%.

[809] This requirement is set out in Condition 5D in Annex 9. BT is also required to publish non-confidential compliance schedules in relation to interconnect circuits as set out in Section 20.

Legal tests

19.72 Section 87(9) of the Act authorises Ofcom to set SMP services conditions imposing on the dominant provider, among others, such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network, or with the availability of the relevant facilities provided the conditions set out in Section 88 of the Act are satisfied.

19.73 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears from the market analysis carried out for the purpose of setting that condition that there is a relevant risk of adverse effects arising from price distortion. We explain above that we consider that there is a risk of such adverse effects since in the absence of charge controls BT might fix and maintain some or all of its prices at an excessively high level so as to have adverse consequences for end-users of public electronic communications services.

19.74 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of:

- promoting efficiency;
- promoting sustainable competition; and
- conferring the greatest possible benefits on the end-users of public electronic communications services.

19.75 Setting the ISB controlling percentage at CPI reasonably reflects the economic costs incurred by BT in providing TDM interconnect circuits to its DLEs, provides the incentive to improve cost efficiency, and provides a stable trajectory of prices for TDM interconnection during the migration period to IP interconnect.

19.76 We consider that this approach promotes sustainable competition by allowing telecoms providers to purchase interconnection services from BT (and to invest in their own infrastructure where this is efficient to do so) at prices that allow them to compete effectively downstream. We consider that this approach is appropriate for the purposes of conferring the greatest benefits on end-users of the services.

19.77 We are also required, under section 88(2) of the Act, to take into account BT's investment in matters to which the condition relates. We explain in this section our rationale for the level of the charge control. That analysis considered the costs currently incurred by BT in providing physical interconnection.

19.78 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

19.79 In particular, we have sought to impose a charge control that furthers the interests of consumers by promoting competition. We have sought through the charge control to secure efficient and sustainable competition by imposing an obligation that will ensure the charges for TDM-based interconnection services provided by BT are not set excessively, but will also allow BT to recover its efficiently incurred costs.

19.80 We have considered the Community requirements set out in section 4 of the Act and believe that the condition meets these requirements.

19.81 We consider that our charge control condition meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable because, without the charge controls, BT would have the ability and incentive to price excessively to third parties, which would adversely affect downstream competition that relies on BT's provision of WCT and WCO;
- not unduly discriminatory because we are imposing the charge control on BT as a consequence of its unique position in WCT and WCO (reinforced by the scale and topology of its network);
- proportionate as it requires BT to comply with the charge control for an important input to downstream markets, which we consider will support the level of competition that we currently observe in the retail market, while allowing BT to recover its efficiently incurred costs. It also incentivises BT to improve its efficiency, because with charges capped for the period of the control, profit maximisation requires cost reductions; and
- transparent in that it is clear in its intention to control BT's charges while creating efficiency incentives and allowing BT the opportunity to recover its efficiently incurred costs.

19.82 For the reasons set out above, we consider that our charge control condition is appropriate to address the competition concerns identified in the corresponding markets, in line with section 87(1) of the Act.

Summary of our decisions

19.83 We have decided to implement the following charge controls in relation to BT's external TDM interconnect circuits at the DLE:

- a cap of CPI+0% for the annual change in the average price of a basket of externally provided circuits, comprising both connections and rentals for ISI, IEC, CSI and IBCs; and
- sub-caps of CPI+10% on each and every charge.

20. Regulatory financial reporting

20.1 BT and KCOM are currently subject to regulatory financial reporting requirements designed to provide us with the information we need to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues, and investigate potential breaches of SMP conditions and anti-competitive practices.

20.2 As part of these requirements, each year BT and KCOM prepare Regulatory Financial Statements (RFS). The RFS are prepared according to a defined framework and methodology and include published statements as well as information that is not published but submitted to us privately.

20.3 In Sections 8, 11, 13 and 18 we explain that we have decided to impose cost accounting and accounting separation obligations on BT in all narrowband markets and interconnection, and on KCOM in the WFAEL, ISDN30, ISDN2 and WCO markets.

20.4 In this section, we set out the specific regulatory accounting requirements that we have decided to impose on BT and KCOM under those cost accounting and accounting separation obligations. We first set out the regulatory financial reporting requirements on BT before considering KCOM. The legal directions we have imposed on BT and KCOM are included in Annex 10.

20.5 In the 2016 NMR Consultation, the main changes we proposed to make to published information were the removal of all service level reporting for WCO; amendments to ISDN30 and ISDN2 reporting to reflect the proposed deregulation of new ISDN services; the introduction of non-confidential compliance statements for ISDN30, ISDN2 and interconnect circuits and other minor changes to the lists of services and components associated with narrowband markets. As explained below, we have decided to implement our consultation proposals on BT, with the following amendments:

- ISDN2/30 reporting in the RFS: we have clarified what service-level information should be published in each financial year;
- FAC component schedule published in the RFS: this schedule breaks down the unit FAC cost for each service by cost component; we have clarified how services with no volume metric should be reported;
- Non-confidential compliance statements: we have clarified what information BT can redact.

20.6 In relation to private reporting, in the 2016 NMR Consultation we proposed to remove one schedule that we no longer required and proposed to amend other directions to reflect current private reporting arrangements.[810] As explained below, we have decided to implement our consultation proposals on BT with the following amendments:

[810] 2016 NMR Consultation, paragraphs 19.79-19.87.

- Interconnection private reporting: we have included a requirement for BT to provide us with a schedule showing financial information for interconnection services at the DLE and tandem-layer so we can understand how BT has attributed revenues and costs to interconnection at the DLE.
- Additional financial information: we have removed the requirement to provide three further schedules because we can obtain this information from the data file provided by BT. We have also formalised in the directions the provision of DLRIC and DSAC data that BT currently provides to us.

20.7 We have amended the legal directions on BT to give effect to these changes, as well as making some minor modifications to ensure the directions accurately reflect our decisions.

20.8 In the 2016 NMR Consultation, we also proposed the following changes to KCOM's reporting requirements: amend the list of network components so they are consistent with the 2016 BCMR Statement; remove the requirement for KCOM to publish cost component information for the WFAEL, ISDN30, ISDN2 and WCO markets and instead provide this to us privately and remove other schedules in KCOM's RFS that are no longer needed or duplicate information from elsewhere in the RFS. We have decided to implement our consultation proposals on KCOM, on which we received no substantive comments.

Regulatory reporting requirements on BT

20.9 For the reasons set out in Sections 8, 11, 13 and 18, we have decided to impose on BT SMP conditions capturing the specific form of BT's accounting separation and cost accounting requirements that come from our policy conclusions in the 2014 Regulatory Financial Reporting Statement. In that statement, we also set out our reasoning and policy decisions about the more detailed requirements which we considered were appropriate for the RFS in all regulated markets and which we would implement by way of directions. We previously gave these directions for markets including WFAEL, ISDN30 and ISDN2 in the 2015 Directions Statement.[811]

20.10 In the 2016 NMR Consultation, we considered the directions imposed in the 2015 Directions Statement and proposed to impose the following seven directions on BT in each of the narrowband markets and interconnection:

- the Regulatory Accounting Principles
- preparing the RFS on a RAV (Regulatory Asset Value) basis
- transparency
- audit of the RFS
- the reconciliation report
- the preparation, delivery, publication, form and content of the RFS
- network components

[811] The 2015 Directions Statement also imposed these directions on the WLA and WBA markets. Ofcom, 2015. *Directions for Regulatory Financial Reporting*. https://www.ofcom.org.uk/__data/assets/pdf_file/0018/59112/statement.pdf.

20.11 We did not consider it was necessary to impose the following directions on BT in any of the narrowband markets:

- consistency with regulatory decisions
- BT's adjusted financial performance
- electricity charge attributions[812]

20.12 Of the seven directions, we proposed to impose on BT, we only received substantive stakeholder comments on the direction relating to the preparation, delivery, publication, form and content of the RFS, i.e. the direction that sets out the information BT should publish in its RFS and the information it should provide to us privately.

20.13 Of the three directions we proposed not to impose, BT considered that we should impose the adjusted financial performance direction.

20.14 In the rest of this section we first set out our conclusions on the direction for the preparation, delivery, publication, form and content of BT's RFS before setting out our conclusions on the remaining six directions proposed in the consultation (which attracted no comments and are unchanged from the consultation). We then explain why we have decided not to impose the three directions relating to consistency with regulatory decisions, BT's adjusted financial performance and electricity charge attributions.

BT: Preparation, delivery, publication, form and content of the RFS

20.15 This direction provides details of the financial information to be included in the published RFS and to be provided to Ofcom privately. It therefore plays an important role in ensuring the RFS provide relevant information to stakeholders and Ofcom. Some elements of the published RFS relate to all markets[813] while others are specific to particular markets. To preserve the integrity and consistency of the RFS, we consider that all markets should be subject to appropriate reporting requirements.

20.16 We explain below why such financial information is necessary and the categories of information we generally require. We then consider stakeholder comments and set out our conclusions on the information we have decided to require BT to provide publicly and privately.

Importance of financial information

20.17 It is important that BT's Regulatory Financial Reporting relating to narrowband markets and interconnection continues to be relevant, reliable, transparent and proportionate. In the 2014 Regulatory Financial Reporting Statement, we said that regulatory financial reporting should provide us with the information necessary to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions

[812] As set out below, the direction for electricity charge attributions only applies to the WLA market.
[813] For example, the reconciliation of the RFS as a whole to BT Group's statutory accounts.

continue to address the underlying competition issues, and investigate potential breaches of SMP conditions and anti-competitive practices.[814]

20.18 Publishing financial information can also contribute to an effective regulatory regime. One of the objectives of the 2005 EC Recommendation is to improve the transparency of accounting systems[815] and it recommends that "national regulatory authorities make relevant accounting information from notified operators available to interested parties at a sufficient level of detail. The detail of information provided should serve to ensure that there has been no undue discrimination between the provision of services internally and those provided externally and allow identification of the average cost of services and the method by which costs have been calculated. In providing information for these purposes, national regulatory authorities should have due regard for commercial confidentiality. In this respect, the publication by the notified operator of sufficiently detailed cost statements showing, for example, the average cost of network components will increase transparency and raise confidence on the part of competitors that there are no anti-competitive cross-subsidies. This is considered to be particularly important for wholesale services".[816]

20.19 The 2005 EC Recommendation also says that "regulatory accounting information serves national regulatory authorities and other parties that may be affected by regulatory decisions based on that information, such as competitors, investors and consumers. In this context, publication of information may contribute to an open and competitive market and also add credibility to the regulatory accounting system".[817] The 2005 EC Recommendation specifically says that, subject to confidentiality considerations, profit and loss statements and capital employed statements should be published for relevant markets and services.[818]

20.20 Consistent with the 2005 EC Recommendation, we said in the 2014 Regulatory Financial Reporting Statement that publishing financial information supports stakeholders' contribution to an informed regulatory framework and adds credibility to the regulatory accounting system. Determining what would constitute a sufficient level of detail to publish is a matter of regulatory judgement, and what is justified in each case may differ between market reviews. As set out in the 2014 Regulatory Reporting Statement, and subject to confidentiality and proportionality considerations, in each case sufficient information should be published to enable stakeholders to have reasonable confidence that BT has complied with its SMP conditions and allow them to contribute to the regulatory regime (for example by contributing to the development of robust regulatory decisions, reviewing and challenging data on which those decisions are made, assisting us

---

[814] Ofcom, 2014. *Regulatory Financial Reporting – Final Statement,* paragraph 2.28. https://www.ofcom.org.uk/__data/assets/pdf_file/0025/78460/financial-reporting-statement-may14.pdf.
[815] Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications, recital 4. http://www.akos-rs.si/files/APEK_eng/Legislation/l-26620051011en00640069.pdf.
[816] 2005 EC recommendation, Point 5.
[817] 2005 EC recommendation, Annex.
[818] 2005 EC recommendation, Annex.

in monitoring compliance and helping us intervene in a timely fashion when required).[819] SMP conditions include those relating to regulatory reporting obligations (i.e. accounting separation and cost accounting) such that publishing financial information can give confidence to stakeholders that BT is providing the required data to Ofcom under its reporting obligations and that the reporting regime overall is working as planned.[820] In the 2014 Regulatory Reporting Statement we said that we would consider and determine what level of information would provide reasonable confidence in any particular case, following input from stakeholders.[821] We also set out that cost, volume and revenue information published in the RFS should reflect the level of the remedy.[822] For example, if the remedy is in the form of a charge control on individual services or baskets of services, information should generally be published relating to those services or baskets of services. However, in the 2016 NMR Consultation, we noted that in certain circumstances, we may decide that BT needs to publish regulatory financial data that goes beyond the level of the remedy to give stakeholders reasonable confidence that BT has complied with its SMP conditions and allow them to contribute to the regulatory regime.[823]

20.21 In light of the approach set out in the 2014 Regulatory Financial Reporting Statement, and taking account of the guidance in the 2005 EC Recommendation, we have considered what specific regulatory accounting requirements are required to support the remedies imposed in this review. We set out our decisions relating to reporting requirements in the following categories:

- **Public information**. This is information that we consider will give stakeholders reasonable confidence that BT has complied with its SMP conditions, allow them to contribute to the regulatory regime, and is consistent with the level of the remedy.
- **Private information**. This is information that we receive privately from BT. As set out above, we may require this information to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues, and investigate potential breaches of SMP conditions and anti-competitive practices.

20.22 We also set out our decisions for the non-confidential compliance schedules that BT should publish on its website alongside the public version of the RFS.

20.23 In the rest of this section we first provide further information on types of public information and respond to stakeholder comments on our overall approach before setting out our conclusions for each narrowband market and interconnection services. We then

[819] 2014 Regulatory Financial Reporting Statement, paragraphs 2.29-2.41.
[820] In the 2014 Regulatory Reporting Statement, we said at paragraph 2.31 that "we consider that a regulatory environment where stakeholders are simply informed that the regulator is satisfied that the obligations have been met is likely to be less effective than one where the industry is better informed".
[821] 2014 Regulatory Financial Reporting Statement, paragraph 2.39.
[822] 2014 Regulatory Financial Reporting Statement, paragraphs 4.76-4.85
[823] For example, in the 2016 BCMR Statement, given the broad baskets used in that charge control, we decided that BT must publish financial information on certain individual services (see paragraphs 16.44-16.46 and 16.52-16.61).

set out the responses and our conclusions on private reporting and non-confidential compliance schedules.

Public information

20.24 In the published RFS, financial information on specific markets broadly relates to three areas:

- **Market level information**. This is information on the revenues, operating costs, capital employed and returns on MCE for a specific market as a whole. In the 2016/17 RFS, this information is set out in the schedules on pages 28, 94 and 97 for the 2016/17 financial year. For example, in 2016/17, these schedules show that revenue in the WFAEL market was £1.6bn and the return on MCE was 13.6%. The schedules also show a breakdown of operating costs and capital employed.824
- **Service level information**. This can include the revenue, volumes, prices and FAC of specific services or groups of services associated with the relevant market. For example, in relation to the WFAEL market, page 37 of the 2016/17 RFS gives this information for 12 services provided in that market.
- **Cost components for reported services**. In BT's cost attribution system, costs are ultimately attributed to cost components which in turn are attributed to services. A cost component schedule therefore shows how the service level FAC information is broken down by cost component. For example, in relation to the WFAEL market, pages 38 and 39 of the 2016/17 RFS shows which cost components are used by each reported WFAEL service. In the 2016 NMR Consultation, we proposed to amend the cost component schedules reported in the RFS so that the component cost information is reported in unit costs rather than the total component cost.[825] This change will make it easier to compare component costs where those components are shared across markets, for example between the WFAEL and WLA markets.

Stakeholder comments on the approach to public reporting

20.25 Vodafone said that "[r]egulatory reporting is essential for transparency, and given the SMP nature of these markets it is essential that full and transparent reporting is available to all stakeholders to ensure that costs can be scrutinised. Market failure needs to be remedied through regulatory intervention and unless stakeholders have access to reliable regulatory accounting information, they can't judge if the prices charged for regulated services are reasonable or fully participate in future consultations related to those charges".[826]

---

[824] Operating cost and capital employed are broken down by what BT calls 'sectors' on pages 94 and 97 of the 2016/17 RFS. These sectors provide a high level view of the types of operating costs and assets associated with the relevant market.
[825] For example, pages 38 and 39 of the 2016/17 RFS shows which cost components are used by each reported WFAEL service. The cost component value by service is reported in £millions. We proposed to amend this so that the values are reported in £units. The bottom row of this schedule would then change from £units to £millions and could be reconcilable to the service level FAC information.
[826] Vodafone response to 2016 NMR Consultation, part 1, page 20.

20.26 BT said it would have expected proposed deregulation of prices to flow through to deregulation of reporting requirements.[827] It said that we should develop our reporting framework so that reporting remedies strictly reflect the pricing remedies imposed to give stakeholders clarity and certainty over the information that will be disclosed.[828] BT provided comments on the overall approach Ofcom should take to requiring publication of market level, service level and cost component level information, as well as comments on our proposals for each individual market. Since BT's comments on each market largely flow from its comments on our overall approach, we consider these first.

Market level information

20.27 As a general principle, BT said it supported the publication of market level information.[829] However, BT argued that market level information may only be justified where prices are set by reference to BT's incurred costs.[830] BT argued there was no benefit to stakeholders in publishing market level information where there was no pricing remedy or where remedies were not related to BT's costs, as in this case market level information is not required to demonstrate to stakeholders BT's compliance with, or the effectiveness of, the pricing remedy.[831]

20.28 BT disagreed that market level cost information provides transparency regarding how BT has allocated costs between regulated markets and between regulated and unregulated markets, because it publishes an Accounting Methodology Document (AMD) describing how costs have been attributed.[832]

20.29 BT also disagreed that market level information mitigates against the risk of double recovery of costs or that costs might be unreasonably loaded onto particular services or markets. BT said double recovery might be a concern where all charge controls are based on BT's incurred costs, but that double recovery is mitigated through publication of the reconciliation statement, which demonstrates that costs are only attributed once.[833]

20.30 BT said that if the pricing remedy was not linked to costs, publication of market level information will not demonstrate the overall reliability and robustness of the RFS (as argued by Ofcom), but will instead undermine stakeholder confidence.[834]

Service level information

20.31 BT supported the principle of publishing service level information on revenues, volumes, prices and costs where this is relevant to the pricing remedy imposed, provides useful information to stakeholders and is proportionate.[835]

---

[827] Openreach response to 2016 NMR Consultation, paragraph 85.
[828] Openreach response to 2016 NMR Consultation, paragraph 88 and 100.
[829] Openreach response to 2016 NMR Consultation, paragraph 119.
[830] Openreach response to 2016 NMR Consultation, paragraph 100 and 121-123.
[831] Openreach response to 2016 NMR Consultation, paragraphs 123 – 124.
[832] Openreach response to 2016 NMR Consultation, paragraph 124.
[833] Openreach response to 2016 NMR Consultation, paragraph 124, second bullet.
[834] Openreach response to 2016 NMR Consultation, paragraph 124, final bullet.
[835] Openreach response to 2016 NMR Consultation, paragraph 125.

20.32 BT considered that service level information should only be published to demonstrate compliance where a charge control is based on its incurred costs or a safeguard cap is in place. It did not consider that publication of service level information was of benefit to stakeholders where the pricing remedy was not linked to BT's costs (e.g. a fair and reasonable charges obligation) or where no pricing remedy is imposed.[836] BT did not consider that publication of unit costs was needed to demonstrate compliance with a charge control which was based on its incurred costs, but recognised that it may provide stakeholders with assurance on the effectiveness of a pricing remedy. BT argued that financial information should only be split between internal and external customers to demonstrate compliance with no undue discrimination obligations.[837] BT said it would prefer service level reporting obligations to be met through the publication of non-confidential compliance statements rather than through a market summary in the RFS.[838]

20.33 BT argued that service level information should only be published at the level at which prices are regulated (e.g. basket or sub-basket) and "subject to a level of materiality".[839]

Cost component information

20.34 BT supported the publication of component FAC information where a charge control was based on BT's incurred costs or where there was a cost orientation obligation.[840] However, BT did not consider stakeholders would benefit from publication where there was no pricing remedy or another form of price control not based on BT's costs.[841]

20.35 BT also noted our proposal to change the figures reported in the component FAC schedule to unit FAC. BT said that where a service has no volume metric then a meaningful unit cost cannot be provided and as such the service should be omitted from the schedule.[842]

Our conclusions on the approach to public reporting

20.36 We explained the purposes of public reporting above, drawing on the conclusions of the 2014 Regulatory Financial Reporting Statement and the guidance in the 2005 EC Recommendation.

20.37 We do not agree with BT that pricing remedies are the only factor to take account of when considering the requirements for public reporting. While pricing remedies are a relevant factor when considering the services or level of cost information to report, more generally it is important to ensure that sufficient information is published to achieve the objectives of public reporting, as set out above; i.e. to enable stakeholders to have reasonable confidence that BT has complied with its SMP conditions, allow them to contribute to the regulatory regime and add credibility to the regulatory accounting system. Therefore, we consider that appropriate reporting requirements should be determined as part of each

[836] Openreach response to 2016 NMR Consultation, paragraph 128.
[837] Openreach response to 2016 NMR Consultation, paragraph 129.
[838] Openreach response to 2016 NMR Consultation, paragraph 127.
[839] Openreach response to 2016 NMR Consultation, paragraph 100, final bullet.
[840] Openreach response to 2016 NMR Consultation, paragraph 100, third bullet.
[841] Openreach response to 2016 NMR Consultation, paragraph 132.
[842] Openreach response to 2016 NMR Consultation, paragraph 147.

market review so we can assess what a sufficient level of detail would be in respect of each market in light of our competition concerns, taking account of stakeholder representations and other factors relevant to the particular market. We consider that our decisions set out below are proportionate and strike a balance between the information that stakeholders need to contribute to the regulatory regime and confidentiality concerns that BT may have around the commercial nature of its financial information.

20.38 Below we respond to stakeholder comments on our approach to market, service and component level costs.

Market level information

20.39 We disagree with BT that market level information is only justified where prices are set by reference to BT's incurred costs. Publication of this information provides an overview of all markets where BT has regulatory reporting obligations. While we agree that market level information does not demonstrate compliance with pricing remedies, it gives confidence to stakeholders that BT is providing the required data to Ofcom under its reporting obligations and that the reporting regime overall is working as planned. It also allows stakeholders to contribute to the regulatory regime and assess the impact and effectiveness of the remedies imposed – for example, by reference to trends in revenues, costs and returns that have been prepared on a consistent basis.

20.40 In contrast to BT's view, we consider that publication of market level information provides transparency regarding how BT has allocated costs between regulated markets and between regulated and unregulated markets. While BT's AMD currently describes how costs have been attributed, it does not show the impact of those attributions. Market level information can therefore help stakeholders understand the impact of those attribution decisions. Transparency is an important element of financial reporting obligations, as explained above. We consider that where BT has wholesale regulatory reporting obligations it is important to publish some information relating to that wholesale market. In our view, information on market revenues, costs and returns would generally represent the minimum sufficient level of detail on wholesale markets that would allow stakeholders to have reasonable confidence that BT has complied with its SMP conditions and contribute to the regulatory regime, thereby adding credibility to the regulatory accounting system. Publication of market level information is also consistent with the 2005 EC Recommendation which recommends that such information is published for relevant markets.

20.41 We recognise that the reconciliation statement published in the RFS helps demonstrate that costs are only attributed once in BT's accounting system and agree with BT that publishing market returns does not by itself help mitigate the risk of double recovery. However, we consider that providing stakeholders with the opportunity to assess the outcome of cost attributions can mitigate the risk that costs might be unreasonably loaded onto particular markets (and services) since it allows them to scrutinise and challenge the outcomes of the bases of attribution.

20.42 Finally, we do not agree with BT that publishing market level information would undermine stakeholder confidence where price remedies are not linked to BT's costs. Vodafone's response indicates that it is important to ensure information is available to enable stakeholders to contribute to the regulatory regime. More generally, as noted above, we consider that publishing market level information gives stakeholders reasonable confidence that BT has complied with its SMP conditions (including regulatory reporting requirements) and allows them to assess the impact and effectiveness of the remedies imposed by reference to a set of financial information that has been prepared on a consistent basis.

Service level information

20.43 In relation to service level volumes, prices and revenues, we disagree with BT that these should only be published to demonstrate compliance with a charge control or safeguard cap. While the nature of the pricing remedy is an important consideration, there may be other reasons to publish this information, such as to demonstrate compliance with a no undue discrimination obligation or to provide transparency about relative usage (e.g. where there is a significant difference between the products bought internally by BT and externally by other operators). BT agrees in its response that financial information would need to be split between internal and external customers where there is a no undue discrimination obligation.

20.44 We agree with BT that service level cost information could allow stakeholders to assess the effectiveness of a charge control based on BT's incurred costs. However, we do not agree with BT that a cost-based charge control is the only circumstance that would justify publication of service level FAC information. For example, where prices are set using a bottom-up model, BT's costs may have been used to inform our cost estimates and to calibrate the model. It may also be important to ensure stakeholders can compare prices to a measure of costs on an ongoing basis (for example to assess how changes in prices compare to changes in costs) and that they have an understanding of service costs to contribute effectively to the regulatory regime. In addition, where costs are shared with services in other markets, enabling stakeholders to see the effects of BT's attribution of costs between markets can reassure them that attributions have been made appropriately, adding credibility to the overall financial reporting regime.

20.45 In principle, we agree with BT that service level information should be published at the level at which prices are regulated (e.g. basket, sub basket or service level). However, in certain circumstances, we may decide that BT needs to publish regulatory financial data that goes beyond the level of the remedy to give stakeholders reasonable confidence that BT has complied with its SMP conditions, allow them to contribute to the regulatory regime and add credibility to the regulatory accounting systems. For example, as noted above, in the 2016 BCMR Statement, given the broad baskets used in that charge control, we decided that BT must publish financial information on certain individual services as well. In addition, we may require BT to report on groups of services (e.g. 'other ISDN2', as explained below) where, for example, only a proportion of services in the market are subject to charge controls and we want to ensure that all the services within that market are captured (i.e the service totals reconcile to the market totals) or to limit the number of individual services reported in the RFS (e.g. for reasons of practicality or materiality).

20.46 We note that BT would prefer service level reporting obligations to be met through the publication of non-confidential compliance statements rather than through a market summary in the RFS. However, we consider that these publications have different purposes. We consider that it enhances confidence in the non-confidential compliance statements where the same figures (for example relating to volumes or revenues) can be seen in both documents and we do not consider it onerous for BT to re-produce this information.

Cost component information

20.47 As with service level cost information, our starting point for considering the publication of component-level costs is the extent to which the pricing remedy is based on BT's costs. However, we do not agree with BT that this is the only circumstance that would justify publication of component level FAC information for the same reasons as for service-level cost information given above. Following our decisions in this statement, cost component information will be published for WFAEL and interconnection services, for the reasons set out below.

20.48 We have decided to amend the FAC cost component schedules reported in the RFS so that the component cost information is reported in unit costs rather than the total component cost. This change will make it easier to compare component costs where those components are shared across markets. Where BT reports services with no volume metric, we disagree with BT that they should be omitted from the schedule since we consider it is important that stakeholders can understand which components contributed to the cost base of each reported service. In cases where BT reports a service with no volume metric (for example, time related charges) we have decided that BT should show the percentage contribution from each component to the FAC of the service.

WFAEL market

Consultation proposals

Market level information

20.49 We proposed that BT must publish the revenue, operating costs, capital employed and returns for the WFAEL market. In practice, this would mean that the WFAEL market continues to be included in the 'performance summary by market' schedule in the RFS and the 'attribution of wholesale current costs and mean capital employed' schedules.

Service level information

20.50 We proposed that BT must publish revenue, volume, average price and FAC for WFAEL services, split between internal and external customers, at the level that they are regulated.

20.51 While the proposed fair and reasonable charging obligation is not a cost-based remedy, we considered that it is important to publish service-level cost information for this market because many costs are shared with those in other regulated markets.

20.52 We proposed that BT should publish revenue, volume, average price and FAC information on the following principal services/groups of services (which are the same as those reported in the 2015/16 RFS):

- Analogue Core WLR Rentals
- WLR Connections
- WLR Transfers
- WLR Conversions
- Analogue Premium Rentals
- WLR Premium Connections
- WLR Premium Conversions
- Caller Display
- Time Related Charges
- Other WLR

20.53 In relation to the WFAEL market, we proposed to remove separate reporting for WLR Simultaneously Provided Connections and Conversions[843] since regulation for these services was being considered in our separate WLA market review.

20.54 In line with our proposal to impose a fair and reasonable charging obligation on all WFAEL services, we also proposed to remove the requirement to publish a schedule of volumes and direct costs for TRCs associated with the WFAEL market.[844]

Cost components for reported services

20.55 We proposed that BT must publish the calculation of service level FAC based on network component costs and usage factors for the WFAEL market.

Stakeholder responses

20.56 Vodafone considered that accounting transparency was necessary to ensure non-discrimination and charge control compliance.[845] Vodafone also observed that BT's internal consumption of WLR is greater than that of external purchasers, who often make more use of wholesale services such as MPF. Vodafone said that "with retail services increasingly being purchased in bundles it is necessary to ensure that the costs of the constituent parts of the bundle are properly understood to deter anti-competitive behaviour, especially where other wholesale services like MPF may be used to deliver bundled services to consumers".

[843] These services relate to charges for WLR provided in combination with SMPF.
[844] This schedule can be seen on page 121 of the 2016/17 RFS.
[845] Vodafone response to 2016 NMR Consultation, part 2, paragraph 4.42.

20.57 Since the proposed fair and reasonable charging obligation is not a cost-based remedy, BT considered that it should only be required to publish market level information for the WFAEL market and not any service level or cost component information. BT said that Ofcom would receive service and component level information privately which would allow it to compare costs in WFAEL and WLA.[846]

20.58 If Ofcom did require publication of service level information for the WFAEL market, BT agreed that such information should only be required for principal WFAEL services.[847]

20.59 BT noted the proposal to remove separate reporting of WLR Simultaneously Provided Connections and Conversions but asked whether these should be reported within the 'Other WLR' service.[848]

20.60 BT welcomed our proposal to remove the requirement to publish a schedule of volumes and direct costs for TRCs associated with the WFAEL market, though it noted that we had proposed to continue to receive this information privately.[849]

Our conclusions

Market level information

20.61 No stakeholders disagreed with our proposals to require BT to report market level information for WFAEL. We have therefore decided that BT must publish the revenue, operating costs, capital employed and returns for the WFAEL market. Trends in market level financial performance are informative in the context of considering the impact and effectiveness of the remedies imposed in the WFAEL market as a whole. Market level cost information also provides transparency regarding how BT has allocated costs between regulated markets (and also between regulated and unregulated markets). We see this as facilitating stakeholder confidence that such costs have been allocated consistently and appropriately. It also mitigates the risk that costs might be unreasonably loaded onto particular services or markets. We consider it is appropriate to require BT to publish this information to demonstrate to stakeholders the overall reliability and robustness of the RFS.

Service level information

20.62 We have decided that BT must publish revenue, volume, average price and FAC for WFAEL services, split between internal and external customers, at the level that they are regulated.

20.63 In Section 8 we explained that WFAEL charges are subject to a fair and reasonable charges obligation and a no undue discrimination and EOI obligation. Publishing internal and external prices helps demonstrate compliance with the no undue discrimination obligation.

---

[846] Openreach response to 2016 NMR Consultation, paragraphs 105-107.
[847] Openreach response to 2016 NMR Consultation, paragraph 108.
[848] Openreach response to 2016 NMR Consultation, paragraph 109.
[849] Openreach response to 2016 NMR Consultation, paragraphs 110-111.

20.64 We consider that publishing internal and external revenues and volumes can demonstrate the impact and effectiveness of the remedies set in the WFAEL market and provides transparency about the relative usage of WFAEL services by BT and external telecoms providers.

20.65 We consider that it is important to publish service-level cost information for WFAEL because many costs are shared with those in other regulated markets. For example, WLR rentals share substantial costs with services in other markets, in particular MPF rentals.

20.66 We have decided that BT should publish revenue, volume, average price and FAC information on the principal WFAEL services listed at paragraph 20.52, though we have changed the name of Analogue Core WLR Rentals to Analogue WLR Basic Rental to be consistent with the terminology in the 2016/17 RFS. We have decided to remove separate reporting for Simultaneously Provided Connections and Conversions and agree with BT that it would be reasonable to include these within the 'Other WLR' service line.

20.67 During this review, we discovered that in the 2016/17 RFS the 'Other WLR' service included information associated with ISDN30 and ISDN2 services.[850] In future, information on these services must be reported in the relevant ISDN market.

20.68 As per our consultation proposal, we have also decided to remove the requirement to publish a schedule of volumes and direct costs for TRCs associated with the WFAEL market.

Component level information

20.69 We have decided that BT must publish the calculation of service level FAC based on network component costs and usage factors for the WFAEL market. As noted above, WFAEL rental services (mainly purchased internally by BT) share some component costs with rental services (mainly purchased by other telecoms providers) in other markets, notably WLA.

Approach to remedies in the wholesale ISDN30 and ISDN2 markets

20.70 As discussed in Section 8, we have decided to largely deregulate the provision and rental of new ISDN lines after a transitional period ending on 30 November 2018. As explained above, to address the issue of excessive pricing of existing ISDN lines, we have retained a charge control, based on current charges, on all wholesale ISDN30 and ISDN2 lines for the transitional period and on existing lines only from the end of the transitional period. Consistent with Section 8, we refer to lines which will have been ordered before the end of the transitional period as 'existing lines', and ISDN lines ordered after the transitional period as 'new lines'.

[850] BT response dated 23 August 2017 and 22 September 2017 to the 17th NMR s.135 notice. In 2016/17, the Other WLR service included £1.8m of revenue associated with ISDN2 and £4.7m of revenue associated with ISDN30.

ISDN2

Consultation proposals

Market level information

20.71 We proposed that BT must publish the revenue, operating costs, capital employed and returns for the ISDN2 market. In practice, this would mean that the ISDN2 market continues to be included in the 'performance summary by market' schedule in the RFS and the 'attribution of wholesale current costs and mean capital employed' schedules.

Service level information

20.72 We proposed that BT must publish revenue, volume, and the average price for ISDN2 services, split between internal and external customers, at the level that they are regulated.

20.73 We did not propose to require FAC information to be reported since the proposed charge control was based on a flat nominal cap, rather than based on a detailed cost model We did not consider that stakeholders needed visibility of ISDN2 service FAC to assess compliance with the control.

20.74 We said it was important to continue to report revenue associated with new lines to ensure that the total service level revenue reconciles with the market level revenue reported in the 'summary performance by market' schedule. We therefore proposed that BT should publish revenue, volume and average prices for the following services/groups of services:

- Transitional period (same services as currently reported)
  - ISDN2 Rentals
  - ISDN2 Connections
  - ISDN2 Transfers
- After the transitional period
  - ISDN2 Rentals – Existing Lines;
  - ISDN2 Transfers – Existing Lines; and
  - ISDN2 – New Connections, Transfers and Rentals (revenue reporting only).

Component level information

20.75 Given that we did not propose to require BT to publish FAC for ISDN2 at the individual service level, we did not propose to require BT to publish component level FAC for ISDN2 services.

Stakeholder responses

20.76 BT welcomed our proposal to not require FAC reporting at the individual service level. BT agreed that stakeholders do not need this information to be assured of its compliance with price regulation.[851]

20.77 BT agreed with our proposal to publish market level information and service-level revenues, volumes and average prices for existing ISDN services (both before and after the transitional period).[852] BT disagreed with our proposal that information on new ISDN lines, which are not subject to price regulation, should continue to be published after the transitional period. However, it recognised "the practical difficulty for Ofcom and other stakeholders, given Ofcom's proposal to partly deregulate ISDN markets, of aligning the ISDN market summaries and performance summary by market".[853]

20.78 BT was also concerned that our proposed reporting obligations could make the RFS more complex, difficult to prepare and less transparent for the reader. BT noted that our proposals required the separate recording of revenue arising from new connections and there might be complications to reporting during the transitional period if this was not aligned with its financial year end.

Our conclusions

Market level information

20.79 No stakeholders disagreed with our proposals to require BT to report market level information for ISDN2. We have therefore decided that BT must publish the revenue, operating costs, capital employed and returns for the ISDN2 market. This is for the same reasons as set out in paragraph 20.61.

Service level information

20.80 No stakeholders disagreed with our proposals to require BT to publish revenue, volume, and the average price (split between internal and external customers) for ISDN2 services during the transitional period and for existing services following the transitional period.

20.81 We consider that publishing internal and external prices helps demonstrate compliance with the no undue discrimination obligation and allows stakeholders to see how average prices compare to the price cap. We consider that publishing internal and external revenues and volumes demonstrates the impact and effectiveness of the remedies proposed in the ISDN2 market and provides transparency about the relative usage of ISDN2 services by BT and external telecoms providers.

20.82 We have decided not to require BT to publish FAC information at a service level for the reasons given in paragraph 20.73.

---

[851] Openreach response to 2016 NMR Consultation, paragraph 112.
[852] Openreach response to 2016 NMR Consultation, paragraphs 113-114.
[853] Openreach response to 2016 NMR Consultation, paragraphs 115-116.

20.83 Although we have decided to remove most SMP remedies on new ISDN2 connections and subsequent rentals and transfers from the end of the transitional period, we consider that it is important to continue to report, for the whole of the next market review period, the revenue associated with new lines to ensure that the market total reconciles with that reported in the 'summary performance by market' schedule. We have therefore decided that BT must publish revenue information related to new lines after the transitional period, alongside revenue information on all other non-charge controlled ISDN2 services.

20.84 We have reviewed which services it would be appropriate for BT to report against the charge controls we have imposed to ensure that services are reported at the level that they are regulated. In Section 9, we decided to impose separate charge controls on ISDN2 rentals, connections and transfers in the transitional period and on ISDN2 rentals and transfers after the transitional period. Given this, we have decided to require BT to report on ISDN2 rentals, connections and transfers in the transitional period; this is the same list of services as currently reported. The reported services should be consistent with the definitions in Annex 9. Any ISDN2 service not included in these controls should be reported in an 'Other ISDN2' reporting line.

20.85 We recognise that the transitional period runs to 30 November 2018 and therefore spans regulatory financial year reporting periods. In particular, the 2018/19 financial year includes 8 months of the transitional period and 4 months of the post-transitional period. We have amended our consultation proposals to provide clarity on what services should be reported in each financial year as follows. Note that only revenue reporting will be required for 'Other ISDN2'.

Table 20.1: ISDN2 service reporting in each financial year

2017/18	2018/19	2019/20 onwards
ISDN2 Rentals	ISDN2 Rentals (ordered before 30 November 2018)	ISDN2 Rentals (ordered before 30 November 2018)
ISDN2 Connections	ISDN2 Connections (ordered before 30 November 2018)	-
ISDN2 Transfers	ISDN2 Transfers (ordered before 30 November 2018)	ISDN2 Transfers (ordered before 30 November 2018)
Other ISDN2	Other ISDN2 (including ISDN2 rentals, connections and transfers ordered after 30 November 2018)	Other ISDN2 (including ISDN2 rentals, connections and transfers ordered after 30 November 2018)

20.86 In 2018/19, the Other ISDN2 reporting line would include (in addition to revenues associated with non-charge controlled ISDN2 services) 4 months of revenue associated with ISDN2 rentals, connections and transfers – i.e. the proportion of revenue associated with these services ordered after the end of the transitional period. The ISDN2 rentals and transfer lines would include 8 months of information relating to the transitional period and 4 months of information relating to the post-transitional period. The ISDN2 Connections line would include 8 months of information relating to the transitional period only.

20.87 During this review, we discovered that some ISDN2 'network features' services had been reported within the 'Other WLR' service in the WFAEL market in the 2016/17 RFS and three ISDN2 services had been reported in residual markets. In future, these services must be reported within the 'Other ISDN2' line. [854]

Component level information

20.88 Given that we have decided not to require BT to publish FAC for ISDN2 at the individual service level, we do not require BT to publish component level FAC for ISDN2 services.

ISDN30

Consultation proposals

Market level information

20.89 We proposed that BT must publish the revenue, operating costs, capital employed and returns for the ISDN30 market. In practice, this would mean that the ISDN30 market continues to be included in the 'performance summary by market' schedule in the RFS and the 'attribution of wholesale current costs and mean capital employed' schedules.

Service level information

20.90 We proposed that BT must publish revenue, volume, and the average price for ISDN30 services, split between internal and external customers, at the level that they are regulated.

20.91 We did not propose to require FAC information to be reported since the proposed charge control was based on a flat nominal cap, rather than based on a detailed cost model. We did not consider that stakeholders needed visibility of ISDN30 service FAC to assess compliance with the control.

20.92 We said it was important to continue to report revenue associated with new ISDN30 lines to ensure that the total service level revenue reconciles with the market level revenue reported in the 'summary performance by market' schedule. We therefore proposed that BT should publish revenue, volume and average prices for the following services/groups of services:

- Transitional period
  - ISDN30 Rentals
  - ISDN30 Connections
  - ISDN30 Transfers
  - ISDN30 Enhanced care (SML 3 and 4)

[854] BT response dated 23 August 2017 and 22 September 2017 to the 17th NMR s.135 notice. In 2016/17 £1.8m of ISDN2 revenue was included in the Other WLR line and £1.9m of revenue was included in wholesale residual.

  - ISDN30 Direct Dialling – Rentals
  - ISDN30 Direct Dialling – Planning
  - ISDN30 Direct Dialling – Connections

- After the transitional period
  - ISDN30 rentals – Existing Lines
  - ISDN30 transfers – Existing Lines;
  - ISDN30 Enhanced Care (SML 3 and 4) – Existing Lines
  - ISDN30 Direct Dialling – Rentals – Existing Lines
  - ISDN30 – New Connections, Transfers, Rentals and Ancillary Services (revenue reporting only)

Cost components for reported services

20.93 Given that we did not propose to require BT to publish FAC for ISDN30 at the individual service level, we did not propose to require BT to publish component level FAC for ISDN30 services.

Stakeholder responses

20.94 BT made the same comments for ISDN30 as it made for ISDN2.

20.95 BT also asked for clarification on whether the service currently reported as ISDN30 Enhanced Care should be renamed ISDN30 SML 3 and 4, and whether new direct dialling revenue would need to be separately reported following the transitional period.[855]

Our conclusions

Market level information

20.96 No stakeholders disagreed with our proposals to require BT to report market level information for ISDN30. We have therefore decided that BT must publish the revenue, operating costs, capital employed and returns for the ISDN30 market. This is for the same reasons as set out in paragraph 20.61.

Service level information

20.97 No stakeholders disagreed with our proposals to require BT to publish revenue, volume, and the average price (split between internal and external customers) for ISDN30 services during the transitional period and for existing services following the transitional period.

20.98 We consider that publishing internal and external prices helps demonstrate compliance with the no undue discrimination obligation and allows stakeholders to see how average prices compare to the price cap. We consider that publishing internal and external revenues and volumes demonstrates the impact and effectiveness of the remedies proposed in the ISDN30 market and provides transparency about the relative usage of ISDN30 services by BT and external telecoms providers.

---

[855] Openreach response to 2016 NMR Consultation, paragraph 149.

20.99 We have decided not to require BT to publish FAC information at a service level for the reasons given in paragraph 20.91.

20.100 Although we have decided to remove most SMP remedies on new ISDN30 connections, rentals, transfers and ancillary services from the end of the transitional period, we consider that it is important to continue to report, for the whole of the next market review period, the revenue associated with new lines to ensure that the market total reconciles with that reported in the 'summary performance by market' schedule. We have therefore decided that BT must publish revenue information related to new lines after the transitional period.

20.101 We have reviewed which services it would be appropriate for BT to report against the charge controls we have imposed to ensure that services are reported at the level that they are regulated. In Section 9, we decided to impose separate charge controls on the following baskets and individual services during the transitional period:

- A basket of rentals, channel connections and SML3 and 4
- Channel connections
- SML3 and 4
- Line connections
- DDI rentals
- DDI connections
- DDI planning
- Transfers

20.102 Following the transitional period, charge controls will no longer apply to line connections, DDI connections and DDI planning.

20.103 We said above that the nature of the pricing remedy was an important consideration when determining service level reporting. Given this, we have decided to require BT to report on each charge controlled service or sub-basket, i.e. ISDN30 channel connections, SML3 and 4[856], line connections, DDI rentals, DDI connections and DDI planning. While there is not a separate charge control on ISDN30 rentals (it is part of a basket with channel connections and SML3 and 4), the other services in the basket are subject to separate controls such that ISDN30 rentals should be separately reported to effectively report on the basket as a whole. In addition, like other ISDN30 lines, ISDN30 rentals are subject to a no undue discrimination obligation and ISDN30 rentals represent around 95% of ISDN30 revenue.[857] The reported services should be consistent with the definitions in Annex 9. Any ISDN30 service not included in these charge controls should be reported in an 'Other ISDN30' reporting line.

20.104 We recognise that the transitional period runs to 30 November 2018 and therefore spans regulatory financial year reporting periods. The 2018/19 financial year includes 8 months of the transitional period and 4 months of the post-transitional period. We have amended our consultation proposals slightly to provide clarity on what services should be reported in

[856] This service is currently reported as ISDN30 Enhanced Care but we have changed the name to ISDN30 SML 3 and 4 to be more consistent with the name of this service in the Openreach price list.
[857] In 2016/17 ISDN30 rental revenue was £167.8m out of a total market revenue of £176.4m.

each financial year as follows. Note that only revenue reporting will be required for 'Other ISDN30'.

Table 20.2: ISDN30 service reporting in each financial year

2017/18	2018/19	2019/20 onwards
ISDN30 Rentals	ISDN30 Rentals (lines ordered before 30 November 2018)	ISDN30 Rentals (lines ordered before 30 November 2018)
ISDN30 Channel Connections	ISDN30 Channel Connections (lines ordered before 30 November 2018)	ISDN30 Channel Connections (lines ordered before 30 November 2018)
ISDN30 Line Connections	ISDN30 Line Connections (ordered before 30 November 2018)	-
ISDN30 SML3 and 4	ISDN30 SML3 and 4 (ordered before 30 November 2018)	ISDN30 SML3 and 4 (ordered before 30 November 2018)
ISDN30 Transfers	ISDN30 Transfers (ordered before 30 November 2018)	ISDN30 Transfers (ordered before 30 November 2018)
ISDN30 DDI Rentals	ISDN30 DDI Rentals (ordered before 30 November 2018)	ISDN30 DDI Rentals (ordered before 30 November 2018)
ISDN30 DDI Planning	ISDN30 DDI Planning (ordered before 30 November 2018)	-
ISDN30 DDI Connections	ISDN30 DDI Connections (ordered before 30 November 2018)	-
Other ISDN30	Other ISDN30 (including all ISDN30 services ordered after 30 November 2018)	Other ISDN30 (including all ISDN30 services ordered after 30 November 2018)

20.105 In 2018/19, the Other ISDN30 reporting line would include (in addition to revenues associated with non-charge controlled ISDN30 services) 4 months of revenue associated with ISDN30 Rentals, Channel Connections, Line Connections, SML 3 and 4, Transfers, DDI Rentals, DDI Planning and DDI Connections – i.e. the proportion of revenue associated with these services ordered after the end of the transitional period. The ISDN30 Rentals, Channel Connections, SML 3 and 4, Transfers and DDI Rentals lines would include 8 months of information relating to the transitional period and 4 months of information relating to the post-transitional period. The ISDN30 Line Connections, DDI Planning and DDI

Connections lines would include 8 months of information relating to the transitional period only.

20.106 During this review, we discovered that some ISDN30 'network features' services had been reported within the 'Other WLR' service in the WFAEL market in the 2016/17 RFS. This included the charge controlled 'ISDN30 DDI Rentals' service. In addition, two ISDN30 services had been reported in residual markets. In future, of these services, the ISDN30 DDI Rentals service must be separately reported while all other ISDN30 services must be reported within the 'Other ISDN30' line.[858]

Component level information

20.107 Given that we have decided not to require BT to publish FAC for ISDN30 at the individual service level, we do not require BT to publish component level FAC for ISDN30 services.

WCO

Consultation proposals

Market level information

20.108 We proposed that BT must publish the revenue, operating costs, capital employed and returns for the WCO market. In practice, this would mean that the WCO market continues to be included in the 'performance summary by market' schedule in the RFS and the 'attribution of wholesale current costs and mean capital employed' schedules.

Service level information

20.109 Since we did not propose a no undue discrimination obligation in respect of WCO, we did not consider it was appropriate to continue requiring BT to publish internal and external prices and volumes for WCO at the individual service level (although we proposed to require BT to provide to us with this information privately).

20.110 We did not propose to require service-level FAC information to be reported because we did not consider this would be appropriate given our proposal to impose a fair and reasonable charging obligation to address concerns over a potential price squeeze rather than excessive prices. Information on the FAC of WCO services is not clearly relevant to a price squeeze assessment so we did not propose to require BT to publish this information (although we proposed to require BT to provide us with this information privately).

Component level information

20.111 Given that we did not propose to require BT to publish FAC for WCO at the individual service level, we did not propose to require BT to publish component level FAC for WCO services.

[858] BT response dated 23 August 2017 and 22 September 2017 to the 17th NMR s.135 notice. In 2016/17 £4.7m of ISDN30 revenue was included in the Other WLR line and £20k of revenue was included in wholesale residual.

Stakeholder responses

20.112 BT welcomed our proposal to remove the obligation to publish service level information.[859] However, BT said it did not see a benefit to stakeholders of publishing a market-level ROCE for WCT since it was potentially misleading (e.g. 51.9% in 2015/16 and 32.7% in 2016/17).[860] BT noted that the size of the ROCE was due to Ofcom's previous approach to setting prices in WCO and WCT, with WCT prices set at LRIC and common costs recovered only through WCO prices.[861]

20.113 BT suggested that it should only be required to publish a combined ROCE for WCO and WCT markets. It said this was supported by Ofcom's publications of graphs showing separate and combined ROCEs in the 2016 NMR Consultation.[862]

Our conclusions

Market level information

20.114 We have decided that BT must publish the revenue, operating costs, capital employed and returns for the WCO market. This is for the same reasons as set out in paragraph 20.61.

20.115 We recognise that the market ROCE for WCO appears high compared to the cost of capital due to previous pricing decisions, where costs that were common between WCO and WCT were recovered from WCO prices and WCT prices were set at LRIC. However, we disagree that it would be appropriate to publish combined market information for WCO and WCT. We consider it is important to publish market level information (which includes revenues and costs and MCE as well as ROCE), to give stakeholders confidence that BT is complying with its SMP conditions (including separately accounting for the WCO market) and that the RFS are reliable and robust by presenting financial information on a consistent basis for all wholesale markets where BT has reporting obligations. In Section 14 we said that we would expect ROCE for WCO to continue to be above the cost of capital during the review period, and in our view the level of the published ROCE for WCO would be consistent with stakeholder expectations given our approach to setting prices in these markets.

Service level information

20.116 No stakeholders disagreed with our proposal not to require BT to publish information on internal and external revenues, volumes, prices or FAC at the individual service level. We have therefore decided not to require BT to publish service level information on WCO.

Component level information

20.117 Given that we have decided not to require BT to publish FAC for WCO at the individual service level, we do not require BT to publish component level FAC for WCO services.

[859] BT response to 2016 NMR Consultation, paragraph 5.58.
[860] BT response to 2016 NMR Consultation, paragraph 5.59. It was not clear from BT's response whether it only considered the market level ROCE should be omitted or all market level information (i.e. revenues, costs, MCE and returns).
[861] BT response to 2016 NMR Consultation, paragraph 5.59.
[862] BT response to 2016 NMR Consultation, paragraph 5.60.

WCT

Consultation proposals

Market level information

20.118 We proposed that BT must publish the revenue, operating costs, capital employed and returns for the WCT market. In practice, this would mean that the WCT market continues to be included in the 'performance summary by market' schedule in the RFS and the 'attribution of wholesale current costs and mean capital employed' schedules.

Service level information

20.119 We proposed that BT must publish revenue, volume, and average price for WCT services, split between internal and external customers, at the level that they are regulated.

20.120 Given the proposal to remove the time of day gradient, we proposed to simplify the service level information published in the RFS to remove time of day information where BT does not vary prices by time of day. Where BT does vary prices by time of day, we proposed that time of day information on volumes and prices would continue to be required.

20.121 We did not propose to require service-level FAC information to be reported since the charge control is not based on BT's costs.

20.122 We also noted that the current level of service reporting in the RFS sees WCT services being reported by network section, with local exchange segments and sticks being separately reported. We proposed that the distinction between segments and sticks was no longer necessary and proposed that BT should publish revenue, volume and average price information, split between internal and external customers, for a single service, "WCT services".

Component level information

20.123 Given that we did not propose to require BT to publish FAC for WCT at the individual service level, we did not propose to require BT to publish component level FAC for WCT services.

Stakeholder responses

20.124 BT agreed with our proposal not to require BT to publish FAC information at the service and component level, given the proposed charge control remedy was not based on BT's costs.

20.125 As with WCO, BT said it did not see a benefit to stakeholders of publishing a market level ROCE because it was potentially misleading (e.g. -53.7% in 2015/16 and -57.4% in 2016/17). BT proposed that it should not publish a market return for WCT, which it said would be consistent with Ofcom's approach on MCT.[863]

[863] BT response to 2016 NMR Consultation, paragraphs 5.62-63.

20.126 BT argued that stakeholders could obtain assurance that it was complying with SMP obligations though publication of non-confidential compliance statements and that stakeholders would receive no additional benefit from the publication of service level information on WCT.[864]

20.127 BT said that time of day reporting should no longer be required once time of day pricing ceases.[865] BT said it would retain the capability to provide time of day analysis if this is needed for compliance purposes.[866]

Our conclusions

Market level information

20.128 We have decided that BT must publish the revenue, operating costs, capital employed and returns for the WCT market. This is for the same reasons as set out in paragraph 20.61.

20.129 We recognise that the market ROCE for WCT appears low compared to the cost of capital due to previous pricing decisions, where costs that were common between WCO and WCT were recovered from WCO prices and WCT prices were set at LRIC. However, we disagree with BT that it would be appropriate to remove the requirement to publish a ROCE for WCT. We consider it is important to publish market level information (which includes revenues and costs and MCE as well as ROCE), to give stakeholders confidence that BT is complying with its SMP conditions (including separately accounting for the WCO market) and that the RFS are reliable and robust by presenting financial information on a consistent basis for all markets. As noted above, in Section 14 we said that we would expect ROCE for WCT on an FAC basis to continue to be below the cost of capital during the review period, and in our view the level of the published ROCE for WCT would be consistent with stakeholder expectations given our approach to setting prices in WCT. In relation to MCT, we set out our proposed approach to regulatory reporting in our recent consultation, saying that we did not consider it would be appropriate in the context of the MCT market to impose regulatory reporting remedies on MCT providers.[867] We also recognise that BT's relative market position in WCT is different from that in MCT.[868]

Service level information

20.130 We have decided that BT must publish revenue, volume, and average price for a single WCT service "WCT services", split between internal and external customers. Requiring BT to publish internal and external prices helps demonstrate compliance with the no undue discrimination obligation and allows stakeholders to see how average prices during the year compare to the price cap. Publishing internal and external revenues and volumes helps demonstrate the impact and effectiveness of the remedies proposed for WCT, and provides transparency about the relative usage of WCT by BT and external telecoms

---

[864] BT response to 2016 NMR Consultation, paragraph 5.64.
[865] BT response to 2016 NMR Consultation, paragraph 5.65.
[866] BT response to 2016 NMR Consultation, paragraph 5.66.
[867] Ofcom, 2017. *Mobile Call Termination Market Review 2018-21 – Consultation*, paragraph 4.91. https://www.ofcom.org.uk/__data/assets/pdf_file/0011/103340/mobile-call-termination-consultation.pdf.
[868] For example, in Section 13 we identify that BT terminates around 50% of WCT volumes by minutes.

providers. Publication of a single WCT service is consistent with our price cap, which does not distinguish between different network segments (e.g. exchange segment and stick).

20.131 We disagree with BT that there is no benefit to stakeholders of publishing service level information and that stakeholders could obtain assurance from non-confidential compliance schedules. We explained above that service level information and non-confidential compliance schedules serve different purposes.

20.132 Given our decision to remove the time of day gradient following a two-month transitional period, we have decided to simplify the service level information published in the RFS to remove time of day information where BT does not vary prices by time of day. Where BT does continue to vary prices by time of day, it will still be required to publish time of day information on volumes and prices. BT's response indicates it will retain this capability.

20.133 No stakeholders disagreed with our proposal not to require BT to publish information on FAC at the individual service level. We have therefore decided not to require BT to publish service level FAC information for WCT.

Component level information

20.134 Given that we have decided not to require BT to publish FAC for WCT at the individual service level, we do not require BT to publish component level FAC for WCT services.

Interconnect circuits

Consultation proposals

Technical area level information

20.135 We proposed that BT must publish the revenue, operating costs, capital employed and returns for interconnect circuits. In practice, this would mean that interconnect circuits continue to be included in the 'performance summary by market' schedule in the RFS and the 'attribution of wholesale current costs and mean capital employed' schedules.

Service level information

20.136 We proposed that BT must publish revenue, volume, average price and FAC for interconnect circuits at the level that they are regulated. We noted that, following BT's 2015/16 Change Control Notification (CCN), from 2015/16 we expected all revenues, volumes and averages prices reported in the RFS to relate to external customers only.

20.137 We proposed that this information should be reported for the following services, which is consistent with the current level of reporting in the RFS:

- external wholesale standard Customer-Sited Interconnect connections
- external wholesale standard Customer-Sited Interconnect rentals – fixed
- external wholesale standard Customer-Sited Interconnect rentals – per km
- external wholesale interconnection extension circuits connections
- external wholesale interconnection extension circuits rentals – fixed
- external wholesale interconnection extension circuits rentals – per km
- external wholesale intra-building circuits connections

- external wholesale intra-building circuits rentals
- external wholesale in-span interconnection links rentals
- external nominated in-span interconnection links – per km
- external wholesale rearrangements

20.138 Given that we were proposing to only regulate interconnect circuits at the DLE level of BT's network (consistent with the level at which we regulate WCO and WCT) we noted that BT would need to separately identify revenues and costs associated with interconnect at the DLE and, in doing so, it may need to appropriately attribute revenues and costs to different types of interconnect service (e.g. between tandem and DLE interconnect). We said we expected BT to explain its approach to attributing revenues and costs in its Accounting Methodology Document (AMD).

Component level information

20.139 We proposed that BT must publish the calculation of service level FAC based on network component costs and usage factors for interconnect circuits. This was consistent with our proposal to require the publication of service level FAC information.

Stakeholder responses

20.140 BT agreed with our proposed reporting requirements[869] though it noted that "the form of deregulation will make reporting obligations, while remaining feasible, harder to fulfil as interconnection at the tandem layer will need to be distinguished from interconnect at the DLE".[870]

Our conclusions

Technical area level information

20.141 We have decided that BT must publish the revenue, operating costs, capital employed and returns for the interconnect services that we proposed in the consultation as listed above. This is for the same reasons as set out in paragraph 20.61. Reported revenues for these interconnect circuits should be gross of any revenue shares or discounts associated with the traffic passed over the circuits.[871]

Service level information

20.142 No stakeholders disagreed with our proposal to require BT to publish revenue, volume, average price and FAC for the services proposed at the level that they are regulated. We have therefore decided to implement this proposal. As noted above, we expect all volumes and average prices for the interconnect circuits reported in the RFS to relate to external customers only.

20.143 We consider it is appropriate to require BT to report price information to allow stakeholders to see how average prices compare to the price caps, and the publication of

[869] BT response to 2016 NMR Consultation, paragraph 5.68.
[870] BT response to 2016 NMR Consultation, paragraph 5.57.
[871] We understand that this is how interconnect revenues are currently reported in the RFS.

external revenues will allow Ofcom and other stakeholders to monitor the activities of BT to ensure that it does not discriminate unduly. We consider that publishing service level revenues and volumes helps demonstrate the impact and effectiveness of the regulation we have decided to apply to interconnect circuits. Publishing the revenues also allows stakeholders to see the revenues that are used as the weighting in the charge control formula.[872] Reported revenues for interconnect circuits should be gross of any revenue shares or discounts associated with the traffic passed over the circuits. This is consistent with the definition of external revenue in condition 5D.

20.144 We have decided to require BT to publish service level FAC information for ISB services since this would be consistent with the charge control remedy, which, as set out in section 19, has been informed by cost information on interconnect circuits. We consider that revenue, volume, average price and FAC should be reported for the following services, which is consistent with the interconnect services in the basket and the current level of reporting in the RFS:

- external wholesale standard Customer-Sited Interconnect connections
- external wholesale standard Customer-Sited Interconnect rentals – fixed
- external wholesale standard Customer-Sited Interconnect rentals – per km
- external wholesale interconnection extension circuits connections
- external wholesale interconnection extension circuits rentals – fixed
- external wholesale interconnection extension circuits rentals – per km
- external wholesale intra-building circuits connections
- external wholesale intra-building circuits rentals
- external wholesale in-span interconnection links rentals
- external nominated in-span interconnection links – per km
- external wholesale rearrangements[873]

20.145 As set out in Section 17, we have decided to only regulate interconnect circuits at the DLE level of BT's network as this is consistent with the level at which we regulate WCO and WCT. Telecoms providers can also connect to BT's network at the tandem level. To comply with our obligations, BT will need to separately identify revenues and costs associated with interconnect at the DLE and, in doing so, it may need to appropriately attribute revenues and costs to different types of interconnect service. We expect BT to explain its approach to attributing revenues and costs in its AMD. We recognise that this obligation may require BT to make amendments to its cost accounting system, but it is important for the information published in the RFS to relate to the relevant part of the network subject to regulation.

[872] See Section 19.
[873] According to page 69 of BT's 2016 wholesale catalogue, external wholesale rearrangements are as follows, "Rearrangement of Intra building circuits is necessary when an operator wishes to alter the actual routing of the circuit within the exchange (physical rearrangement) or the type of service offered over the circuit (software rearrangement)". https://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2016/WholesaleCatalogue2015-16.pdf.

20.146 We note that BT is currently only required to publish information about the circuit types listed i.e. interconnect circuits provided over its TDM network and not interconnect circuits provided using IP.

Component level information

20.147 No stakeholders disagreed with our proposal to require BT to publish component level FAC information. We have therefore decided to implement our proposal. This is consistent with our decision to require the publication of service level FAC information. Network component cost information will help us and stakeholders understand the costs of interconnect circuits and assess whether costs have been attributed appropriately.

Private reporting

Consultation proposals

20.148 In addition to information reported in the published RFS, BT also provides information to us privately which, overall, ensures that we have the information necessary to make informed regulatory decisions, monitor compliance with SMP conditions, ensure that those SMP conditions continue to address the underlying competition issues and investigate potential breaches of SMP conditions and anti-competitive practices. BT currently provides us with several additional financial information (AFI) schedules including a data file which provides detailed information on all the revenues, volumes, costs and cost categories that support the published RFS.

20.149 In the 2016 NMR Consultation, we proposed to do the following[874]:

- Remove the AFI-28 schedule on the basis that the information (which related to NTS retail and PRS Bad Debt Services) is no longer required[875];
- Amend the requirement to provide a data file, to capture the arrangements with BT that are currently in place and ensure that the data file includes information on ISDN30, ISDN2, WCO and WCT markets that is not reported publicly[876];
- Maintain a schedule showing volume, revenue and cost data for TRCs associated with the WFAEL market[877]; and

---

[874] 2016 Narrowband Consultation, paragraphs 19.79 to 19.87

[875] Ofcom, 2014. *Changes to BT and KCOM's regulatory and financial reporting 2013/14 update*, table on page 42. https://www.ofcom.org.uk/__data/assets/pdf_file/0029/68762/bt_kcom_1314_statement.pdf.

[876] For ISDN30 and ISDN2 the amendment included revenue, volume and cost information on new rental, connection and ancillary services and components to help us understand whether BT is allocating costs appropriate between old and new ISDN lines, assess compliance with the no undue discrimination obligation and assess the impact and effectiveness of the remedies imposed. For WCO and WCT the amendment included revenue, volume and cost information to help us understand the allocation of costs between and within markets and assess the impact and effectiveness of the remedies imposed. For WCT, the amendment also clarified that the data file should include volumes and average prices by time of day, where BT offers time of day pricing.

[877] This TRC schedule is required to monitor the impact and effectiveness of the proposed remedies, to ensure they continue to address the competition problems identified and to enable our timely and effective intervention should this be necessary. TRCs are provided in a number of different regulated markets and this schedule ensures that BT records information necessary for the purposes of monitoring TRC revenues and costs, and to enable comparison of TRC costs across markets where relevant (for example between the WFAEL and WLA markets).

- Amend the requirement to provide DLRIC and DSAC data to clarify that BT should provide this information for all markets (as it currently does).[878]

Stakeholder comments

20.150 We did not receive any comments on these proposals. BT suggested that the data file should be the starting point to assess whether there is a need for it to provide additional information to Ofcom privately.[879]

20.151 BT said that any additional private information should be limited and justified as follows:[880]

- there is a clear need for the required information for Ofcom to meet its regulatory duties;
- the requirement for additional information is proportionate for that need; and
- the information cannot be extracted from the data file.

Our conclusions on overall approach to private reporting

20.152 We have decided to amend the information that BT reports to us privately as per our consultation proposals for the reasons given above. No stakeholders disagreed with these proposals. We have made further amendments as set out below to ensure our proposals are fully implemented.

20.153 The condition that imposes the requirement for BT to provide information privately does not specify the format of that information, meaning that it could be provided as a file within the data file rather than as a separate AFI.

20.154 In principle, we agree with BT that where the information is provided within the data file, it need not be provided as a separate AFI. However, we do not consider that this would apply:

- to information that we do not get as part of the data file (currently any LRIC and DSAC information);
- where obtaining the information from the data file would not be straightforward and/or the information from the data file would be different to that which would have been included in the AFI[881]; or
- where the AFI is used as a control total for information obtained from the data file.[882]

20.155 We have reviewed the current list of AFIs against these criteria and have identified a further three AFIs that BT will no longer need to provide, since we can obtain this information from the data file.[883] All other AFIs should continue to be provided separately.

[878] DLRIC and DSAC data can inform our market reviews and our assessment and analysis of appropriate remedies where SMP is present. It is important to receive this information on all markets to ensure the overall coherence of the data on DLRIC and DSAC.
[879] Openreach response to 2016 NMR Consultation, paragraph 94.
[880] Openreach response to 2016 NMR Consultation, paragraph 95.
[881] This may be due to rounding or omission of small value line items in the data file. In this case, by 'different' we mean that there would be a difference of at least 1% in any individual number.
[882] For example, AFIs 1 to 4 are used for this purpose.
[883] These are AFIs 7, 8 and 11 which provide various breakdowns of operating cost and MCE by component.

To fully implement our proposal to capture the arrangements currently in place when BT provides us with the data file each year, we have included a requirement for BT to provide certain control total files so we can validate the outputs of the data file. This does not require BT to provide information to us that it is not already providing.

20.156 In relation to interconnect, we set out above that BT will need to separately identify revenues and costs associated with interconnect at the DLE from those associated with the tandem level, and that we expect it to explain its attribution methodology in its AMD. To ensure that we understand the attribution methodology adopted by BT, we are requiring BT to continue to provide us with the volumes, revenues, operating costs and MCE associated with interconnect circuits at the DLE and tandem layer combined (i.e. to continue to provide us with the information on interconnect that it currently publishes in the RFS). BT can provide this information in a separate schedule or as part of the data file.

20.157 Finally, in 2015/16 and 2016/17 BT provided us with a breakdown of cost components by cost category on a DLRIC and DSAC basis to complement the LRIC and FAC breakdowns we received as additional financial information. We have formalised the provision of this information in the directions.[884]

Non-confidential compliance information

20.158 In the 2014 Regulatory Financial Reporting Statement, we said that “BT must produce non-confidential compliance schedules for each regulated market. These non-confidential compliance statements must be published on BT’s website in the same location as the Published Regulatory Financial Statements and at the same time as the confidential compliance statements are provided to Ofcom”.[885] Publication of compliance statements helps provide assurance about BT’s compliance with charge controls.

20.159 Following the 2015 Directions Statement BT has published non-confidential compliance schedules on its website in 2014/15 and 2015/16 in relation to the WFAEL and both ISDN markets.[886] In the 2016 NMR Consultation we proposed directions requiring BT to publish non-confidential compliance schedules for the narrowband markets and interconnection where we have decided to impose a specific price control, i.e. the ISDN30 and ISDN2 markets, and in relation to the provision of interconnect circuits.[887] No stakeholders disagreed with this proposal so we have decided to implement this requirement.

---

[884] AFIs 1 and 2 have been amended to require information on a LRIC, DLRIC and DSAC basis. This does not require BT to provide information to us that it is not already providing.

[885] 2014 Regulatory Financial Reporting Statement, paragraph 4.49.

[886] See the Regulatory Financial Statements section of BT’s website, http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm.

[887] We have decided to not require BT to publish non-confidential compliance schedules for WCT, since we have decided to introduce a single maximum rate for the FTR cap, indexed by CPI-X each year. We will publish the relevant price caps on our website each year (i.e. updating for CPI), as we do for Mobile Call Termination rates (see https://www.ofcom.org.uk/about-ofcom/latest/media/analysts/regulated-prices).

20.160 We have clarified in the direction set out in annex 10 that revenue-related information can be redacted in the non-confidential compliance statement where revenue information is not published in the RFS, as this is consistent with current practice.

Direction for the preparation, delivery, publication, form and content of the RFS

20.161 We have decided to implement the requirements set out above by giving a direction to BT setting out the requirements explained above in relation to preparation, delivery, publication, form and content of the RFS in respect of the narrowband markets and interconnect circuits. We consider that it is appropriate for the direction to be based on the form of the direction given in the 2015 Directions Statement with the modifications necessary to reflect our decisions set out above.

20.162 We consider that giving the direction specifying requirements in relation to the preparation, delivery, publication, form and content of the RFS for each market fulfils our general duties under section 3 of the Act and meets the Community requirements set out in section 4 of the Act because:

- The direction is designed to give us a greater role in determining how BT should prepare its Regulatory Financial Statements, thereby ensuring the Regulatory Financial Statements are aligned with our regulatory decisions and giving confidence to stakeholders about the absence of bias in the preparation of the Regulatory Financial Statements. It also ensures that the presentation and usability of the Regulatory Financial Statements is improved and that the obligations that are imposed on BT are proportionate.
- The direction therefore seeks to ensure the RFS remain relevant, thereby increasing transparency. Ultimately, this promotes competition.

20.163 In taking our decision, we have taken due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

20.164 We also consider that the direction imposed in each market meets the tests set out in section 49(2) of the Act in that it is:

- Objectively justifiable because the Direction will reflect the decisions in this statement. Our decisions concerning the additional information to be provided, both in public and in private, seek to ensure that stakeholders have sufficient information about the products and services they purchase to provide them with reasonable confidence about BT’s compliance with its SMP conditions and that we have sufficient information necessary to carry out our functions.
- Not unduly discriminatory because it reflects BT’s market position in the UK excluding the Hull area, and we have explained in this statement the reasons for requiring relevant information from BT both publicly and privately.
- Proportionate because the Direction will be no more than is required to ensure the effectiveness of the decisions in this document and ensures that Ofcom and

stakeholders are provided with a sufficient level of information, and does not extend beyond these.

- Transparent because it is clear that the intention of the Direction will be to make sure that the RFS remain fit for purpose and that Ofcom and stakeholders are provided with a sufficient level of information.

Amendments made to the direction

20.165 BT provided comments on this direction[888] and we summarise the amendments we have made in response below. These amendments ensure that the directions accurately reflect our decisions set out in this section.

- We have amended the Performance Summary by Market/Technical Area schedule to include headings for:
  - ‘EOI Eliminations’ and ‘Roundings’ between the Wholesale Residual and Total Wholesale Markets headings; and
  - ‘Eliminations’ and ‘Roundings’ between the Retail Residual and Total Markets headings.
- We have included a column for ‘EOI Eliminations’ in the schedules for Attribution of Wholesale Current Costs and Attribution of Wholesale Current Cost Mean Capital Employed.
- We have amended the Market/Technical Area Summary schedule to include a row for Roundings and sub basket rows.
- For the WFAEL market we have clarified that the service called WLR Premium Conversions in the 2016 NMR Consultation should have been called WLR Premium Transfers (i.e. as currently reported).
- We have corrected the list of services that are required to be reported for WFAEL as part of the Market/Technical Area calculation of FAC based on component costs schedule.[889]

Other directions we have decided to impose

20.166 In addition to the preparation, delivery, publication, form and content of the RFS direction, there are six other directions from the 2015 Directions Statement specifying requirements in relation to regulatory financial reporting that we have decided to impose. We did not receive any stakeholder comments on these six directions. Imposing these directions will align the narrowband markets and interconnection with the regulatory financial reporting directions imposed in other recent market reviews, ensuring that regulatory financial reporting is prepared on a consistent basis.[890] We describe each of these directions below

[888] Openreach response to 2016 NMR Consultation, paragraphs 141-152.
[889] BT identified in its response that we had omitted some services in the 2016 NMR Consultation.
[890] Specifically, the directions in the 2015 Directions Statement (which applied to the WFAEL, WLA, ISDN30, ISDN2 and WBA markets) and the 2016 BCMR Statement (which applied to business connectivity markets).

and explain why we have decided to impose them on narrowband markets and interconnect circuits.

Regulatory Accounting Principles (RAP)[891]

20.167 We decided to introduce the RAP in the 2014 Regulatory Financial Reporting Statement.[892] The RAP are a set of guiding principles with which BT's Regulatory Financial Reporting must comply. To preserve the integrity and consistency of the RFS we consider that the RAP should be implemented across all regulated markets (to the extent that each market review considers this to be appropriate) as there are significant advantages to BT and other stakeholders of BT applying one set of principles across all markets. We therefore have decided to implement these requirements by giving a direction to BT in the form set out in the 2015 Directions Statement in respect of the narrowband markets and interconnect circuits.

20.168 We consider that giving the direction specifying the Regulatory Accounting Principles in relation to each market and interconnection fulfils our general duties under section 3 of the Act and meets the Community requirements set out in section 4 of the Act for the reasons set out in 20.162.

20.169 In making this decision, we have taken due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

20.170 We also consider that the direction imposed on each market and interconnection meets the tests set out in section 49(2) of the Act in that it is:

- Objectively justifiable because by specifying the Regulatory Accounting Principles we will establish the attributes for BT's regulatory financial reporting.
- Not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull area. KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not established the need for such regulation at present.
- Proportionate because our decision is no more than is required to ensure an absence of bias and consistency with regulatory decisions. While we are establishing Regulatory Accounting Principles, BT retains an important role in determining the basis of preparation of the Regulatory Financial Statements, and can continue to put through methodology changes where this is in line with the Regulatory Accounting Principles and such changes have been notified to Ofcom.
- Transparent because it is clear that the intention of our decision is to ensure we take a greater role in the basis of preparation of the Regulatory Financial Statements to ensure an absence of bias and consistency with regulatory decisions.

[891] The Regulatory Accounting Principles are: 1. Completeness; 2. Accuracy; 3. Objectivity; 4. Consistency with regulatory decisions; 5. Causality; 6. Compliance with the statutory accounting standards; 7. Consistency of the RFS as a whole and from one period to another.

[892] 2014 Regulatory Financial Reporting Statement, paragraph 1.12 and section 3.

Preparing the RFS on a RAV basis

20.171 For the purposes of some price controls we use the RAV of access duct.[893] However, prior to the 2014 Regulatory Financial Reporting Statement, BT valued duct on a current cost (CCA) basis. This meant that we had to make an adjustment for each charge control and investigation that included access duct to revalue it on a RAV basis. This made it difficult for stakeholders to see in the RFS the revised returns for markets where we apply the RAV adjustment. Therefore, in the 2014 Regulatory Financial Reporting Statement, we decided that BT must prepare the RFS on a RAV basis.[894] To preserve the integrity and consistency of the RFS, we consider that access duct associated with all regulated markets should be prepared on a RAV basis.[895] We consider it appropriate to implement this requirement in this review and we have decided to implement it by giving a direction to BT in relation to the narrowband markets and interconnect circuits. We consider that it is appropriate to use the form of direction from the 2015 Directions statement but, for the reasons set out above, amended to remove references to consistency with regulatory decisions.

20.172 We consider that giving the direction specifying the RAV methodology for each market and interconnection would fulfil our general duties under section 3 of the Act and meet the Community requirements set out in section 4 of the Act for the reasons given in paragraph 20.162. In deciding upon this change, we have taken due account of applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

20.173 We also consider that the direction imposed on each market and interconnection meets the tests set out in section 49(2) of the Act in that it is:

- objectively justifiable because the requirements specifying the RAV methodology will establish further detail and will also provide BT with clarity as to the requirements which it will need to follow to ensure that the Regulatory Financial Statements are prepared on the RAV basis;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull area. KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not decided that KCOM should prepare its Regulatory Financial Statements on a RAV basis;
- proportionate because our decisions are no more than is required to ensure that BT is provided with clarity as to the requirements which it will need to follow to ensure that the Regulatory Financial Statements are prepared on the RAV basis; and
- transparent because it is clear that our decisions seek to provide BT with clarity as to the requirements which it will need to follow to ensure that the Regulatory Financial Statements are prepared on the RAV basis.

---

[893] The RAV is the value ascribed by Ofcom to access duct which was in existence prior to August 1997 (i.e. assets which were in existence prior to the change in valuation method from historical cost accounting to current cost accounting). For further details, see section 6.2.5 of BT's 2015/16 Accounting Methodology Document.
[894] 2014 Regulatory Financial Reporting Statement, paragraph 3.91.
[895] We note that BT's 2015/16 RFS was prepared on a RAV basis. See page 9 of the 2015/16 RFS.

Transparency

20.174 One of the purposes of imposing a cost accounting obligation is to ensure that fair, objective and transparent criteria are used to prepare regulatory financial statements. Therefore, the purpose of any such direction is to ensure that any information, material or explanatory document prepared by BT in respect of the RFS is sufficiently transparent such that a suitably informed reader can gain a clear understanding of the information presented. To preserve the integrity and consistency of the RFS, we consider that all markets should be subject to the same transparency direction. We consider that it is appropriate to implement these requirements in this review and have decided to give a direction to BT in the form set out in the 2015 Directions Statement in respect of the narrowband markets and interconnect circuits.

20.175 We consider that giving the direction in each market and interconnection, specifying the transparency requirements for each market, fulfils our general duties under section 3 of the Act and meets the Community requirements set out in section 4 of the Act for the reasons given in paragraph 20.162. In deciding upon this change, we have taken due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

20.176 We also consider that the direction imposed on each market and interconnection meets the tests set out in section 49(2) of the Act in that it is:

- objectively justifiable because the changes we have decided to introduce will improve the clarity of BT's Accounting Methodology Documents;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull area. KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not at present established the need for such changes. In any case, KCOM's Secondary Accounting Documents do not exhibit the same level of complexity as BT's;
- proportionate because the changes are no more than is required to ensure that presentation of the basis of preparation is clear for users, and they reduce the regulatory burden on BT; and
- transparent because it is clear that the intention of our changes is to ensure that presentation of the basis of preparation is clear for users.

Audit of the RFS

20.177 Audit of the RFS can help give users confidence that the information provides a fair reflection of financial performance, is free from error and has been prepared following the accounting methodology statements published by BT and relevant directions issued by Ofcom.[896] To preserve the integrity and consistency of the RFS we consider that all markets should be subject to the same audit direction. We consider that it is appropriate to implement these requirements in this review and therefore, have decided to give a

[896] Chapter 5 of the 2014 Financial Reporting Statement explained the changes to audit requirements imposed on BT.

direction to BT in the form set out in the 2015 Directions Statement in respect of the narrowband markets and interconnect circuits.

20.178 We consider that giving the direction, specifying the audit requirements for each market and interconnection, fulfils our general duties under section 3 of the Act and meets the Community requirements set out in section 4 of the Act for the reasons given in paragraph 20.162. In deciding upon this change, we have taken due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

20.179 We also consider that the direction imposed on each market and interconnection meets the tests set out in section 49(2) of the Act in that it is:

- objectively justifiable because it is important for both stakeholders and Ofcom that an appropriate level of assurance is provided on the RFS;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull area. KCOM is the only other SMP provider which has regulatory accounting obligations and KCOM is required to secure an appropriate level of audit opinion on its Regulatory Financial Statements;
- proportionate because the audit requirements are no more than is necessary to ensure that an appropriate level of assurance is provided on the RFS; and
- transparent because it is clear that the intention of our changes is to ensure that an appropriate level of assurance is provided on the RFS.

Reconciliation report

20.180 In the 2014 Financial Reporting Statement we decided as a matter of policy that BT must publish the impact of all material changes and errors in an annual reconciliation report with an accompanying assurance report from their regulatory auditors. Changes to attribution methods or the correction of errors can affect all markets reported in the RFS. As a result, to preserve the integrity and consistency of the RFS, we consider that all markets should be subject to the same direction to produce a reconciliation report. We consider that it is appropriate to implement these requirements in this review and therefore, have decided to give a direction to BT in the form set out in the 2015 Directions Statement in respect of the narrowband markets and interconnect circuits.

20.181 We consider that giving the direction, specifying the requirements in relation to the reconciliation report and the accompanying audit opinion for each market and interconnection, would fulfil our general duties under section 3 of the Act and meet the Community requirements set out in section 4 of the Act for the reasons given in paragraph 20.162. In deciding upon this change, we have taken due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

20.182 We also consider that the direction imposed on each market and interconnection meets the tests set out in section 49(2) of the Act in that it is:

- objectively justifiable because it is necessary for there to be visibility in relation to changes and errors made in the Regulatory Financial Statements, both for us and for other stakeholders, and it is therefore necessary for us to specify the requirements in relation to the content of the reconciliation report and the accompanying audit opinion;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull area. While KCOM is the only other SMP provider which has regulatory accounting obligations we do not consider that it is necessary to impose this requirement on KCOM at this stage;
- proportionate because our decisions are no more than is required to provide visibility in relation to changes and errors both for us and for other stakeholders; and
- transparent because it is clear that our decisions seek to provide visibility in relation to changes and errors both for us and for other stakeholders and to provide BT with clarity about the requirements specifying the content of the reconciliation report and the accompanying audit opinion.

Network components

20.183 This direction specifies the cost components used by BT to prepare the RFS. To preserve the integrity and consistency of BT's Regulatory Financial Reporting it is important that there is a single list of components used to attribute costs to services in regulated markets. In the Directions Statement, we gave a direction to BT in respect of, among others, the WFAEL, ISDN30 and ISDN2 markets, specifying the network components. In the 2016 BCMR Statement[897], we gave a direction to BT specifying the list of network components in relation to the markets covered by that review. This list was an updated list based on the list contained in the Directions Statement. To preserve the integrity and consistency of BT's Regulatory Financial Reporting it is important that there is a single list of components used to attribute costs to services in regulated markets and we consider that the list set out in the direction given in the 2016 BCMR Statement is appropriate in relation to the markets covered by this review.[898] We therefore have decided to specify the network components by giving a direction in the form set out in the 2016 BCMR Statement in respect of the narrowband markets and interconnect circuits.

20.184 We consider that giving the direction, specifying BT's list of network components for each market and interconnection, fulfils our general duties under section 3 of the Act and meets the Community requirements set out in section 4 of the Act for the reasons given in paragraph 20.162. In deciding upon this change, we have taken due account of all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular the 2005 EC Recommendation.

[897] Paragraph 16.90 of the 2016 BCMR Statement says that, following a review of the network components, i) components that are only utilised by services in markets where no cost accounting obligation exists were removed from the component list, ii) nine new components were introduced and iii) seven components were withdrawn.

[898] Some of the components added to the network component list in the 2016 BCMR Statement are relevant to the narrowband markets, e.g. the component for 'Openreach time related charges'.

20.185 We also consider that the direction imposed on each market and interconnection meets the tests set out in section 49(2) of the Act in that it is:

- objectively justifiable because it is necessary to make the reporting of services in Narrowband markets consistent with the reporting of services in other regulated markets;
- not unduly discriminatory because it reflects BT's market position in the UK excluding the Hull area. KCOM is the only other SMP provider which has regulatory accounting obligations and we have also decided to update KCOM's list of components in this statement to enable it to prepare its Regulatory Financial Statements;
- proportionate because our decision is no more than is required to specify network components. Our decision about the modification of network components is no more than is required to make the reporting of services in Narrowband markets consistent with the reporting of services in other regulated markets; and
- transparent because it is clear that our decision specifies network components and seeks to make the reporting of services in narrowband markets consistent with the reporting of services in other regulated markets, and to ensure that these components remain fit for purpose.

Directions we have decided not to impose

Consultation proposals

20.186 We did not consider it was necessary to impose the following directions on BT which were previously imposed in the 2015 Directions Statement:

- **Consistency with regulatory decisions.** As explained in the 2014 Regulatory Financial Reporting Statement, this requirement is relevant where we consider regulatory decisions should be reflected in the RFS to ensure consistency, as per Regulatory Accounting Principle number four.[899] We did not consider that any adjustments were required to BT's RFS to ensure that reporting is consistent with regulatory decisions taken as part of this review.
- **Adjusted financial performance.** This requirement may be relevant where we consider regulatory decisions should be reflected in the RFS to ensure consistency with regulatory decisions. As with the consistency direction, we did not consider that any adjustments were required to BT's RFS to ensure that reporting is consistent with regulatory decisions taken as part of this review.
- **Electricity charge attributions.** This direction made in the 2015 Directions statement related to the WLA market and is not relevant to narrowband markets.[900] We therefore proposed not to make a direction for electricity charge attributions.

---

[899] 2014 Regulatory Financial Reporting Statement, paragraphs 3.36-3.42

[900] 2015 Directions Statement, paragraph 1.17.

Stakeholder comments

20.187 No stakeholders commented on our proposal not to impose the directions for consistency with regulatory decisions and electricity charge attributions.

20.188 BT disagreed with our proposal to remove the requirement for an Adjusted Performance Schedule.[901] In particular, BT said that "assets in the ISDN30 and ISDN2 markets are heavily depreciated, which may make market returns potentially misleading. Although there is no longer a charge control in these markets, we believe that the performance in these markets should be adjusted for in the Adjusted Financial Performance Schedule".[902] BT also proposed that an adjustment is made to WCO market returns in an adjusted financial performance schedule.

Our conclusions

20.189 Given that no stakeholders commented on our proposal not to impose the directions for consistency with regulatory decisions and electricity charge attributions we have decided not to impose these two directions.

20.190 Where we adjust BT's incurred costs in our regulatory decisions, we might expect to see those adjustments reflected in the RFS, either through the consistency direction or the adjusted financial performance direction. In this review, we have not made any explicit adjustments to BT's costs when setting price controls. As a result, we do not consider that it is necessary to impose either direction.

20.191 We note that in the 2015 Directions Statement we also concluded that it was not necessary to require BT to include any adjustments for ISDN2 or ISDN30 in the adjusted financial performance statement. [903]

20.192 We have explained above the expected impact of our charge control decisions on reported returns for the ISDN30, ISDN2, WCO and WCT markets. In our view the level of the published ROCE for these markets would be consistent with stakeholder expectations given our approach to setting prices in these markets.

KCOM reporting

20.193 In Section 11 we decided to impose accounting separation and cost accounting remedies on KCOM in relation to the WFAEL, ISDN30, ISDN2 and WCO markets. We said that we decided to impose on KCOM the SMP conditions capturing the specific form of KCOM's accounting separation and cost accounting requirements from the 2004 Regulatory Financial Reporting Statement.[904] Given KCOM's size relative to BT and its potential impact

[901] Openreach response to 2016 NMR Consultation, paragraph 91; BT response to 2016 NMR Consultation paragraph 5.44.
[902] Openreach response to 2016 NMR Consultation, paragraph 118.
[903] 2015 Directions Statement, paragraphs 4.159-4.173.
[904] Ofcom, 2004. *The Regulatory Financial Reporting Obligations on BT and Kingston Communications – Final Statement and Notification*. https://www.ofcom.org.uk/__data/assets/pdf_file/0034/55969/finance_report.pdf.

on the UK telecoms market, the regulatory financial reporting requirements on KCOM in the past have been less than those applied to BT.[905]

20.194 In the 2004 Regulatory Reporting Statement, we also set out our reasoning and policy decisions about the detailed requirements which we considered were appropriate for KCOM's RFS in all regulated markets and which we implemented by way of six directions. These six directions currently apply to KCOM and specify requirements in relation to the following:

- **Direction 1: Network components**. This direction specifies all of the network cost components used by KCOM to prepare the RFS. To preserve the integrity and consistency of KCOM's regulatory financial reporting it is important that there is a single list of components used to attribute costs to markets and services in each regulated market.
- **Direction 2: Transparency**. One of the purposes of imposing a cost accounting obligation is to ensure that fair, objective and transparent criteria are used to prepare regulatory financial statements. The purpose of this direction is therefore to ensure that any information, material or explanatory document prepared by KCOM in respect of the RFS is sufficiently transparent, such that a suitably informed reader can gain a clear understanding of the information presented. To preserve the integrity and consistency of the RFS we consider that all markets should be subject to the same transparency direction.
- **Direction 3: Preparation, audit, delivery and publication of the RFS**. This direction sets out which financial schedules KCOM is required to provide for each regulated market and the audit opinion that it is required to obtain for each schedule (consistent with Directions 5 and 6). This direction plays an important role in ensuring that the RFS provide relevant information to stakeholders. Some elements of the published RFS relate to all markets[906], while others are specific to particular markets. To preserve the integrity and consistency of the RFS, we consider that all markets should be subject to appropriate reporting requirements.
- **Direction 4: Form and content of the RFS**. This direction sets out the format of each financial schedule from Direction 3. As with Direction 3, this direction plays an important role in ensuring that the RFS provide relevant information to stakeholders and, to preserve the integrity and consistency of the RFS, we consider that all markets should be subject to appropriate reporting requirements.
- **Direction 5 (form of the 'FPIA' opinion for financial statements) and Direction 6 (form of the 'PPIA' opinion for financial statements)**. These directions set out the standard of audit review for each financial schedule set out in Direction 3. FPIA means

[905] This was recognised in our 2004 Regulatory Financial Reporting Statement. In paragraph 3.25 we said "Given Kingston's size relative to BT and its potential impact on the UK telecoms market, Ofcom considers that there is some scope to reduce the level of detail that Kingston is required to prepare, have audited and publish on a regular basis. However, Ofcom notes that it expects Kingston to have processes in place that will enable it to produce this information if required".
[906] For example, the reconciliation of the RFS as a whole to KCOM's statutory accounts.

"fairly presents in accordance with" and PPIA means "properly prepared in accordance with".[907]

20.195 In its response to our 2016 NMR Consultation, KCOM did not disagree with our regulatory reporting proposals and there were no substantive comments on our proposals from other stakeholders. Therefore, we have decided to implement our consultation proposals. Specifically, we have decided that these six directions will continue to apply to KCOM, with the modifications to Directions 1, 3 and 4 as set out below. These modifications reflect how we have decided to regulate KCOM and ensure that Ofcom and stakeholders receive relevant financial information.

Modification to Direction 1: Network components

20.196 In the 2016 BCMR Statement we decided to amend KCOM's list of network components to include the following components[908]:

- Local Loop Infrastructure
- Exchange to Exchange Infrastructure
- Electronics
- Field provision
- Field maintenance
- Back-office Provision
- Back-office Maintenance
- Sales and Product Management
- Net Current Assets
- Other

20.197 We have considered whether these additional components should be applied to the narrowband markets.

20.198 For the WFAEL, ISDN30 and ISDN2 markets, KCOM's RFS reports four components: exchange concentrator, exchange-exchange transmission length, product policy and planning for narrowband call services and local loop infrastructure. We do not consider that these components reflect the main cost elements of services in these markets. At a high level, we would expect the components to broadly reflect the costs associated with the main building blocks required to provide these services, for example: the copper line and associated duct, frames, jumpering[909], line cards and testing equipment. We therefore have decided to amend the list of network components associated with the WFAEL market consistent with the 2016 BCMR Statement. Once included in KCOM's cost attribution system, we would expect the component Exchange to Exchange Infrastructure to capture the costs of frames and jumpering associated with services in these markets, while the Electronics component would capture costs of line cards and testing equipment.

[907] Paragraphs 4.56 and 4.57 of the 2014 Regulatory Financial Reporting Statement explain what opinion is required under FPIA and PPIA.
[908] 2016 BCMR Statement, paragraphs 14.120-14.121,
[909] The engineering activity associated with wiring the end-user's line with the telecoms provider's equipment.

20.199 For the WCO market, KCOM's RFS reports seven components: exchange concentrator, exchange processor, exchange-exchange transmission link, exchange-exchange transmission length, national operator assistance, emergency operator assistance, and Product Policy and Planning for narrowband call services. These components appear broadly appropriate and reflect the main cost elements of WCO services on KCOM's network. However, to ensure consistency with cost components in other markets, we have decided to amend the list of network components associated with the WCO market consistent with the 2016 BCMR Statement. Once these new components are included in KCOM's cost attribution system, we would expect, for example, that the current component Product Policy and Planning for narrowband call services would be replaced with the new component Sales and Product Management.

20.200 We have therefore decided to amend the list of network components associated with the WFAEL, ISDN30, ISDN2 and WCO markets consistent with the 2016 BCMR Statement. To preserve the integrity and consistency of KCOM's RFS it is important that there is a single list of components used to attribute costs to services in regulated markets. Consistent with the 2016 BCMR Statement, we have decided that KCOM must implement this change for its 2017/18 RFS.

Modification to Direction 1

20.201 We have decided to modify the information set in Annex A to Direction 1 imposed in each of the WFAEL, ISDN30, ISDN2 and WCO markets by adding the network components listed at paragraph 20.196 above.

20.202 We consider that the modifications to Direction 1 fulfil our general duties under section 3 of the Act and meet the Community requirements set out in section 4 of the Act because:

- Our decision is aligned with Ofcom's regulatory decisions and gives confidence to stakeholders about the absence of bias in the preparation of the Regulatory Financial Statements. It also ensures that the presentation and usability of the Regulatory Financial Statements is improved and that the obligations that are imposed on KCOM are proportionate.
- The decision therefore seeks to ensure that the RFS remain relevant, thereby increasing transparency. Ultimately, this promotes competition.

20.203 We also consider that the modifications meet the tests set out in section 49(2) of the Act in that it is:

- objectively justifiable because it is necessary for us to give a direction specifying network components. Our decision about the modification of list of network components is objectively justifiable because it is necessary to make the reporting of services in Narrowband markets consistent with the reporting of services in other regulated markets;
- not unduly discriminatory because it reflects KCOM's market position in the Hull area. BT is the only other SMP provider which has regulatory accounting obligations and we have also decided to update BT's list of components in this statement;

- proportionate because our decision is no more than is required to specify network components and ensure that the reporting of services in narrowband markets is consistent with the reporting of services in other regulated markets; and
- transparent because it is clear that our decision seeks to specify network components and to make the reporting of services in narrowband markets consistent with the reporting of services in other regulated markets and to ensure that these components remain fit for purpose.

Modifications to Direction 3 (preparation, audit, delivery and publication of the RFS) and Direction 4 (form and content of the RFS)

20.204 Together, Directions 3 and 4 specify what financial schedules KCOM should prepare and what information it should publish in its RFS.

20.205 Although the 2014 Regulatory Financial Reporting Statement did not explicitly apply to KCOM[910], we consider that some of the principles from that statement are relevant when considering the regulatory financial reporting we require from KCOM. In particular, we consider it is appropriate that the information we require KCOM to publish in its RFS should reflect the level of the remedy (as it does with BT's reporting) and strike a balance between information that stakeholders need to contribute to the regulatory regime, confidentiality concerns that KCOM may have around the commercial nature of its financial information and, in the case of KCOM, its smaller scale relative to BT.

20.206 We have not previously required KCOM to provide us with information privately. However, as set out below, we have decided to remove the requirement for KCOM to publish cost component information for the WFAEL, ISDN30, ISDN2 and WCO markets on the basis that we have decided to not impose cost-based charge controls or cost orientation obligations on KCOM.[911] In order for KCOM to demonstrate compliance with its cost accounting obligations, we have decided to require KCOM to provide us with cost component information for each of these markets privately. This will help demonstrate to us that KCOM is using an appropriate cost accounting system to attribute costs to markets.[912]

20.207 We have also decided to remove the requirement for KCOM to publish two schedules showing internal and external sales by market in relation to narrowband markets.[913] These schedules show average time of day prices for WCO and revenue information for all regulated markets. We do not consider that it is appropriate to require average time of day prices to be reported for WCO given that we have decided to remove the obligations on KCOM not to unduly discriminate. The revenue information in this schedule is duplicated in other schedules in the RFS.

[910] 2014 Regulatory Financial Reporting Statement, paragraphs 2.125 and 2.126.
[911] A summary of our decisions for KCOM can be found in Tables 11.1 and 11.2.
[912] We will continue to require KCOM to publish a description of its cost accounting system each year. See http://www.kcomplc.com/regulatory/regulatory-accounts/.
[913] See pages 50 and 51 of KCOM's 2016/17 RFS.

20.208 In addition, KCOM publishes a profit and loss and balance sheet which consolidates the information for each of the WFAEL, ISDN30, ISDN2 and WCO markets.[914] We have decided to remove these two schedules because the information is already included in the individual profit and loss and balance sheet schedules for each individual market.

20.209 Further, we have decided to make some minor modifications to Direction 3 to reflect KCOM's current reporting arrangements.[915]

20.210 After reviewing the reporting currently provided publicly by KCOM, in the rest of this section we set out our decisions on:

- the public information to be reported by KCOM in relation to the narrowband markets; and
- the information on cost components that we require KCOM to provide us with privately.

Public information

20.211 KCOM currently publishes a profit and loss account, balance sheet and a cost component breakdown for the WFAEL, ISDN30, ISDN2 and WCO markets.[916]

20.212 We have decided that KCOM must continue to publish the profit and loss and balance sheet schedules for these markets. Trends in market-level financial performance allow us to monitor developments in the market and are informative in the context of considering the impact and effectiveness of remedies as a whole. Market level cost information also provides transparency regarding how KCOM has attributed costs between regulated markets (and between regulated and unregulated markets). We see this as facilitating stakeholder confidence that such costs have been attributed consistently.

20.213 For ISDN30 and ISDN2 we have also decided that internal and external sales shown in the profit and loss account must be split between existing lines and new lines from the end of the transitional period, consistent with the remedy.

20.214 We have decided to remove the obligation for KCOM to publish a component cost breakdown for the WFAEL, ISDN30, ISDN2 and WCO markets. As set out above, we do not consider that it is appropriate to require KCOM to publish this information where a cost-based charge control is not being imposed.[917]

20.215 KCOM also publishes a schedule showing internal and external sales by market.[918] For these markets, this information is duplicated in the profit and loss account so we have decided to remove the requirement to publish this schedule.[919] In addition, these schedules publish

[914] See pages 9 and 10 of KCOM's 2016/17 RFS.
[915] These modifications clarify that KCOM is not required to publish incremental cost information and it is only required to publish a consolidated network services reconciliation statement (see page 59 of KCOM's 2015/16 RFS) and not one for each market. These modifications do not affect the information to be published by KCOM in its RFS.
[916] See KCOM's 2016/17 RFS.
[917] Unlike BT, KCOM does not provide MPF.
[918] Pages 50 and 51 of KCOM's 2016/17 RFS.
[919] The revenue information is duplicated for all markets so we have decided to remove this schedule in its entirety.

internal and external time of day prices and volumes (minutes) for WCO. Since we have not decided to impose a no undue discrimination obligation in respect of WCO, we do not consider it is appropriate to continue requiring KCOM to publish internal and external prices and volumes for WCO.

Private information on cost components

20.216 As explained above, we have decided that KCOM must provide cost component information to us privately to demonstrate that it is using an appropriate cost accounting system to attribute costs to markets, including the use of the required network components. We therefore have decided that KCOM must provide us with a schedule showing the breakdown by cost component of the operating costs and capital employed associated with the WFAEL, ISDN30, ISDN2 and WCO markets.

Modification to Direction 3 (Preparation, Audit, Delivery and Publication of the RFS)

20.217 We have decided to modify Direction 3 imposed in each of the WFAEL, ISDN30, ISDN2 and WCO markets as follows:

- Annex A will be modified so that the cost component schedule should be provided to Ofcom privately rather than published for each of the WFAEL, ISDN30, ISDN2 and WCO markets; and
- Annex B will be modified so that the schedules showing internal and external revenue for all markets and time of day pricing and volumes for WCO are no long required for narrowband markets.

20.218 We consider that the modifications to Direction 3 fulfil our general duties under section 3 of the Act and meet the Community requirements set out in section 4 of the Act because:

- Our decision is aligned with Ofcom's regulatory decisions and gives confidence to stakeholders about the absence of bias in the preparation of the Regulatory Financial Statements. It also ensures that the presentation and usability of the Regulatory Financial Statements is improved and that the obligations that are imposed on KCOM are proportionate.
- The decision therefore seeks to ensure the RFS remain relevant, thereby increasing transparency. Ultimately, this promotes competition.

20.219 We also consider that modifications meet the tests set out in section 49(2) of the Act in that they are:

- Objectively justifiable because the Direction will reflect the decisions in this drft statement. Our decisions concerning the information to be provided, both in public and in private, seek to ensure that stakeholders have sufficient information about the products and services they purchase to provide them with reasonable confidence about KCOM's compliance with its SMP conditions and that we have sufficient information necessary to carry out our functions.
- Not unduly discriminatory because it reflects KCOM's market position in the Hull area. BT is the only other SMP provider which has regulatory accounting obligations, and we

have explained in this statement the reasons for requiring relevant information from KCOM both publicly and privately.

- Proportionate because the modifications will be no more than is required to ensure the effectiveness of the decisions in this statement and ensures that Ofcom and stakeholders are provided with a sufficient level of information, and does not extend beyond these.
- Transparent because it is clear that the intention of the modifications will be to make sure that the RFS remain fit for purpose and that Ofcom and stakeholders are provided with a sufficient level of information.

Modification to Direction 4 (Form and Content of the RFS)

20.220 We have decided to modify Direction 4 imposed in each of the WFAEL, ISDN30, ISDN2 and WCO markets as follows:

- Annexes 7 and 8 will be removed. These annexes contain schedules showing the consolidated profit and loss account and balance sheet for the WFAEL, ISDN30, ISDN2 and WCO markets; and
- Annex 9 will be modified for the ISDN30 and ISDN2 markets to split internal and external sales between existing lines and new lines in the P&L schedule from the end of the transitional period.

20.221 We consider that the modifications to Direction 4 fulfil our general duties under section 3 of the Act and meet the Community requirements set out in section 4 of the Act because:

- Our decision is aligned with Ofcom's regulatory decisions and gives confidence to stakeholders about the absence of bias in the preparation of the Regulatory Financial Statements. It also ensures that the presentation and usability of the Regulatory Financial Statements is improved and that the obligations that are imposed on KCOM are proportionate.
- The decision therefore seeks to ensure the RFS remain relevant, thereby increasing transparency. Ultimately, this promotes competition.

20.222 We also consider that modifications meet the tests set out in section 49(2) of the Act in that they are:

- Objectively justifiable because the modifications will reflect the decisions in this statement. Our decisions concerning the information to be provided, both in public and in private, seek to ensure that stakeholders have sufficient information about the products and services they purchase to provide them with reasonable confidence about KCOM's compliance with its SMP conditions and that we have sufficient information necessary to carry out our functions.
- Not unduly discriminatory because it reflects KCOM's market position in the Hull area. BT is the only other SMP provider which has regulatory accounting obligations, and we have explained in this statement the reasons for requiring relevant information from KCOM both publicly and privately.

- Proportionate because the modifications will be no more than is required to ensure the effectiveness of the decisions in this statement and ensures that Ofcom and stakeholders are provided with a sufficient level of information, and does not extend beyond these.
- Transparent because it is clear that the intention of the modifications will be to make sure that the RFS remain fit for purpose and that Ofcom and stakeholders are provided with a sufficient level of information.