

# Business Connectivity Market Review – Volume I

Review of competition in the provision of leased lines

Redacted for publication  $\succ$ 

Statement

Published:

28 April 2016

# About this document

Ofcom's Business Connectivity Market Review examines the provision of leased lines to businesses in the UK.

Leased lines are high-quality, dedicated, point-to-point data transmission services used by businesses and providers of communications services. They are essential components not only of many business information and communication technology (ICT) services, but also of mobile and residential broadband services.

Every three years, Ofcom conducts a review of competition in the provision of leased lines in the UK. Where we find that a provider has "significant market power" (SMP) we impose regulations appropriate for protecting the interests of consumers in light of the competition concerns raised.

This statement sets out our analysis of the relevant markets, identifying markets in which a provider has SMP. The document also sets out the remedies we are imposing to address the competition problems that would otherwise arise from such SMP, including controls on the prices that BT can charge for these services.

# Contents

Section	I	Page
1	Executive summary Introduction	1 1
	Market context	1
	The review process	2
	Our Decisions	3
	European consultation	13
2	Background Scope and purpose of this review	15 15
	Last market review	15
	Call for Inputs consultation summary	17
	Data analysis consultation summary	18
	Passive remedies consultation summary	18
	Main BCMR consultation summary	19
	LLCC consultation summary	20
	Cost Attribution Review consultation summary	20
	Second LLCC consultation summary	21
	Second Cost Attribution Review consultation summary	21
	Strategic Review of Digital Communications	22
	Summary of business connectivity market research	22
	Summary of market research on quality of service	23
	Summary of further research	24
	Information gathering	24
	The regulatory framework	25
	Impact assessment	29
	Equality impact assessment	29
	European consultation	29
	Structure of this Statement	30
3	Market context Introduction	31 31
	Markets overview	31
	Services considered in this review	36
	Volumes and trends	44
	Competition developments	46
	Stakeholders' responses	51
4	Market assessment for wholesale Contemporary Interface Symmetric Broadband Origination services	53

	4.1 Introduction	53
	4.2 Product market definition	54
	4.3 Geographic market definition	116
	4.4 Assessment of market power in relevant markets	148
	4.5 Mobile and LLU backhaul	175
	4.6 CI core	178
5	Market assessment for legacy wholesale services Introduction	183 183
	Approach to market assessment for legacy services	184
	Substitutability between leased lines with different types of interface	185
	TI services at higher bandwidths	193
	Identifying the boundary between TI terminating segments and trunk networks	198
	Geographic market definition	200
	SMP assessment	201
6	Assessment of wholesale and retail markets in the Hull area Introduction	205 205
	Assessment of competition in wholesale markets	206
	Assessment of competition in retail markets	219
	Application of the EC's three criteria test to retail markets	228
7	General approach to remedies and assessment of passive	е
	remedies	235
		235
	Decision to remove regulation	236
	Competition problems we identified	236
	National and Community competition law	237
	Regulatory Framework	239
	Consideration of passive remedies	241
	Overall impact of our package of remedies	249
	Impact of remedies in the LP	250
8	General remedies for wholesale leased lines markets Introduction	254 254
	Summary of decisions	255
	Assessment of appropriate remedies	256
	Price control remedies	289
	Other issues	297
9	Specific remedy for the CISBO markets – Dark Fibre Introduction	310 310
	Requirement to provide access to dark fibre on reasonable request	311
	Requirement not to discriminate unduly and Equivalence of Inputs (EOI)	318

	Approach to regulating prices of dark fibre	323
	Minimum requirements for Reference Offer	332
	Transparency as to quality of service	341
10	Specific remedies for the CISBO markets – active remedies Introduction	344 344
	Summary of our decisions	344
	Structure of this section	345
	Assessment of appropriate remedies	346
11	Specific remedy for the TISBO market Introduction	368 368
	Summary of our decisions	368
	Assessment of appropriate remedies	368
12	Remedies – interconnection and accommodation services Introduction	376 376
	Summary of our decisions	376
	Assessment of appropriate remedies	377
13	Remedies – quality of service Introduction	387 387
	Summary of decisions	388
	Structure of this section	393
	Introduction	393
	Assessment of Openreach's quality of service	397
	The impact of poor performance on Openreach's customers	419
	Openreach's incentives to deliver acceptable Ethernet provisioning quality of service	423
	The design of minimum standards for Ethernet provisioning and repair quality of service	428
	Setting the minimum standards	461
	Decisions on the implementation of quality of service remedies	506
14	Remedies for the Hull area Introduction	543 543
	Summary of decisions	543
	Structure of this Section	545
	Developments since the BCMR 2013	545
	Remedies for the wholesale leased lines markets	546
	Remedies for the retail leased lines markets	574
15	Remedies – summary of approach to setting the charge controls Introduction	593 593
	Key features of our charge controls	593
	Approach to setting the charge controls	595
	Impact of the new charge controls	598

16	Regulatory financial reporting Introduction	600 600
	Directions to implement regulatory accounting requirements as set out in the 2014 Regulatory Financial Reporting Statement	600
	Our conclusions on the requirement for consistency with regulatory decisions	601
	Our conclusions on reporting requirements to support remedies in the BCMR 2016	608
	Legal tests	623

## **Section 1**

# **Executive summary**

## Introduction

- 1.1 Leased lines are important components of business Information and Communications Technology (ICT) services, particularly those used by large multisited enterprises and Government organisations. They also play a significant role in delivering fixed and mobile broadband services to consumers, as Communications Providers (CPs) use them extensively in their networks. We define them as services which provide dedicated transmission capacity between fixed locations.
- 1.2 This document is a Statement of the conclusions of our review of competition in the provision of leased lines in the UK. Subject to any comments from the European Commission, our conclusions will impose rules, including price controls, where we find that competition is not effective. We carry out this review, known as the Business Connectivity Market Review (BCMR), every three years, in accordance with the EU regulatory framework for telecommunications, which is implemented in the UK by the Communications Act 2003 (the Act).
- 1.3 The overall aim of our work in the BCMR is to ensure that the interests of end-users are protected and to promote effective competition, efficient investment, innovation and choice.

## **Market context**

- 1.4 Bandwidth consumption by businesses and by private users continues to increase. An increasing number of enterprises host their computing infrastructure in remote data-centres ('cloud' computing), and consumption of high bandwidth services such as streamed video is growing rapidly.
- 1.5 The increasing demand for bandwidth is driving up volumes of high-capacity leased lines, which require optical fibre and fast electronic equipment. However, not all businesses require high capacities, and leased lines serve many different applications, reflected in the very wide range of bandwidths available.
- 1.6 Provision of leased lines requires infrastructure including exchanges, underground ducts and optical fibres and/or copper wire cables. Links which use optical fibre from end-to-end can support leased line services of any bandwidth up to hundreds of Gbit/s. The bandwidth capability of copper wire is more limited.
- 1.7 While several CPs (such as Virgin Media, Vodafone and Colt) operate access infrastructure in parts of the UK, BT's access infrastructure is ubiquitous, covering all of the UK except Hull, where KCOM is the incumbent provider. Previous regulations have required BT and KCOM to provide a range of leased line services on a wholesale basis, which other operators can buy to serve their end-users or to link nodes in their own networks.
- 1.8 Ethernet is the technology most commonly employed in modern leased lines, although some very-high-bandwidth services use wavelength-division multiplex

(WDM) equipment.<sup>1</sup> Legacy services use either analogue or digital time-division multiplex (TDM) equipment, which is no longer manufactured.

1.9 In this review, we refer to the modern Ethernet and WDM services collectively as Contemporary Interface (or CI), and to the legacy services collectively as Traditional Interface (or TI).

# The review process

1.10 There are three formal stages in the BCMR, as in other market reviews which we conduct under the EU regulatory framework. First, we define each relevant market in terms of its product and geographic scope. Then we assess whether any CP has a position of significant market power (SMP) in any of the relevant markets, which, in essence, means that a CP would be able to operate in the market without effective constraint from competition. Finally, we assess which regulatory remedies we should impose *ex ante* to address competition concerns that arise from any SMP finding.

## Chronology

- 1.11 We completed the last BCMR in 2013, and set out our findings in a Statement which we published in March 2013.<sup>2</sup>
- 1.12 On 1 April 2014, before starting our substantive analysis in this review, we published a Call for Inputs (CFI) to set out our plan for the review and to gather stakeholders' views on topics which we thought were likely to be particularly important.<sup>3,4</sup>
- 1.13 Following publication of the CFI, we conducted market research, held extensive discussions with industry stakeholders and analysed a large amount of data which CPs provided in response to our formal requests for information about their networks and services. We also reviewed relevant publicly-available information.
- 1.14 In October 2014 we published a consultation on our initial analysis of the data we gathered from CPs on their network coverage and level of activity in leased lines markets.<sup>5</sup>
- 1.15 In November 2014 we published a preliminary consultation on passive remedies.<sup>6</sup>
- 1.16 In May 2015 we published our main consultation for this review, including our proposals for market definition, SMP findings and remedies.<sup>7</sup> At the same time we

<sup>&</sup>lt;sup>1</sup> WDM allows a single fibre to carry several leased line services simultaneously.

 <sup>&</sup>lt;sup>2</sup> See Business connectivity market review - Final statement, 28 March 2013, available at <a href="http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/">http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/</a>
 <sup>3</sup> See Business connectivity market review – Timetable and initial call for inputs, 1 April 2014,

available at <u>http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity-market-review/summary/Business-Connectivity-Market-Review.pdf</u>
<sup>4</sup> Annex 1 lists the respondents to all consultations we published as part of the BCMR.

<sup>&</sup>lt;sup>4</sup> Annex 1 lists the respondents to all consultations we published as part of the BCMR. <sup>5</sup> See *Business Connectivity Market Review – Consultation on data analysis*, 8 October 2014, available at <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-data-</u> analysis/computerion.pdf

analysis/summary/BCMR\_Data\_Consultation.pdf <sup>6</sup> See Business Connectivity Market Review – Preliminary consultation on passive remedies, 5 November 2015, available at <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-passives/summary/BCMR\_passives.pdf</u>

published a consultation proposing to deregulate BT's provision of retail very-lowbandwidth TI services.8

1.17 In June and November 2015, we published consultations on the controls we proposed to impose on BT's wholesale charges for leased lines (the leased lines charge control, or LLCC).<sup>9</sup> These referred to analysis contained in consultations under our Cost Attribution Review.<sup>10</sup>

#### **Strategic Review of Digital Communications**

- In parallel with the BCMR, Ofcom has been conducting the Strategic Review of 1.18 Digital Communications (DCR), which sets out our approach to regulating communications markets for the next decade. Of com published a statement with initial conclusions on the DCR on 25 February.<sup>11</sup> Some of these initial conclusions are directly relevant to our ex ante regulation of telecoms markets, such as our strategic shift to promote large-scale investment in more fibre, our proposals in relation to Openreach's quality of service, and our intention to reform Openreach's governance and strengthen its independence from BT.
- 1.19 The DCR sets out Ofcom's overall strategy for communications markets over the next ten years. The EU regulatory framework requires Ofcom to reach conclusions on leased lines markets this year. This BCMR review has therefore focused on the particular circumstances of the leased lines markets over the three year market review period. Although our review of business connectivity markets was largely undertaken before the publication of the DCR statement, we have identified where appropriate how we consider that the initial conclusions reached in the DCR apply to our review of business connectivity markets, in particular in our analysis of the case for requiring passive access to Openreach's network, and our analysis of Openreach's quality of service for leased lines.

## **Our Decisions**

#### Market analysis

1.20 We define a single product market for CI services of all bandwidths because we find evidence that a chain of substitution links all such services and observe that they can all be provided using the same physical access infrastructure.

<sup>&</sup>lt;sup>7</sup> See Business Connectivity Market Review, review of competition in the provision of leased lines, 15 May 2015, available at http://stakeholders.ofcom.org.uk/consultations/bcmr-

<sup>2015/?</sup>utm\_source=updates&utm\_medium=email&utm\_campaign=bcmr-may15 <sup>8</sup> See Business Connectivity Market Review – Very low bandwidth leased lines, 15 May 2015, available at http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/ <sup>9</sup> See Leased Lines Charge Controls and Dark Fibre Pricing, 12 June 2015, available at

http://stakeholders.ofcom.org.uk/consultations/llcc-dark-fibre/ and Business Connectivity Market Review – Update on the proposed leased lines charge controls, 13 November 2015, available at http://stakeholders.ofcom.org.uk/consultations/bcmr-update-proposed-leased-lines-charge-controls/

<sup>&</sup>lt;sup>10</sup> See *Review of BT's Cost Attribution Methodologies*, 12 June 2015, available at http://stakeholders.ofcom.org.uk/consultations/cost-attribution-review/ and Review of BT's Cost Attribution Methodologies - second consultation, 13 November 2015, available at

http://stakeholders.ofcom.org.uk/consultations/BT-cost-attribution-review-second-consultation/ <sup>11</sup> See Making Digital Communications Work for Everyone, 25 February 2016, available at http://media.ofcom.org.uk/news/2016/digital-comms-review-feb16/

- 1.21 A key implication of this finding is that the degree of choice of alternative infrastructure is the main determinant of the effectiveness of competition in supply of CI services in a given area. We have therefore gathered detailed data on the location of CPs' infrastructure in order to allow us to examine competitive conditions by geography. This allows us to identify potential areas for deregulation and to distinguish between areas with different competitive conditions.
- 1.22 Based on the differences in competitive conditions between geographic areas, we have defined distinct geographic markets in wholesale CI services in each of the Central London Area, London Periphery, Hull and the rest of the UK. The table below illustrates the degree of choice of alternative infrastructure available in the specific geographic areas that we have identified through the analysis in this review.

Number of competitors' networks	Central London Area	London Periphery	Rest of UK (exc. Hull)
At least 1	100%	96%	61%
At least 2	99%	68%	15%
At least 3	98%	40%	5%
At least 4	93%	22%	2%
At least 5	83%	11%	1%

### Table 1.1: Proportion of businesses within 100m of BT's competitors' networks

1.23 We have defined a separate product market for TI services, as we had in previous reviews, because there is little prospect of competitive entry in the provision of these legacy products, whose volume is declining. We have defined two geographic markets for TI services: one in the whole of UK except Hull, and the other in Hull.

## Markets we are deregulating

- 1.24 We are deregulating where our analysis has identified that there is sufficient choice of alternative infrastructure to ensure that end-users will be protected by effective and sustainable competition and BT therefore does not have SMP. In particular, we will no longer regulate the provision of any CI leased lines in the Central London Area. This will mean that no SMP regulations will apply in any part of the value chain of more than 30,000 leased lines.
- 1.25 We have also expanded significantly the set of interconnected 'hub' sites which we identify in the competitive core network, which we do not regulate. BT is not required to provide access to its network between these hub sites, consisting of 64 large datacentres and 119 BT exchanges.<sup>12</sup>
- 1.26 Volumes of some TI services are declining rapidly as their users migrate to modern alternatives. We are therefore no longer regulating the provision of the following types of TI leased lines:
  - i) retail analogue services and retail digital services operating at very low bandwidths, i.e. below 2Mbit/s, outside Hull; and
  - ii) wholesale services operating at bandwidths above 8Mbit/s throughout the UK.

<sup>&</sup>lt;sup>12</sup> The set of core network nodes identified by the regulations superseded by the decisions of this review consists of 85 BT exchanges.

1.27 We are publishing a separate statement setting out our decision to deregulate BT's provision of retail very low bandwidth TI services.<sup>13</sup> BT is planning to withdraw these ageing services. We have been monitoring the progress of end-users' migration to modern alternatives, and are aware that some operators of critical national infrastructure, such as water and electricity utilities, have yet to complete their migrations. We will therefore continue to monitor the progress of their migrations after the conclusion of this review.

## Markets in which we are imposing regulations ex ante

1.28 The markets we are defining and our findings of SMP are summarised in the table below.

		Retail services		Wholesale terminating segments			
Interface technology	Bandwidth (Mbit/s)	Hull	Rest of UK	Central London London Area Periphery Rest of UK		Hull	
Traditional (TI)	Low: <=8	ксом	No SMP	ВТ		КСОМ	
Contemporary (CI)	All bandwidths	ксом	No SMP	No SMP	вт	вт	ксом

## Figure 1.1: Market definitions and SMP findings

## Approach to remedies, including our assessment of passive remedies

- 1.29 The design of appropriate remedies for leased lines markets is complex and requires the exercise of judgment. In making this judgment we have regard to the need to protect consumers and to promote effective competition, innovation and choice in markets for services which use leased lines. We also seek to promote competition in the provision of leased lines based on efficient investment in alternative infrastructure where this is effective and sustainable.
- 1.30 We can impose different types of regulated access to the SMP operator's network, which correspond to different levels in the value-chain of leased lines.
  - An active remedy is a requirement for the SMP operator to offer functioning electronic services on regulated terms, including both the physical elements of the network and the electronic equipment.
  - A passive remedy, in contrast, is a requirement for the SMP operator to offer its competitors access to the physical elements of its network, such as underground ducts and/or optical fibres, without the electronic equipment. In this sense, passive remedies correspond to more upstream levels in the value-chain than active remedies.
- 1.31 A key part of our judgment is to balance the risks and benefits associated with intervening at different levels of the value chain. Regulating access further upstream in the value-chain exposes more of the value-chain to competition between BT and access-seekers, thereby promoting greater innovation and efficiency. However, depending on how it is priced and designed, it could also have risks, such as

<sup>&</sup>lt;sup>13</sup> See Business Connectivity Market Review: Very low bandwidth leased lines, Statement, 28 April 2016, <u>http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/</u>

reducing incentives – both of the SMP operator and of other CPs – to invest in their own local access infrastructure. Our approach must enable the evolution of digital communications in line with the expanding needs of consumers and businesses and support new investment and innovation. Each time we conduct a market review it is therefore important that we reconsider this balance.

- 1.32 In the DCR statement we set out a strategy to encourage large-scale investment in new 'fibre to the premises' networks for mass-market broadband services, including improving access to Openreach's network through passive access to ducts and poles. Our DCR statement also recognised that there are important differences between leased lines and mass-market broadband services. In particular, fibre to the premises is not available on a large scale today for mass-market broadband services, whereas there is significant fibre available for the provision of dedicated leased line services for larger businesses.
- 1.33 In considering whether to impose a passive remedy in this review, we recognised that, at least for the next three years, we would need to retain the active leased line remedies, because the industry relies heavily on them. Any passive remedy would therefore need to be part of a managed transition in which both active and passive leased line remedies coexist.
- 1.34 We have concluded in this BCMR that it is appropriate to change our approach from previous reviews towards regulation further upstream in the value-chain. We have decided that we should move away from the current reliance on BT's regulated (active) services towards a future model in which competition will be based on passive access, consistent with the strategic vision set out in the DCR Statement.
- 1.35 We consider that, at this stage, imposing a passive remedy alongside the active remedies would promote efficiency and sustainable competition in fibre-based leased lines better than is currently possible with active remedies alone, for three main reasons:
  - 1.35.1 First, a passive remedy will stimulate competition based on innovation and differentiation, by allowing CPs to develop new products and services independently of BT, because passive remedies would allow them to choose and manage all the electronic equipment at the ends of the fibre.
  - 1.35.2 Second, a passive remedy will allow the industry to eliminate the need for some duplication of electronic equipment, which is currently required to establish clear demarcation between portions of leased line services managed respectively by BT and by CPs.
  - 1.35.3 Third, once effective and sustainable competition based on passive remedies is established, we will look to roll back regulatory obligations which require BT to provide active services, reducing the overall regulatory burden and shifting the level of our regulatory intervention higher upstream in the value chain.
- 1.36 In this review, we have considered two specific forms of passive remedy in which stakeholders had expressed interest. The first would require BT to provide access to unlit strands of its optical fibre, allowing CPs to provide the electronic equipment needed to light the fibre. We call this remedy 'dark fibre'. The second would require BT to provide access to its ducts, allowing CPs to lay the optical fibre themselves, as well as to provide the necessary electronic equipment. We call this remedy 'duct access'.

- 1.37 We consider that it is appropriate in this review period to proceed with a dark fibre remedy and not to impose duct access. We consider this is the most appropriate means to manage the transition towards competition based on passive remedies. We recognise that imposing a dark fibre remedy would carry some risks relative to an actives-only remedies package. These include the potential for inefficient entry incentivised by regulatory arbitrage opportunities, which could result from any inconsistencies between the pricing of active and dark fibre products, and reduced incentives for CPs and BT to invest in infrastructure.
- 1.38 Our dark fibre design addresses these risks by requiring BT to provide dark fibre in a manner and at a price consistent with its 1Gbit/s wholesale Ethernet leased line services. More specifically, BT, from 1<sup>st</sup> October 2017, will be required to provide dark fibre at the same price as the 1Gbit/s active service, minus the long run incremental costs of the active elements of that 1Gbit/s service. We call this the 'active-minus' pricing approach.
- 1.39 We consider that this approach results in a charge consistent with the design of the controls which we are imposing on BT's charges (described below), which provides incentives for efficient investment for BT and for rival infrastructure operators; it incentivises use of dark fibre where it provides benefits relative to active remedies; it ensures that BT will continue to have a fair opportunity to recover its efficiently-incurred costs; and it will require limited rebalancing of charges, so that charges to more price-sensitive customers do not need to increase in nominal terms.
- 1.40 Under the DCR we intend to act to ensure that duct access can be used by competing providers to build new fibre networks to support mass-market broadband. Our work in this area, including under the review of the wholesale local access market and the Civil Infrastructure Directive, may have implications for the outlook of competition in leased lines markets, and we will take this into account in our next review and if necessary we can re-open our market assessment to address any major changes.

## BT's quality of service in providing Ethernet leased lines

- 1.41 We consider that BT's quality of service in providing wholesale Ethernet leased line services is not acceptable. Provisioning performance since 2011 has deteriorated and currently shows little sign of sustained improvement. We also consider that whilst the quality of BT's repairs of these services is broadly acceptable, this too could deteriorate if BT were to divert resources to improve the quality of provision.
- 1.42 BT has recognised these problems, and we support the work it has been undertaking with the industry to address the issues. BT is developing changes to its order handling processes and systems to enable performance improvements.
- 1.43 Nevertheless, we consider that regulatory and contractual arrangements currently in force for wholesale Ethernet leased line services are not sufficient to ensure that BT maintains appropriate standards of quality to support effective downstream competition and to protect end users.
- 1.44 Therefore, we are imposing new obligations on BT to ensure that it has appropriate incentives to improve its provision of wholesale Ethernet leased line services and to do so without degrading its repair performance.
- 1.45 Our research shows that although end-users would like BT to deliver their services within shorter lead-times, they attach greater importance to certainty that BT will

deliver those services on agreed dates. Accordingly, we are requiring BT to adhere to two sets of minimum standards.

1.46 Firstly, we are imposing a minimum standard of certainty of delivery date which requires BT to improve on its current performance from Year 1 of the review period, as shown in the table below.

	Actual performance	Minimum standard		
	<b>2015</b> <sup>(a)</sup>	Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)
% of orders completed on or before initial Contractual Delivery Date	71%	80%	85%	90%

#### Table 1.2: Minimum standard for order completion by agreed date

(a) From 1 January to 10 November 2015

1.47 Secondly, we are imposing minimum standards of provision lead-times and of repair, as shown in the table below. They require BT to deliver improvements in its provision lead-times over the first two years of the review period, and to maintain at least its current repair performance throughout the review period.

## Table 1.3: Minimum standards of provision lead times and repair

	Actual pe	rformance	Minimum standard		
	2011	<b>2015</b> <sup>(a)</sup>	Year 1 (2016/17)	Year 2 (2017/18)	Year 3 (2018/19)
Mean time to provide	40 working days	48 working days	No more than 46 working days	No more than 40 working days	As Year 2
Lower percentile limit	40% of provisions delivered in 29 working days	40% of provisions delivered in 25 working days	At least 40% of provisions delivered in 30 working days or less	At least 40% of provisions delivered in 29 working days or less	As Year 2
Upper percentile limit	3% of provisions delivered in 118 or more working days	3% of provisions delivered in 211 or more working days	No more than 3% of provisions delivered in 159 or more working days	No more than 3% of provisions delivered in 118 or more working days	As Year 2
% faults fixed within 5 hours	93.1%	94.4% (Jan'14 to Jul'14)	At least 94% of faults fixed within 5 hours	As Year 1	As Year 1

(a) From 1 January to 10 November 2015

1.48 We further require BT to:

- provide specified key performance indicators (KPIs) for its main Ethernet services; and
- offer the same service-level agreements and guarantees (SLAs/SLGs) as we have previously directed until it negotiates with the industry a new set of SLAs/SLGs based on the new provisioning process that is being introduced.

1.49 We will continue to keep Openreach's Ethernet service performance under review whilst developing the approaches, set out in the DCR, to incentivise Openreach to perform above minimum standards where this delivers consumer benefits. We will also work with industry as discussions progress on ways to improve order processes. Consistent with our strategic aims, where we consider that such approaches might also deliver performance improvements for customers of leased lines, we will consider using our power to impose directions before the next BCMR.

#### Summary of remedies we are imposing on BT

- 1.50 In addition to dark fibre and minimum standards of quality of Ethernet services, we are imposing on BT similar obligations to those that have been in force until now, including requirements to provide wholesale TI and CI leased line services on regulated terms.
- 1.51 In particular, we are imposing an established package of remedies, including charge controls, on BT's provision of wholesale TI services of bandwidths <=8Mbit/s throughout the UK, except Hull; and the remedies summarised in the table below on its provision of wholesale CI services in the geographic markets in which it has SMP.

### Table 1.4: Overview of remedies in wholesale CI markets in which BT has SMP

Remedies	UK, excluding Central London Area, London Periphery and Hull	London Periphery
Network access on reasonable request	Yes	Yes
Specific access remedies         -       Dark fibre         -       Ethernet         -       Minimum quality standards for Ethernet         -       WDM	Yes Yes Yes Yes	Yes Yes Yes Yes
Charge controls <ul> <li>Dark fibre</li> <li>Ethernet &lt;=1Gbit/s</li> <li>Ethernet &gt;1Gbit/s and WDM</li> </ul>	Yes Yes Safeguard cap	Yes Yes No
<ul> <li>Other price controls</li> <li>Fair and reasonable charges<sup>14</sup></li> <li>Pricing differential between EAD and EAD LA<sup>15</sup></li> </ul>	Yes No	Yes No
Equivalence of Inputs <ul> <li>Dark fibre</li> <li>Ethernet &lt;= 1Gbit/s</li> <li>Ethernet &gt;1Gbit/s and WDM</li> </ul>	Yes Yes Yes	Yes Yes Yes <sup>16</sup>

<sup>&</sup>lt;sup>14</sup> We have decided that this obligation should apply only to charges that are not subject to the charge

controls. <sup>15</sup> We have decided not to implement our proposal to require BT to ensure that the prices of these two services reflect the differences in their incremental costs.

<sup>&</sup>lt;sup>16</sup> We have decided to require BT to adhere to equivalence of inputs (a strict form of nondiscrimination) in new provisions of its wholesale very-high-bandwidth services (Ethernet faster than 1Gbit/s and WDM) in the London Periphery. This is a change from the proposals we made in May 2015. We have changed our view because we considered that the requirement would address the risks of price and non-price discrimination more effectively, while the additional costs BT would incur are unlikely to be significant because it already adheres to the same requirement in rest of the UK.

<ul> <li>Other general access remedies, including:</li> <li>No undue discrimination</li> <li>Publication of reference offers</li> <li>Notification of changes to charges, terms and conditions</li> <li>Quality of service condition<sup>17</sup></li> <li>Publication of technical information</li> <li>Accounting separation</li> </ul>	Yes	Yes
Develop new products	Yes	Yes

# Controls on BT's wholesale charges

1.52 To address the risk of excessive pricing, we are imposing the following charge controls on leased lines services:

<sup>&</sup>lt;sup>17</sup> The quality of service measures discussed above are imposed as directions pursuant to this condition.

Baskets BT product name		Starting Charge Adjustment	Value of X
Ethernet basket		-12%	CPI-13.5% <sup>18</sup>
	Sub-baske	ts/sub-caps	
1Gbit/s EAD sub-basket	1Gbit/s EAD and EAD LA <sup>19</sup>	-12%	CPI-6.75%
Main link sub-basket	EAD Main link, WES/WEES, BNS, ONBS and BES Main Link charges	-12%	CPI-6.75%
Interconnection services and Cablelink sub-basket	Bulk Transport Link (BTL), Cablelink	-12%	CPI-13.50%
Ethernet rental sub- basket	EAD and EBD rental charges with an associated connection charge		CPI-CPI
Sub-cap on all charges	All Ethernet Services <sup>20</sup>		CPI-CPI
TI basket		-7.5%	CPI-3.5%
	Sub-baske	ts/sub-caps	
2Mbit/s RBS and SiteConnect sub-basket	2Mbit/s Radio Backhaul Services (RBS) and SiteConnect	-7.5%	CPI-3.5%
Sub-cap on interconnection services	PPC and RBS point of handover charges		CPI-CPI
Sub-cap on all non- interconnection charges	All TI services (excluding interconnection services)		CPI+8%
Accommodation services i.e. to rent space in BT exchanges			
Access Locate Administration Fee	Access Locate Administration Fee <sup>21</sup>		CPI-0%
Excess Construction Charges (ECCs)			
Contractor ECCs	Construction activities that Openreach provides through an external contractor	None	Basis of charges obligation <sup>22</sup>
Direct ECCs: Blown fibre	Fibre installation using blown fibre technique	None	CPI-18.75%

#### Table 1.5: Summary of the controls and starting charge adjustments

<sup>18</sup> CPI refers to the amount of change in the Consumer Prices Index.

<sup>&</sup>lt;sup>19</sup> EAD stands for Ethernet Access Direct. This includes all variants of 1Gbit/s EAD and EAD LA services. <sup>20</sup> Except charges that fall within the Ethernet rental sub-basket.

<sup>&</sup>lt;sup>21</sup> We have decided to treat the Ethernet and TI accommodation products that overlap with LLU Co-Mingling products the same as the LLU Co-Mingling products. The June 2014 FAMR Statement's charge control for the Co-Mingling (New Provides and Rentals) basket continue to apply regardless of whether they are used by CPs for leased line products or for LLU

<sup>&</sup>lt;sup>22</sup> Contractor ECCs are based on the charge paid by BT to contractor(s), plus BT's relevant incremental costs, plus an appropriate mark-up for common costs.

Direct ECCs: Cable delivery	Installation of copper or fibre cables	None	CPI+17.25%
Direct ECCs: Blown fibre tubing	Installation of blown fibre tubing in ducts	None	CPI+8.75%
Direct ECCs: Internal cabling	Internal cabling work	None	CPI+11.75%
Direct ECCs: Survey	Survey fees and planning charges	None	CPI-3.25%
Ethernet Time Related Charges (TRCs)			
All relevant Ethernet TRCs	All relevant Ethernet TRCs <sup>23</sup>	None	-0.15%

#### Source: Ofcom

1.53 Ofcom's DCR recognised that there are some concerns about BT's ability to discriminate against competitors under the current model of functional separation. These are issues which are broader in scope than the matters considered as part of this market review. Our approach to the potential reform of the relationship between Openreach and the rest of BT is explained in the DCR Statement.

## Remedies on KCOM in the Hull area

1.54 We are requiring KCOM to provide both wholesale and retail TI and CI services in the Hull area on regulated terms, to address the competition problems which we have identified in that area, as summarised in the table below.

<sup>&</sup>lt;sup>23</sup> See Table 8.3, in Section 8, Volume I

Markets (all in the Hull area)	Remedies
Wholesale TI (<=8Mbit/s) and Wholesale CI (all bandwidths)	<ul> <li>Requirement to provide network access on reasonable request and on fair and reasonable prices, terms and conditions</li> <li>Requirement not to discriminate unduly</li> <li>Requirement to publish a reference offer, including charges, terms and conditions</li> <li>Requirement to notify changes to charges, terms and conditions</li> <li>Requirement to notify changes to technical information</li> <li>Requirements for accounting separation</li> <li>Requirement to produce a pricing transparency report</li> </ul>
Retail TI leased lines (<=8Mbit/s) and Retail CI leased lines (all bandwidths)	<ul> <li>Requirement to supply retail leased lines on reasonable request and on fair and reasonable charges terms and conditions</li> <li>Requirement not to discriminate unduly</li> <li>Requirement to publish a reference offer, including charges, terms and conditions</li> <li>Cost accounting obligations</li> <li>Requirement to produce a pricing transparency report</li> </ul>

## Table 1.6: Summary of remedies we are imposing on KCOM in the Hull area

# **European consultation**

- 1.55 We notified our draft statement to the European Commission, BEREC and the national regulatory authorities of other member states in line with the consultation process set out in Article 7 and Article 7a of the Framework Directive. Under this consultation process, the European Commission can impose a standstill period where it has serious doubts as to the compatibility of the proposed measures with Community law and in particular the objectives referred to in Article 8. Ultimately the Commission has the power to require the withdrawal of a draft measure defining a particular market or making a finding of significant market power. The European Commission may also make comments on the draft measure, of which we are required to take utmost account.
- 1.56 The European Commission did not have serious doubts about the measures set out in our draft statement. Its response to our notification made two comments<sup>24</sup>, which can be summarised as:
  - i) The European Commission considered that the implementation risks associated with imposing a duct access remedy could be mitigated by use of a "uniform costing methodology" in line with the approach we had adopted for pricing dark

<sup>&</sup>lt;sup>24</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/statement/EC-comments-on-draft-bcmr-statements.pdf</u>

fibre. It asked us to consider imposing duct and pole access in non-competitive areas.

- ii) The European Commission noted and welcomed our detailed analysis of network reach and welcomed our intention to deregulate or impose lighter remedies in areas with infrastructure based competition. It considered that it may be possible to have a more granular geographic differentiation of remedies with specific criteria for imposing lighter touch remedies, including taking account of the possible availability of access to BT's ducts. In particular, it asked Ofcom to consider the imposition of a lighter set of remedies in other areas (as well as the LP), including the five Central Business Districts, based on a clear set of criteria.
- 1.57 We explain in this statement how we have taken utmost account of the European Commission's comments. We have addressed the first comment at paragraphs 7.60 – 7.62. We have addressed the second comment at paragraphs 4.456, 7.98 and 8.223.

## Section 2

# Background

# Scope and purpose of this review

- 2.1 In the Business Connectivity Market Review (BCMR) we review competition in the markets for:
  - the retail provision of leased lines in the UK; and
  - the wholesale provision of terminating segments and trunk segments in the UK.
- 2.2 When referring to these markets as a whole and in general terms we use the term 'the leased lines market' or 'the leased lines markets'.
- 2.3 The purpose of the BCMR is threefold:
  - i) to identify and define the relevant markets;
  - ii) to assess the extent of competition in the relevant markets and determine whether any operator has Significant Market Power (SMP) in those markets; and
  - iii) where there is a finding of SMP, to determine the appropriate remedies which should be imposed, based on the nature of the competition problems identified in the relevant markets.
- 2.4 We set out the market review process in summary below and we provide more detail in Annex 2.
- 2.5 We have published a separate statement setting out our decision to stop regulating BT's provision of very low bandwidth leased lines.<sup>25</sup>

## Last market review

2.6 In March 2013, we completed the BCMR 2013 in which we imposed certain regulatory obligations on BT and KCOM in those markets where we found them to have SMP. Table 2.1 below summarises the market definitions and SMP findings of the BCMR 2013, and Table 2.2 below summarises the charge control and starting charge adjustments we imposed. A number of separate leased lines markets were defined based on the capabilities of different technologies: traditional interface services, alternative interface services and multiple interface services.

<sup>&</sup>lt;sup>25</sup> See Business Connectivity Market Review: Very low bandwidth leased lines, Statement, 28 April 2016, <u>http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/</u>

		Retail Services		Wholesale Segments			
				Symmetric Broadband Origination			Trunk
Interface technology	Bandwidth (Mbit/s)	UK	Hull	The WECLA	UK except the WECLA and Hull	Hull	υк
	VLow: <2 Low: <=8	вт		BT		ксом	National
Traditional (T I)	Med:>8, <=45			No SMP	BT	ксом	No SMP
	High:>45, <=155			No SMP	BT	ксом	Regional BT
	Very High: 622			No SMP		ксом	
Alternative (Al)	Low <=1,000		ксом	BT	вт	ксом	
Multiple (MI)	>1,000, and any if WDM at customer's premises			No SMP	ВТ		

# Table 2.1: BCMR 2013 - Market definitions and SMP findings

## Table 2.2: BCMR 2013 - charge controls

Basket	Overall cap (value of X)	Sub-baskets & sub-caps		
TI	RPI+2.25%	Point of Handover sub-basket (RPI-0%) RBS, Netstream 16 Longline and SiteConnect sub-basket (RPI+2.25%) Ancillary services, equipment and infrastructure sub-cap (RPI+2.25%) TI all services sub-cap (RPI+10%)		
Ethernet	RPI-11.5%	Interconnection services sub- basket (RPI-11.5%) EAD 1 Gbit/s sub-basket (RPI- 11.5%) Ethernet all services sub-cap (RPI-RPI)		
Excess Construction Charges	GBCI-0% on each charge			

Accommodation services	RPI-0% on each charge	
AISBO services in the WECLA	RPI-RPI on each charge	
Retail Analogue basket	RPI+2.25%	Retail analogue sub-cap (RPI+10%)

2.7 Further information on the market definitions, SMP findings and remedies imposed on BT and KCOM, including the charge controls imposed on BT, are set out in the March 2013 BCMR Statement, which can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/

2.8 Publications relating to previous BCMRs can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/telecoms/telecoms-competiton-regulation/ethernetand-leased-lines/

# **Call for Inputs consultation summary**

- 2.9 On 1 April 2014, before starting our substantive analysis in this review, we published a Call for Inputs<sup>26</sup> (the April 2014 CFI) to gather stakeholders' views on a number of key issues.
- 2.10 In the April 2014 CFI we announced the start of this review and provided stakeholders with an overview of the project timetable. In addition, we sought stakeholders' views on the following topics:
  - our proposed approach to the review, in particular inviting stakeholders to inform us of any developments or prospective developments since the last BCMR;
  - the proposed market questionnaire, which we had planned to use to explore market characteristics, developments and competitive conditions with communications providers (CPs);
  - BT's quality of service in the delivery of wholesale leased lines, about which concerns have been raised to us by CPs;
  - substitution of leased lines services with broadband services;

<sup>&</sup>lt;sup>26</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity-market-review/summary/Business-Connectivity-Market-Review.pdf</u>

- passive remedies, including the feasibility of particular passive remedies, how they might be used and the benefits that such remedies might offer in comparison to active remedies;
- future regulation of the retail market for very low bandwidth TI services, in light of plans by BT to withdraw these services in the coming years; and
- our approach to any potential charge control remedy.
- 2.11 The April 2014 CFI and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/business-connectivity-market-review/

# Data analysis consultation summary

- 2.12 This BCMR draws on a wide range of evidence, including two significant and complex pieces of analysis: the network reach analysis and the service share analysis. We collected large amounts of data from CPs for both of these analyses.
- 2.13 On 8 October 2014, we published a Data Analysis Consultation<sup>27</sup> (the October 2014 BCMR Consultation) in which we explained what data we requested and the methodologies, assumptions and judgements we used to check and clean the data. We also presented an indicative set of network reach and service share calculations. In addition to publishing that Consultation, we sent each CP a cleaned version of the data which they had provided, so that they could review the cleaning rules and assumptions we applied. This gave CPs an opportunity to identify any errors we made and to provide further information to improve the quality of the data.
- 2.14 Following the October 2014 BCMR Consultation, we made improvements to the network reach and service share analyses, and also commissioned an external audit of the computer models used in both analyses, to guarantee that they are robust and fit-for-purpose. We provide further details on our data analyses in Annex 10 and we discuss the implications of the results in our assessment of market definition and SMP in Sections 4 to 6.
- 2.15 The October 2014 BCMR Consultation and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/bcmr-data-analysis/

## **Passive remedies consultation summary**

2.16 On 5 November 2014 we published a Preliminary Consultation on Passive Remedies<sup>28</sup> (the November 2014 BCMR Consultation) to gather stakeholders' views on the work we had undertaken in assessing the potential impacts of implementing passive remedies in the leased lines markets.

 <sup>&</sup>lt;sup>27</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-data-analysis/summary/BCMR\_Data\_Consultation.pdf</u>
 <sup>28</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>

<sup>&</sup>lt;sup>28</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-passives/summary/BCMR\_passives.pdf</u>

- 2.17 As noted above, in the April 2014 CFI we sought stakeholders' views on passive remedies and the responses we received indicated that a number of stakeholders were interested in them. The purpose of the November 2014 BCMR Consultation was to seek input from stakeholders to help us develop options that both included and excluded passive remedies. This was to enable us to compare the ability of these options to address any competition problems found in the market review.
- 2.18 Specifically, we sought stakeholders' comments on the following areas:
  - the framework we devised for assessing the role of passive remedies in our review;
  - the potential costs and benefits of passive remedies at a broad level; and
  - our high-level views of the design and scope of any passive access product, including pricing issues.
- 2.19 We discuss the responses to the November 2014 BCMR Consultation at appropriate points throughout this document. The Consultation and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/bcmr-passives/

## Main BCMR consultation summary

- 2.20 On 15 May 2015 we published the main BCMR Consultation<sup>29</sup> (May 2015 BCMR Consultation) to gather stakeholders' views on the work we had undertaken in assessing the state of competition in the leased lines markets in the UK and our proposals for regulating these markets during the next BCMR period, from 1 April 2016 until 31 March 2019.
- 2.21 In particular, we sought stakeholders' comments on:
  - our proposed product and geographic market definitions;
  - our proposals for SMP in those markets, shown in Table 2.3;
  - our proposals for deregulating long-distance leased lines between a set of identified core network nodes (including the methodology used to identify these nodes) and wholesale TI services operating at bandwidths above 8Mbit/s;

#### Table 2.3: Proposed market definitions and SMP findings

		Retail services		Wholesale terminating segments			
Interface technology	Bandwidth (Mbit/s)	Hull	Rest of UK	Central London Area	London Periphery	Rest of UK	Hull
Traditional (TI)	Low: <=8	ксом	No SMP		вт		КСОМ
Contemporary (CI)	All bandwidths	КСОМ	No SMP	No SMP	вт	вт	ксом

<sup>&</sup>lt;sup>29</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/summary/BCMR\_Sections.pdf</u>

- our proposals to impose remedies in the markets in which we provisionally found BT to have SMP, including the imposition of:
  - o general remedies;
  - o specific access remedies, including a dark fibre remedy;
  - o price controls;
  - o Equivalence of Inputs; and
  - o minimum standards on Ethernet quality of service; and
- our proposals to impose remedies in the markets in which we provisionally found KCOM to have SMP.
- 2.22 We discuss the responses to the May 2015 BCMR Consultation at appropriate points throughout this document. The Consultation, associated documents and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/

## LLCC consultation summary

- 2.23 On 12 June 2015 we published the LLCC Consultation<sup>30</sup> (June 2015 LLCC Consultation) to gather stakeholders' views on the pricing remedies we proposed to impose as a result of the findings that we set out in the May 2015 BCMR Consultation.
- 2.24 Specifically, we sought stakeholders' comments on the proposed charge controls and our guidance on dark fibre pricing.
- 2.25 We discuss the responses to the June 2015 LLCC Consultation at appropriate points throughout this document. The Consultation and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/llcc-dark-fibre/

## **Cost Attribution Review consultation summary**

2.26 On 12 June 2015 we also published the Review of BT's Cost Attribution Methodologies Consultation<sup>31</sup> (June 2015 CAR Consultation), which set out the analysis we have undertaken to review BT's current set of cost attribution rules. In this consultation, we sought stakeholders' views on our proposed changes to some of BT's attribution methodologies, which adjust BT's costs for the purpose of setting the 2016 LLCC. Our 2015 LLCC Model<sup>32</sup> and therefore the proposals set out in the June 2015 LLCC Consultation relied on analysis undertaken by this Cost Attribution Review.

 <sup>&</sup>lt;sup>30</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/llcc-dark-fibre/summary/llcc-dark-fibre.pdf</u>
 <sup>31</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/cost-attribution-review/summary/review-bt-cost-attribution-method.pdf</u>

<sup>&</sup>lt;sup>32</sup> The model published in conjunction with the June 2015 LLCC Consultation.

2.27 We discuss the relevant responses to the June 2015 CAR Consultation at appropriate points throughout this document. The Consultation and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/cost-attribution-review/

# Second LLCC consultation summary

- 2.28 On 13 November 2015 we published the second LLCC Consultation<sup>33</sup> (November 2015 LLCC Consultation) to gather stakeholders' views on certain revisions to the proposed charge controls we outlined in the June 2015 BCMR LLCC Consultation. The revised proposals related to:
  - base year cost adjustments;
  - efficiency;
  - cost forecast modelling;
  - starting charge adjustments; and
  - regulatory financial reporting.
- 2.29 Table 2.4 sets out our revised proposals:

### Table 2.4: Summary of the proposed controls and starting charge adjustments

Basket	Overall cap (value of X)	Starting charge adjustment
Ethernet	CPI-12.50%	-10%
ті	CPI-3.5%	-5%

2.30 We discuss the responses to the November 2015 LLCC Consultation at appropriate points throughout this document. The Consultation and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/bcmr-update-proposed-leased-linescharge-controls/

## Second Cost Attribution Review consultation summary

2.31 On 13 November 2015 we also published the second Review of BT's Cost Attribution Methodologies Consultation<sup>34</sup> (November 2015 CAR Consultation) to gather stakeholders' views on further proposed changes to some of BT's attribution methodologies.

 <sup>&</sup>lt;sup>33</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-update-proposed-leased-lines-charge-controls/summary/BCMR\_LLCC\_Consultation.pdf</u>
 <sup>34</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/BT-cost-attribution-review-second-</u>

<sup>&</sup>lt;sup>34</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/BT-cost-attribution-review-second-consultation/summary/BT\_Cost\_Attribution\_Review\_Second\_Consultation.pdf</u>

2.32 We discuss the relevant responses to the November 2015 CAR Consultation at appropriate points throughout this document. The Consultation and non-confidential responses to it can be found on our website at the link below:

http://stakeholders.ofcom.org.uk/consultations/BT-cost-attribution-review-secondconsultation/

# **Strategic Review of Digital Communications**

- 2.33 In parallel with the BCMR, Ofcom has been conducting the Strategic Review of Digital Communications (DCR), which sets out our approach to regulating communications markets for the next decade. Ofcom published a statement with initial conclusions on the DCR on 25 February.<sup>35</sup> Some of these initial conclusions are directly relevant to our *ex ante* regulation of telecoms markets, such as our strategic shift to promote large-scale investment in more fibre, our proposals in relation to Openreach's quality of service, and our intention to reform Openreach's governance and strengthen its independence from BT.
- 2.34 The DCR sets out Ofcom's overall strategy for communications markets over the next ten years. The EU regulatory framework requires Ofcom to reach conclusions on leased lines markets this year. This BCMR review has therefore focused on the particular circumstances of the leased lines markets over the three year market review period. Although our review of business connectivity markets was largely undertaken before the publication of the DCR statement, we have identified where appropriate how we consider that the initial conclusions reached in the DCR apply to our review of business connectivity markets, in particular in our analysis of the case for requiring passive access to Openreach's network, and our analysis of Openreach's quality of service for leased lines.

## Summary of business connectivity market research

- 2.35 We commissioned consultants BDRC to carry out a telephone survey of 615 businesses with ten or more employees across the UK which use business connectivity services. This was followed up with a small number of face-to-face "case study" interviews.
- 2.36 This survey was intended to help us understand end-users' preferences for business connectivity services and suppliers, and, where possible, how these have changed since the last BCMR. The main objectives of this research were to inform us about:
  - business end-users' current and future needs for business connectivity services;
  - the services that businesses use and the suppliers that provide them;
  - the different service characteristics that businesses value most;
  - businesses' views about which products are most capable of meeting their business connectivity needs; and
  - businesses' views about any barriers to switching between products.

<sup>&</sup>lt;sup>35</sup> See *Making Digital Communications Work for Everyone*, 25 February 2016, available at <u>http://media.ofcom.org.uk/news/2016/digital-comms-review-feb16/</u>

- 2.37 We have published the findings of this research separately.<sup>36</sup>
- 2.38 In addition, we sent CPs a "market questionnaire" which asked for their views on market characteristics, developments and competitive conditions. This was intended to complement our data-based quantitative analysis with more qualitative evidence on, for example, operators' business plans and competitive strategies, as well as their views on the current and future direction of business connectivity markets. We followed up the responses we received by meeting some of the operators to help us understand their strategies and processes for setting prices.
- 2.39 Both these pieces of market research have informed our assessment of markets and competitive conditions in this review.

## Summary of market research on quality of service

- 2.40 We commissioned consultants BDRC to carry out a telephone survey of 450 organisations that have an Ethernet leased line.
- 2.41 The purpose of the research was to help us understand the value businesses and public sector organisations place on those elements of service that are directly attributable to Openreach's service quality. Specifically the research sought to:
  - understand Ethernet leased line users' experiences of Ethernet provisioning and repair, and whether the service was considered adequate in terms of speed and quality;
  - establish what is considered a 'reasonable length of time' for providing a new connection and for fault repair;
  - understand tolerances to timing delays, i.e. what would constitute an unreasonable delay and how end-users would be likely to react if such a delay was to occur (e.g. by looking for an alternative supplier);
  - establish the relative importance end-users attach to key aspects of Ethernet provisioning and repair;
  - determine willingness to pay for improvements to provision and repair services; and
  - determine how shortfalls in performance (timing or quality) influence end-users' perceptions of a CP and how likely they would be to switch provider as a result of such shortfalls.
- 2.42 We have published the results of the market research separately.<sup>37</sup>

<sup>&</sup>lt;sup>36</sup> BDRC Continental, *Business Connectivity Services Review*, May 2015,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/annexes/BCMR\_2014\_reportbdrc.pdf

<sup>&</sup>lt;sup>37</sup> BDRC Continental, Quality of Service: Ethernet Leased Lines 2014, May 2015,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/annexes/QoS\_report\_27th\_April.pdf

# Summary of further research

- 2.43 We commissioned BDRC to carry out a further telephone survey of 241 organisations focused on end-users of services that used Ethernet and WDM leased lines connections.<sup>38</sup>
- 2.44 The purpose of this survey was to provide further evidence to inform our market definition and SMP, including:
  - the possible differences in end-users' demand requirements for different service types (including by bandwidth or technology);
  - the expected changes in their product requirements going forward;
  - end-users' willingness to switch between services and possible barriers to doing so;
  - what factors drive end-users' choice of supplier and whether there are any barriers to changing supplier; and
  - the awareness and consideration of alternative services, including dark-fibre.
- 2.45 We have published the findings of this research separately.<sup>39</sup>

# **Information gathering**

- 2.46 Our assessments in this Statement are based on information from a number of sources: the information we routinely collect on these markets while carrying out our duties; submissions from stakeholders, including responses to the April 2014 CFI, the November 2014 Consultation, the October 2014 BCMR Consultation, the May 2015 BCMR Consultation, the June 2015 LLCC Consultation, the November LLCC Consultation, and any other *ad hoc* submissions provided<sup>40</sup>; a programme of bespoke market research for this review; discussions with industry stakeholders; data supplied by CPs in response to formal information requests covering network, service, financial and customer data; data supplied by purchasers of 'dark fibre' some infrastructure providers; and publicly available information (including material from investor presentations and analysts' reports).
- 2.47 In the course of this review we have sent formal information requests to BT, KCOM and a number of other CPs. These requests have covered a range of issues, including the supply and demand of leased lines throughout the UK. Our power to issue formal information requests is derived from s135 of the Communications Act

 <sup>&</sup>lt;sup>38</sup> Given difficulties of identifying these customers based on a random sample of large UK businesses we relied on contact details from two of the main providers, including BT.
 <sup>39</sup> BDRC Continental, *Ofcom - Business Connectivity Market Review – High bandwidth connections*,

<sup>&</sup>lt;sup>39</sup> BDRC Continental, *Ofcom - Business Connectivity Market Review – High bandwidth connections*, February 2016, <u>http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/statement2016</u>

<sup>&</sup>lt;sup>40</sup> Where we refer in this document to having taken into account stakeholder consultation responses, this should be taken to include all such submissions, whether provided as part of a formal consultation response or otherwise.

2003 (the Act), which allows us to require anyone to provide us with information that is needed for the purpose of identifying markets and carrying our market analyses.<sup>41</sup>

# The regulatory framework

2.48 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 the relevant national regulatory authorities (NRAs), such as Ofcom. One of these obligations is to carry out a market review. We set out the market review process and the regulatory framework in more detail in Annex 2. In this section we have set out, in summary, what the market review process involves.

### The market review process

- 2.49 The review is carried out in three stages:
  - i) we identify and define the relevant markets;
  - ii) we assess whether any of the markets are effectively competitive, which involves assessing whether any operator has SMP in any of the relevant markets; and
  - iii) we assess the appropriate remedies which should be imposed where there has been a finding of SMP, based on the nature of the competition problem identified in the relevant markets.
- 2.50 In carrying out the review, we are obliged to define relevant markets "appropriate to national circumstances".<sup>42</sup> In so doing, we are also obliged to take "utmost account"<sup>43</sup> of the Recommendation<sup>44</sup> and SMP Guidelines.<sup>45</sup> More broadly, in carrying out the review (including assessing appropriate remedies), we are required to take utmost account of all applicable recommendations issued by the European Commission (the Commission) under Article 19(1) of the Framework Directive<sup>46</sup> and of applicable opinions, common positions, recommendations, guidelines, advice or regulatory best practice adopted by BEREC.<sup>47</sup>

#### The Recommendation and its application to this review

2.51 The Recommendation sets out those product and service markets which, at a European level, the Commission has identified as being susceptible to ex ante

<sup>&</sup>lt;sup>41</sup> s135(3)(g).

<sup>&</sup>lt;sup>42</sup> See Article 15(3) of the Framework Directive (Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services, as amended). 43 Ibid.

<sup>&</sup>lt;sup>44</sup> Commission Recommendation 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).

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). <sup>46</sup> See also section 4A of the Communications Act 2003 (the Act).

<sup>&</sup>lt;sup>47</sup> Body of European Regulators for Electronic Communications. See Article 3(3c) of the Framework Directive. See also Article 3(3) of the BEREC Regulation (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 and the Office).

regulation. These markets are identified on the basis of the cumulative application of three criteria<sup>48</sup>:

- 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.
- 2.52 The Recommendation contains a different list of markets to that of which we took utmost account in the BCMR 2013. Importantly though, the Commission continues to regard the wholesale leased lines market as warranting *ex ante* regulation at a European level.<sup>49</sup> We, as the UK NRA, in accordance with competition law and taking utmost account of the Recommendation, have defined the relevant markets appropriate to our national circumstances.<sup>50</sup> In this review, we focus on whether or not *ex ante* regulation of leased lines markets is warranted. We also consider services such as asymmetric broadband in our market analysis, to assess whether they provide a competitive constraint in the prices of leased lines. However, we do not assess competition in the other direction i.e. whether leased lines-based services would constrain asymmetric broadband services as this has already been considered in our 2014 Wholesale Broadband Access review and, in light of this assessment, the appropriate *ex ante* regulation is already in place for these broadband services.<sup>51</sup>
- 2.53 The requirement to define relevant markets appropriate to national circumstances means we are free to identify relevant markets in the UK as susceptible to regulation other than those listed in the Recommendation.<sup>52</sup> However, where we do so, the Recommendation requires that for each relevant market we must show that the three criteria set out above are satisfied cumulatively.<sup>53</sup>
- 2.54 All of the markets we have identified in this review fall in Market 4 of the Recommendation which is defined as "[w]holesale high-quality access provided at a fixed location",<sup>54</sup> apart from the retail markets identified in the Hull area. These are:
  - The retail market for TI leased lines at bandwidths up to and including 8Mbit/s.
  - The retail market for AI leased lines at bandwidths up to and including 1Gbit/s.

<sup>&</sup>lt;sup>48</sup> See Recital 19 to the Recommendation.

<sup>&</sup>lt;sup>49</sup> See Recital 25.

<sup>&</sup>lt;sup>50</sup> See Recital 25 to the Recommendation.

<sup>&</sup>lt;sup>51</sup> Ofcom's 2014 review of WBA markets is available at

http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/statement/. In the WBA 2014 review, we found that asymmetric broadband services sold to businesses were part of the WBA product market whilst leased lines were not part of the WBA market. In the WBA 2014 review, in light of our market definition and SMP assessment, we imposed appropriate remedies for those asymmetric broadband markets.

<sup>&</sup>lt;sup>52</sup> See Recital 21 to the Recommendation.

 $<sup>^{53}</sup>$  See Point 2 of the Recommendation.

<sup>&</sup>lt;sup>54</sup> See Annex to the Recommendation.

2.55 In the relevant sections of this Statement we set out how the three criteria are satisfied cumulatively for each of these relevant markets set out above that we propose to define.

#### The SMP Guidelines and their application to this review

2.56 The SMP Guidelines include guidance on market definition, assessment of SMP and SMP designation. In the relevant sections of this Statement we set out how we have taken the SMP Guidelines into account in reaching our proposals.

#### Forward look

- 2.57 Rather than just looking at the current position, market reviews look ahead to how competitive conditions may change in future. For this review we have taken a forward look of three years, though we also take into account potential developments in the market beyond that period. This reflects the characteristics of the retail and wholesale markets and the factors likely to influence their competitive development. The forward look period also reflects the requirement in the EC Directives which establish the Common Regulatory Framework for the regulation of electronic communications that ordinarily market reviews should be conducted within three years of the previous review.<sup>55</sup>
- 2.58 This does not preclude us from reviewing any of the markets earlier but, absent unforeseen developments, we anticipate that we would time the next market review to conclude three years after completion of the current review. We have therefore decided that the charge controls that we set out later in this Statement will apply for a period of three years, ceasing on 31 March 2019.

#### Relevant legal tests and statutory duties

- 2.59 Where we propose that a market is not effectively competitive, we identify the undertaking(s) with SMP in that market and propose what we consider to be appropriate SMP obligations. When proposing 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.<sup>56</sup>
- 2.60 Specifically, for each and every SMP obligation we are proposing, we explain why we consider it satisfies the test set out in section 47 of the Act, namely that the obligation is:
  - objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates;
  - not such as to discriminate unduly against particular persons or against a particular descriptions of persons;
  - proportionate to what the condition or modification is intended to achieve; and
  - transparent in relation to what it is intended to be achieved.

<sup>&</sup>lt;sup>55</sup> See, in this respect, Article 16(6)(a) of the Framework Directive.

<sup>&</sup>lt;sup>56</sup> See Article 8(4) of the Access Directive.

2.61 Additional legal requirements also need to be satisfied depending on the SMP obligation in question. For example, where we propose an obligation to provide third parties with network access, we must take into account factors including the feasibility of the network access, the technical and economic viability of creating networks<sup>57</sup> that would make the network access unnecessary, the investment of the network operator who is required to provide access<sup>58</sup>, and the need to secure effective competition<sup>59</sup> in the long term.

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

- We also explain in this Statement why, in our opinion, we consider the performance 2.62 of our general duties under section 3 of the Act would be secured or furthered by our proposed 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 proposals.
- 2.63 Consistent with our duties under section 4A of the Act and under Article 3(3) of the BEREC Regulation, 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.

## **EU Civil Infrastructure Directive**

- 2.64 We have also considered the implications for the BCMR of the EU Civil Infrastructure Directive (CID), which is due to come into effect in UK law by summer 2016.
- 2.65 In summary, the CID will introduce a requirement for all public communications networks operators and utility network operators to meet all reasonable requests<sup>60</sup> for access to their infrastructure from public communications networks operators (e.g. fixed and wireless broadband providers, including CPs such as BT, Colt, Virgin, EE, Telefónica O2 and Vodafone) made with a view to deploying high speed electronic communications networks.<sup>61</sup>
- 2.66 Unlike the SMP framework where any obligation to provide network access would be limited to any operator(s) found to have SMP and would be limited by the product and geographic scope of the market(s) in which it is applied, the CID allows reasonable requests for access on a nationwide basis to all public communications and utility network operators' infrastructure.
- On 30 November 2015 the Department for Culture, Media and Sport published a 2.67 consultation on implementation of the CID.<sup>62</sup>

<sup>61</sup> Article 3(2).

<sup>&</sup>lt;sup>57</sup> Including the viability of other network access products, whether provided by the SMP operator or another person. <sup>58</sup> Taking account of any public investment made.

<sup>&</sup>lt;sup>59</sup> Including, where it appears to us to be appropriate, economically efficient infrastructure-based competition.

<sup>&</sup>lt;sup>60</sup> Under fair and reasonable terms and conditions, including price (Article 3(2)).

<sup>&</sup>lt;sup>62</sup> https://www.gov.uk/government/consultations/eu-broadband-cost-reduction-directive

## Impact assessment

2.68 Impact assessments provide a valuable way of assessing different 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 where our proposals would be likely to have a significant effect on businesses or the general public, or when 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. For further information about our approach to impact assessments, see the guidelines, *Better policy-making: Ofcom's approach to impact assessment*, which are on our website: http://stakeholders.ofcom.org.uk/binaries/consultations/ia\_guidelines/summary/condo

http://stakeholders.ofcom.org.uk/binaries/consultations/ia\_guidelines/summary/condc c.pdf

2.69 We set out our impact assessment in the consultation documents referred to above including the May 2015 BCMR Consultation and the June 2015 LLCC Consultation. In Volumes 1 and 2 of this Statement we take into account relevant responses and set out our conclusions on the impact of the changes.

## Equality impact assessment

- 2.70 Annex 3 details our Equality Impact Assessment for this market review. Ofcom is separately required by statute to assess the potential impact of all our functions, policies, projects and practices on race, disability and gender equality. Equality Impact Assessments (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. Unless we otherwise state in this document, we do not consider that the outcome of our review is likely to have any particular impact on race, disability and gender equality. Specifically, we do not consider that the impact of any outcome will be to the detriment of any group of society.
- 2.71 We have not carried 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 affect all industry stakeholders equally and will not have a differential impact in relation to people of different gender or ethnicity, on consumers in Northern Ireland or on disabled consumers compared to consumers in general. Similarly, we are not envisaging making a distinction between consumers in different parts of the UK or between consumers on low incomes. Again, we believe that our intervention will not have a particular effect on one group of consumers over another.

## **European consultation**

2.72 We notified our draft statement to the European Commission, BEREC and the national regulatory authorities of other member states in line with the consultation process set out in Article 7 and Article 7a of the Framework Directive. Under this consultation process, the European Commission can impose a standstill period where it has serious doubts as to the compatibility of the proposed measures with Community law and in particular the objectives referred to in Article 8. Ultimately the Commission has the power to require the withdrawal of a draft measure defining a particular market or making a finding of significant market power. The European Commission may also make comments on the draft measure, of which we are required to take utmost account.
- 2.73 The European Commission did not have serious doubts about the measures set out in our draft statement. Its response to our notification made two comments, which can be summarised as:
  - i) The European Commission considered that the implementation risks associated with imposing a duct access remedy could be mitigated by use of a "uniform costing methodology" in line with the approach we had adopted for pricing dark fibre. It asked us to consider imposing duct and pole access in non-competitive areas.
  - ii) The European Commission noted and welcomed our detailed analysis of network reach and welcomed our intention to deregulate or impose lighter remedies in areas with infrastructure based competition. It considered that it may be possible to have a more granular geographic differentiation of remedies with specific criteria for imposing lighter touch remedies, including taking account of the possible availability of access to BT's ducts. In particular, it asked Ofcom to consider the imposition of a lighter set of remedies in other areas (as well as the LP), including the five Central Business Districts, based on a clear set of criteria.
- 2.74 We explain in this statement how we have taken utmost account of the European Commission's comments.
- 2.75 In relation to the Commission's first comment, we consider that it remains appropriate to impose a dark fibre remedy and not a duct access remedy in this review. Our analysis on this point is set out at paragraphs 7.60 7.62.
- 2.76 In taking utmost account of the Commission's second comment, we have considered the extent to which we can identify a set of criteria for identifying geographic areas that may be susceptible to lighter touch regulation, such as the CBDs. We set our analysis of this point in paragraph 4.456, explaining the factors we have taken into account in identifying areas that may be suitable for a variation of remedies. We have also given further consideration to the impact of our remedies on alternative infrastructure operators. Our further analysis on this issue is set out in paragraphs 7.98 and 8.223.

# **Structure of this Statement**

- 2.77 This Statement is made up of two main parts:
  - Volume I covers the three main aspects of the market review, namely our definitions of the relevant markets, our assessment of competition in those markets and identification of the operators that have SMP, and our decisions on which remedies are appropriate to address the competition problems we have identified.
  - Volume II covers all aspect of the charge controls, which are part of the overall package of remedies we have decided to impose on BT in some of the relevant markets.
- 2.78 This statement also has a number of annexes, which broadly cover useful background information, evidence we have collected, the detailed analysis we have done in the course of this review, the legal instruments we will be imposing and a glossary.

## **Section 3**

# Market context

# Introduction

- 3.1 In this review, the main business connectivity products and services we focus upon are leased lines used by different end-users. We also consider whether alternative services offer an effective competitive constraint on leased lines services.<sup>63</sup>
- 3.2 This section provides an overview of the following:
  - the main users of business connectivity services, including different users of leased lines and their purchasing behaviour;
  - the main suppliers of services, including providers at different stages of the value chain;
  - a description of the main products used to deliver different requirements;
  - the main demand trends and developments; and
  - the main developments on the supply-side, including investment in local network infrastructure and the expansion of CPs' core networks to include some large data centres as switch sites or 'core network nodes'.

## **Markets overview**

## Main users of business connectivity services products and services

- 3.3 There are three main end user segments that make use of leased lines (or alternatives): enterprise customers, mobile network operators (MNOs) and backhaul by fixed asymmetric broadband providers, including Local Loop Unbundling operators (LLUOs) and others using next generation access technologies.<sup>64</sup> As LLUOs still form the bulk of backhaul demand we refer to LLUOs in the rest of the section.
- 3.4 Below we explain the underlying requirements of all of the above end user segments and how they go about purchasing their business connectivity services.

## Enterprise segments

3.5 Many organisations, both in the private and public sectors, use leased lines to support a wide variety of ICT applications, such as:

<sup>&</sup>lt;sup>63</sup> As we discuss in Annex 6, we have already assessed the need for regulation of asymmetric broadband in a separate market review for Wholesale Broadband Access services. Therefore, the significance of asymmetric broadband, in this BCMR is the constraint that asymmetric broadband would place on leased lines.

<sup>&</sup>lt;sup>64</sup> Fixed asymmetric broadband providers also include those using next generation access technologies such as Fibre to the Cabinet (FTTC) or Fibre to the Premises (FTTP).

- Data connectivity: this includes reliable internet access, remote access to the enterprise network, information/data exchange between enterprise sites, off-site data back-up to data centres (storage area networks) and access to cloud-based services hosted at the data centre.
- Voice and video conferencing applications: leased lines circuits are used to support ISDN and VoIP services.
- Resilience, where leased lines are used as backup lines or as links between an enterprise's computer server sites for disaster recovery.
- Bespoke high value applications: for example, some financial institutions require very low latency links to securities exchanges to support trading activities.
- Legacy / niche applications: critical national infrastructure operators such as large energy and water utilities require leased lines to support metering, telemetry and monitoring of their networks.
- In general, based on our consumer survey,<sup>65</sup> we observe that larger enterprise 3.6 customers are more likely to require leased lines and they often need to connect together a number of different sites.<sup>66</sup> These users need high quality connectivity to support the business critical applications listed above. Some SMEs also use leased lines, but they tend to prefer asymmetric broadband due to cost and differing underlying business requirements.<sup>67</sup> Nevertheless, SME demand for leased lines is still significant given the proportion of UK businesses within the SME segment.<sup>68</sup>
- 3.7 While retail leased lines can be purchased as a stand-alone network service to individual sites, end-user organisations may purchase all leased lines requirements for all sites as part of a single tender that includes a wider package of ICT services.<sup>69</sup> Other larger end-user organisations might purchase leased lines directly from CPs and manage other ICT services in-house.<sup>70</sup> According to the February 2016 BDRC

SMEs show very limited take-up of leased lines. In the case of micro businesses with fewer than ten employees, less than ten percent had claimed to have a leased line or Ethernet service, See: http://stakeholders.ofcom.org.uk/binaries/research/telecoms-research/sme/sme\_research\_report.pdf.

<sup>&</sup>lt;sup>65</sup> In the following paragraphs we refer to evidence from the May 2015 and February 2016 consumer surveys conducted by BDRC, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/annexes/BCMR 2014 report-bdrc.pdf and

http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/statement2016 <sup>66</sup> Based on data underpinning Figure 5.10 of the BDRC consumer survey, the average number of sites connected was 4.20 with fewer sites (2.73) connected by small businesses (10-100 employees). <sup>67</sup> Although some small businesses might use leased lines, leased lines represent a small proportion of these users' requirements. For example, Figures 27 and 28 of our market research looking into

According to government statistics, SMEs accounted for 99.9% of UK private enterprises at the start of 2015.

https://www.gov.uk/government/uploads/system/uploads/attachment data/file/467443/bpe 2015 stati stical\_release.pdf <sup>69</sup> For example, a multi-site business may tender for a bundle of services, including management of

computer systems, telephony and any underlying network connectivity requirements. In some cases, the business may not specify the particular type of leased line required and leave the chosen provider to decide how to fulfil the connectivity needs.

<sup>&</sup>lt;sup>70</sup>Some end-user organisations meet some of their demand for connectivity services by procuring access to a network operator's unlit optical fibres (dark-fibre) and use it to connect equipment in their sites. However, only certain customers can use it due to high start-up costs and the need for specialist skills.

CI survey of users of higher bandwidth services (100Mbit/s and above)<sup>71</sup>, we found that around half of consumers of higher bandwidth products purchase these services on a standalone basis whereas around 30% purchase higher bandwidth products as part of a wider package.<sup>72</sup> Furthermore, although a number of these users often only have a single site to connect;<sup>73</sup> the majority of users of leased lines have requirements to connect together multiple sites.<sup>74</sup>

- 3.8 In general, the majority of businesses tend to buy all of their services from a single supplier, although one quarter use more than one supplier. In the case of higher bandwidth users the main reason for using more than one supplier was the need for backup links in case of failure.<sup>75</sup> Our consumer survey suggests that most enterprise customers on average have contracts for around two to three years, although longer contracts are observed particularly with larger customers.<sup>76</sup> However, even with longer contracts, most customers appear to review their service requirements and purchases regularly.77
- The February 2016 BDRC CI survey found that 19% of users had only had their 3.9 current high bandwidth service for two years or less. However, many had been with the same supplier for longer than this.<sup>78</sup> Respondents said that the main reason for changing service was the need for a faster connection. Respondents also referred to company expansion, cost or price reductions in the market and new services being offered as other important factors.

## Leased lines as inputs to MNOs' and LLUOs' networks

3.10 Leased lines are also used by communications providers (CPs) such as mobile network operators and local loop unbundlers to build the networks they use to support the provision of communication services (i.e. mobile services and asymmetric broadband internet access). The capacity and price of the leased lines affects the speed and cost of downstream mobile and asymmetric broadband

<sup>&</sup>lt;sup>71</sup> February 2016, BDRC CI Survey.

<sup>&</sup>lt;sup>72</sup> February 2016, BDRC CI Survey.

<sup>&</sup>lt;sup>73</sup> This apparently varies by bandwidth consumed. For example, around one half of lower bandwidth users (up to including 100 Mbit/s) have a single UK site; whereas for higher bandwidth users this is a smaller proportion (and could be as low as 28%). <sup>74</sup> Our VHB consumer survey suggested the median number of sites companies purchasing leased

lines is three for those connecting lower speed services and 4 or more for those purchasing higher speeds. On average these respondents estimated that around two-thirds of their sites were connected via leased lines. <sup>75</sup> February 2016, BDRC CI Survey.

<sup>&</sup>lt;sup>76</sup> A third of respondents to the consumer survey estimated they were on 1-2 year (37%) or 2-5 year (33%) contracts with an existing supplier for a BCS, while a quarter (24%) had contracts of up to 1 year. Contracts tended to increase with length depending on customer size. Page 50 of the BDRC consumer survey. <sup>77</sup>In general, enterprise customers review value-for-money or service quality at least every 2-3 years

and nearly three in five go to formal tender within the same period. Our market questionnaire revealed that SMEs tend to approach suppliers directly, whereas government and public sector organisations use competitive tender processes. Large enterprise customers have the most variation in how they buy services, but in general with higher value/more complex solutions are more likely to require tender or a request for proposal (RFP).

<sup>&</sup>lt;sup>78</sup> The February 2016, BDRC CI Survey found that a third of users asked had switched supplier in the past five years.

services. For example, our best current estimate is that mobile backhaul accounted for just under one fifth of MNOs' network costs in 2014/15.<sup>79, 80</sup>

- 3.11 MNOs use large volumes of leased lines to carry mobile voice and data services between their radio base stations and their core networks. Similarly, most suppliers of asymmetric broadband services rely on leased lines to backhaul broadband traffic from BT's exchanges (where they have co-location equipment to aggregate unbundled local loops) to their core networks.
- 3.12 Unlike enterprise services, which tend to be concentrated in urban areas, mobile backhaul requirements are geographically dispersed, reflecting the need for mobile operators to provide mobile base stations to cover a significant proportion of the UK. LLU backhaul demand also extends outside of the main urban areas, as the main operators such as TalkTalk and Sky have co-location equipment at a significant number (but not all) of BT's local exchanges around the country.
- 3.13 As large national operators, MNOs and LLUOs tend to be quite sophisticated buyers. MNOs have noted a general preference to purchase from a limited number of suppliers.<sup>81</sup> This is partly because of the overhead of managing multiple supplier relationships and contracts. BT remains the main supplier of MNO backhaul.

## Suppliers of leased lines and alternative services

- 3.14 Leased lines markets are part of a complex value chain for business connectivity, ranging from network connections sold in a package with downstream services such as ICT solutions; to wholesale inputs assembled by network providers; and at the most upstream level access to physical network such as access to (unlit) fibre or access to telecoms ducts in the ground.
- 3.15 Figure 3.1 illustrates the range of suppliers in the value chain and the interactions between them. We show the most upstream suppliers and services (physical network) at the top through to the most downstream providers / services (fully managed) services. We show the main players on the right hand side at each level of the value chain. We also show (some) of the interactions between different layers of the value chain on the far left hand side. At a particular level in the value chain, a user may use the input shown immediately above. For example, an end-to-end retail leased line will be made up of (upstream) leased lines components including terminating (access) segments (or "tails") and possibly also trunk or core network segments. A managed service like a VPN might also use leased line components for connections to individual sites. In some cases, however, it may be that an entity may

office.gov.uk/media/55cc79abe5274a547300002f/Ofcom\_Phase\_2\_submission.pdf <sup>80</sup> As part of the CMA's assessment of the BT/EE, it considered whether BT's role as a significant provider of mobile backhaul services might give rise to competition concerns including concerns over a margin squeeze. The CMA concluded that any reduction in EE's backhaul costs as a result of efficiencies generated by the merger would not be so large as to allow a reduction of retail prices that would generate competition concerns. Part of the CMA's reasoning was that the efficiencies generated by the merger (i.e. in the provision backhaul) would be very small when compared to the overall costs an MNO would incur in the provision of retail mobile services.

https://assets.digital.cabinet-office.gov.uk/media/5697d55aed915d474700001d/BT-EE\_summary\_final\_report.pdf (paragraph 46).

<sup>&</sup>lt;sup>79</sup> This estimate is based on the Ofcom MCT model, which includes relevant capex and opex. For further details, see paragraph 5.38: <u>https://assets.digital.cabinet-</u>

<sup>&</sup>lt;sup>81</sup> Based on the market questionnaire responses.

be able to self-supply several layers, so it may only require some upstream components.

## Figure 3.1: The ICT value chain and examples (updated)<sup>82</sup>



- 3.16 As discussed above, business and enterprise users may purchase leased lines embedded within managed ICT solutions, provided to enterprise customers by systems integrators such as BT Global Services, IBM, CGI and many others, large and small. Systems integrators typically do not own and operate their own telecoms infrastructure. Instead, they purchase the connections needed to meet the end-users' requirements from communications providers (CPs) higher up the value chain.
- 3.17 CPs who provide managed services for business customers include BT, Virgin, Vodafone, Colt, Interoute and Exponential-E. The CPs, in turn, use either leased lines and/or contended business-grade broadband or superfast-broadband services to construct the connectivity solution required.
- 3.18 The main CPs which supply leased lines include BT, Virgin Media, Vodafone, Level 3, Colt, Verizon and Zayo, among others. CPs usually carry leased line services on either copper wires (typically for lower speed legacy applications) or optical fibres, although fixed microwave links are also sometimes used. The inherent transmission capacity of optical fibre is far greater than that of either copper wire or microwave links. Construction of physical networks of copper wires or optical fibres requires a high initial investment in civil infrastructure, including trenches, ducts, poles and cables.
- 3.19 Several CPs in the UK own such infrastructure and some, including Zayo, CityFibre and Level 3, offer access to components of their infrastructure, such as segments of "dark" (i.e. unlit) fibre or of duct, on a commercial basis. We refer to these components as passive inputs, as they do not include the powered components,

<sup>&</sup>lt;sup>82</sup> We have updated Figure 3.1 relative to the May 2015 Consultation in light of stakeholder comments discussed in paragraphs 3.72 to 3.76 below. 'Managed Service' has been changed to 'Managed service e.g. VPN' and 'End-to-end/VPN leased line' has been changed to 'End-to-end leased line'.

notably electronic equipment and service management tools, needed to provide fullyfunctioning transmission services. Most commercially-available passive inputs are purchased by CPs, who use them in combination with their own infrastructure to provide services to end-users. However, a small number of end-users also buy dark fibre, and engage in technically-sophisticated tasks, including design, equipment selection, integration and testing, in order to self-provide connectivity services.

- 3.20 As discussed further in paragraphs 3.52 to 3.63 below, BT can use its ubiquitous physical network to deliver leased lines almost everywhere in the UK (except in the Hull area, where KCOM is the main provider of physical network). It can therefore use this network to supply (nearly) all the downstream retail services it provides, as well as to sell wholesale services to other CPs who do not have the same level of network coverage.
- 3.21 Although other CPs including, for example, Virgin Media, Vodafone and Colt, own and operate sizeable physical networks in the UK, the coverage of each of their networks is significantly less extensive than that of BT's. Therefore, to provide services nationwide, most CPs other than BT rely on some third-party supply of leased lines services.

# Services considered in this review

3.22 Our review considers retail and wholesale services that make use of leased lines as well as other services that might offer alternative ways of meeting some business needs.<sup>83</sup> Our full assessment of the potential trade-offs between leased lines and alternative services is set out in Sections 4 and 5. Below, we provide a high level description of leased lines and other services from a technical standpoint.

## **Retail services**

## Retail leased lines services

3.23 Retail leased lines are fixed connections that provide end-user organisations with dedicated symmetric capacity between sites. They can be used for a variety of applications, including voice, video and data communications.

## Figure 3.2: Retail leased line



## Leased line example – direct connections between branch offices and a head office

<sup>&</sup>lt;sup>83</sup> In Annex 11, we describe in more detail BT's wholesale leased lines services.

3.24 Figure 3.2 above shows a simplified configuration. The business sites at one end of each access segment are linked to the nearest nodes in the CP's network (typically on BT's network this is a Local Serving Exchange (LSE)) using an access network. The access segments are commonly known as 'local ends'. Connectivity between the CP's network nodes may be provided by a direct fibre or copper connection or, more commonly for longer distance connections, using the CP's backhaul and core transmission network.

### Different interface types for leased lines

- 3.25 In this review, we consider leased lines that employ technologies in common use in the UK. We classify those technologies into three main groups:
  - **Traditional Interface (TI) leased lines**: This group includes services which use legacy analogue and digital interfaces. In the past these have been the most common types of leased line in use in the UK, but their volume is now in sustained decline. In this category there are two broad types of circuit:
    - Analogue interface leased lines: These are commonly used for voice transmission, e.g. external extension circuits between business sites. They are also used for low-bandwidth data transmission.
    - Digital interface leased lines based on legacy TDM technical transmission standards, including Plesiochronous Digital Hierarchy (PDH) and Synchronous Digital Hierarchy (SDH), and which use the ITU G.703 interface. They have stable and predictable transmission characteristics, low transmission delay (latency) and low jitter (variation in transmission delay). These characteristics are important in some user applications. PDH and SDH circuits are the most common type of traditional interface leased line, and are used for enterprise voice and data services. They are currently available in bandwidths ranging from 64kbit/s up to 10Gbit/s. The most popular variants are n x 64kbit/s and 2Mbit/s.<sup>84</sup>
  - Alternative Interface (AI) leased lines: This group of digital leased lines services uses modern interfaces that are generally more suitable for transmission of Internet protocol (IP) data and are often more cost-effective in delivering high bandwidth services than legacy technologies. Interfaces used in AI leased lines include:
    - Ethernet, which is the most common AI leased lines technology. It was originally developed for office environments, where it is still used to transmit data between computers in local area networks (LANs). It has since also been developed for use in telecommunications networks. Ethernet services are currently available in a range of bandwidths from 10Mbit/s to 100Gbit/s, with the most common being 100Mbit/s.
    - Fibre Channel (and related FICON and ESCON interfaces), which is a highbandwidth technology primarily used for data storage network applications.

<sup>&</sup>lt;sup>84</sup> BT plans for all remaining VLB TI services (analogue and digital at <2Mbits/s i.e. n x 64kbit/s services) to be fully withdrawn by 31 March 2020. http://www.globalservices.bt.com/static/assets/pdf/campaign/tdm\_services/TDM\_Roadmap\_Mar\_201

http://www.globalservices.bt.com/static/assets/pdf/campaign/tdm\_services/TDM\_Roadmap\_Mar\_201 5\_lss6.pdf

Wavelength-division multiplexing (WDM) leased lines: WDM is a transmission technology which allows several services to share the same optical fibre, each service being carried by light of a different wavelength or "colour". It was originally used by network operators to provide optical fibre links with very high capacity within their networks. It is now increasingly being used by businesses that have very high bandwidth requirements, particularly for data centre and data storage network applications, and in the media and broadcast industries. The distinguishing feature of WDM is its scalability. Each WDM system can support multiple circuits over one or two optical fibres (typically 16 or 32 circuits at capacities at or above 1Gbit/s). Additional circuits can be quickly added without disruption to the existing circuits and without adding additional fibres. WDM is most commonly used within networks for backhaul and core segments. However, some very large end-users might value the ability to add bandwidth quickly and at low cost. WDM needs to be provided with a relevant transport protocol, and typically these are AI interfaces such as Ethernet or Fibre Channel, but it also supports the TI SDH interfaces.

## Virtual private networks

3.26 Organisations often use leased lines to build private networks, linking their sites together so that offices can exchange data and access corporate applications. Virtual private networks (VPNs) provide an alternative to a private network of retail leased lines to achieve this functionality, using a public core network provided by a CP.<sup>85</sup> The organisation's data is transmitted typically using virtual paths across a core infrastructure shared with other services. Specific protocols are used to ensure the privacy of each user organisation's transmissions through the shared infrastructure. Figure 3.3 below illustrates a simple example connecting several branch offices to a head office.

<sup>&</sup>lt;sup>85</sup> According to the May 2015, BDRC consumer survey, a number of businesses have a VPN (42%), largely underpinned by ADSL or Cable modem, or fibre broadband connection (39%), with one fifth (22%) underpinned by leased lines. Use of VPNs correlates with business size, ranging from 40% among small businesses to 67% among large ones. Two-fifths (37%) of business users asked said they have any type of leased line.



### Figure 3.3: Virtual Private Network (VPN)

3.27 Each site needs an access circuit to connect it to the VPN. This may be provided with a leased line, but other types of connection such as xDSL broadband are also used depending on the user's requirements.<sup>86</sup>

#### Asymmetric broadband services

- 3.28 Asymmetric broadband services are used by some business customers for connections to the internet or to connect together smaller branch offices over VPNs. Such services are asymmetric because the headline upload speed is often much slower than the download speed. The main asymmetric broadband technologies deployed in the UK are:
  - Asymmetric Digital Subscriber Line (ADSL);
  - fibre to the cabinet or premises (referred to collectively as FTTx or nextgeneration access (NGA)); and
  - cable modem.
- 3.29 The architecture used to provide asymmetric broadband services is shown below in Figure 3.4.

<sup>&</sup>lt;sup>86</sup> In the February 2016 BDRC CI Survey, a number of respondents (65%) said they had VPNs underpinned mainly by Ethernet, leased lines or WDM-based links.



#### Figure 3.4: Asymmetric broadband architecture<sup>87</sup>

- 3.30 Current Generation Access (CGA) uses ADSL or ADSL2+ technology over the copper access network from the local exchange to the end-user premises. ADSL technology allows the use of a standard copper telephone line to provide high bandwidth asymmetric data communications. The bandwidths available to end-users are dependent both on the equipment at the local exchange (e.g. the type of ADSL technology deployed) and on the distance of the customer from the local exchange.<sup>88</sup>
- 3.31 NGA technologies rely on an upgrade to the access connection in one of two ways:
  - Fibre To The Cabinet (FTTC) the connection to the cabinet is replaced by fibre and active equipment is deployed in the cabinet. The current copper access network connection from the cabinet to the end-user remains in place; and
  - Fibre To The Premises (FTTP) fibre is used all the way from the exchange to the end-user.
- 3.32 FTTC deployments currently use VDSL2 technology over a copper connection that remains between the cabinet and the end-user with fibre then running from the street cabinet back to the exchange. FTTP services are entirely fibre-based access services and can be provided using a range of different technologies. Where BT has deployed FTTP, it uses a Gigabit Passive Optical Network (GPON) which shares a single fibre from the exchange between a number of end-user premises.
- 3.33 Virgin Media's network uses cable modem technology to provide asymmetric broadband services. The end-user connects via a hybrid coaxial copper cable/optical fibre network utilising Data Over Cable Service Interface Specification (DOCSIS) technology to the head-end equipment in Virgin Media's serving exchange. The use of DOCSIS technology means that the cable network is not subject to the same bandwidth limitations that arise with DSL technology.<sup>89</sup>

<sup>&</sup>lt;sup>87</sup> With CGA no active equipment is deployed to the street cabinet.

<sup>&</sup>lt;sup>88</sup> Available bandwidths can also be increased by using bonded ADSL, in which multiple ADSL lines are bonded together to serve as a single connection with multiplied speeds.

<sup>&</sup>lt;sup>89</sup> We define superfast-broadband as services in excess of 30Mbit/s, which is mainly achieved on NGA technologies.

## Ethernet First Mile (EFM)

3.34 EFM is a set of specifications that allow CPs to run Ethernet over one copper pair or multiple bonded pairs in the access segment to connect the end-user's site to the nearest node. In the UK, CPs which use EFM most commonly lease BT's copper local loops to connect customer premises to the nearest local serving exchange.<sup>90</sup> They connect the services carried by EFM to their backhaul and core transmission networks to provide leased line services. Figure 3.5 summarises the architecture of EFM provision.

## Figure 3.5: EFM architecture



- 3.35 The copper-pair is dedicated to the EFM service and is able to provide dedicated symmetric connectivity to the customer with an Ethernet interface. In this respect, the service is identical to an Ethernet leased line. The key difference between EFM and other leased lines is the use of copper unbundled loops in the access segment for the former. This has some impacts on the services offered.
- 3.36 For example, the use of copper in the access segment means that the EFM connection faces distance limitations similar to those of CGA broadband such as ADSL. The signal diminishes the further the distance of the customer from the exchange, which in turn impacts on the speed of a connection that can reliably be offered. As with ADSL, one solution to increase bandwidth is to bond together a number of copper lines to serve a single site.

## Wholesale services

3.37 CPs provide wholesale leased lines services to each other, either on a commercial basis or on a regulated basis. A CP purchasing wholesale leased lines uses them either as components to construct retail leased lines services for end-user organisations, including as access tails for VPNs (shown in Figure 3.3), or to build its own network, for example to connect its network nodes together.

#### Wholesale leased lines network segments

3.38 For regulatory purposes, we often distinguish between different parts of the network as shown in Figure 3.6.

<sup>&</sup>lt;sup>90</sup> For this purpose, CPs use unbundled local loops which BT is obliged to provide on regulated terms as a remedy for its SMP in the Wholesale Local Access Market.



#### Figure 3.6: Wholesale leased lines by network segments

- 3.39 There are three broad types of wholesale leased lines service:
  - **end-to-end services:** these link two end-user sites, typically over relatively short distances. These are often local connections either directly connected or within similar exchange areas;
  - **terminating segments:** most commonly link an end-user's site to the purchasing CP's network node, enabling the purchasing CP to assemble an end-to-end service using a combination of wholesale inputs and its own network. Terminating segments can also be used to link together nodes in the purchasing CP's network. Terminating segments consist of access and any (necessary) backhaul segments:
    - Access segments: these are typically the final network leg running from an end-user's premises (at the network termination equipment) to a local access node (typically on BT's network this might be in a local serving exchange ("LSE"))<sup>91</sup> or an equivalent point on a rival network where network equipment is located.
    - Backhaul segments: these are circuits running from a local access node back to the purchasing CP's own core network (or between exchanges). Backhaul segments often make greater use of shared infrastructure, including physical sharing (i.e. the same duct and fibre) and/or traffic combined using multiplexing techniques.
  - trunk or core segments: these are segments of leased lines carried over aggregated links between major network nodes. As with backhaul, different traffic streams will share these core networks, but with potentially far more traffic, because they link major network nodes e.g. between major urban centres.
- 3.40 In previous BCMRs we used the term 'Symmetric Broadband Origination' (SBO) to describe terminating segments. As the acronyms associated with this term are well established, in this document we have continued to use them to refer to terminating segments. We distinguish between different SBO services according to the interface used (e.g. TISBO for traditional interface services using legacy technologies and

<sup>&</sup>lt;sup>91</sup> We note that a backhaul network could in theory start from a point closer to the end-user, for example where a CP has installed equipment in a street cabinet. However, in most circumstances a local serving exchange is the first point at which different traffic streams from individual end-users come together.

CISBO for contemporary interface services using newer technologies such as Ethernet and WDM).

## Different products and services suited to different applications

3.41 As discussed in this sub-section, there are a diverse range of business connectivity requirements. We further noted that a range of services can be used to meet those needs either sold as point-to-point links (such as Ethernet, SDH and PDH leased lines) or as inputs to VPNs. Figure 3.7 below provides a simplified and stylised depiction of the different services in terms of the price relativities and the range of 'symmetric' speeds they typically support.<sup>92</sup>

Figure 3.7: Stylised summary of main service types by bandwidth, price and quality



- 3.42 In general, even the cheapest leased lines (SDH/PDH and Ethernet) are charged at a significant premium to asymmetric broadband services such as NGA. Ethernet leased lines, which now account for the majority of installed leased lines (see Figure 3.8 below) are typically the cheapest form of leased lines connection starting at 10Mbit/s and above. The cheapest Ethernet services are based on EFM technology. SDH/PDH remains a relatively low-cost leased line technology at lower bandwidths (2Mbit/s), but is significantly more expensive than Ethernet leased lines at higher bandwidths.
- 3.43 Many users might select a service based on the bandwidth/price trade-offs. However there are a number of other 'quality' dimensions to each service that typically improve as price increases. We discuss these trade-offs in more detail in our market assessment in Sections 4 and 5.

<sup>&</sup>lt;sup>92</sup> In the case of NGA, the speed shown is the lower of the upstream and downstream speeds, as this determines the maximum "symmetric equivalent" speed (with headline upload speeds of up to 20Mbit/s commonly advertised).

# Volumes and trends

## Overview of value and volumes of leased lines

- 3.44 The UK market for leased line services is worth approximately £2bn per annum at the wholesale level. BT's wholesale SDH/PDH revenues were approximately £0.4bn in 2015, and declined by 18% from the previous year; its revenues for wholesale Ethernet services operating at bandwidths up to and including 1Gbit/s were approximately £0.8bn in 2015 and changed little from 2014; its reported regulated wholesale revenues for services capable of support speeds above 1Gbit/s (Ethernet and WDM) were £0.1bn in 2015, only slightly below that seen in 2014.93
- Figure 3.8 shows a breakdown of the volumes of leased lines by main service types 3.45 and bandwidths in Spring 2014.94

## Figure 3.8: Volumes of leased lines by different interface and bandwidth segments<sup>95</sup>



Source: Ofcom based on aggregation of operator data.<sup>96, 97</sup>

3.46 Figure 3.8 shows that Ethernet services operating at bandwidths up to and including 1Gbit/s now account for the majority of installed circuits in the UK. Nevertheless, volumes of TI services which use either legacy digital time-division multiplex or analogue interfaces remain significant. Volumes of Ethernet services operating at speeds above 1Gbit/s and WDM services capable of supporting speeds at or above

<sup>&</sup>lt;sup>93</sup>http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2015/RevisedCurre ntCostFinancialStatements2015.pdf

In the May 2015 BCMR Consultation, we stated that Figure 3.8 showed the breakdown of the volumes in 2013. This was an error as the data was collected in March/April 2014 <sup>95</sup> Ethernet low includes volumes of EFM circuits.

<sup>&</sup>lt;sup>96</sup> Volumes are expressed in terms of the number of local customer ends (not circuits).

<sup>&</sup>lt;sup>97</sup> Numbers include MNO and LLU backhaul.

1Gbit/s are more limited, but are growing faster (see below), and as stated in paragraph 3.42 are significant in value terms.

3.47 In terms of the underlying trends in the market, Figure 3.9 shows volumes for BT's sales of TI circuits (and forecasts over the period covered by this review). The expectation is continued decline in TI services.

## Figure 3.9: Declines in legacy TI markets

Note: Dotted lines show forecast local end volumes. Source: LLCC data from BT

- 3.48 Figure 3.9 shows that there has been a trend decline in TI services, but that significant continuing demand for TI circuits is expected to remain at lower bandwidths. The dotted lines from 2015/16 show forecast local end volumes. According to BT's estimates, used here for purposes of illustration, there were still over 200,000 circuits (at sub-2 and 2Mbit/s) in 2012/13. BT forecasts show that it expects a further sharp decline in TI services over the period until 2018/19 with 2Mbit/s circuits providing the only significant remaining demand. This is consistent with BT's plans to shut the platform that supports sub-2Mbit/s circuits in 2020 <sup>98</sup>, as discussed in our VLB statement.<sup>99</sup>
- 3.49 By contrast, significant growth is forecast for Ethernet and WDM services with demand increasing in particular for Ethernet at 100Mbit/s and above as end-users migrate to higher-speed services.

<sup>&</sup>lt;sup>98</sup><u>http://www.globalservices.bt.com/static/assets/pdf/campaign/tdm\_services/TDM\_Roadmap\_Mar\_20</u> <u>15\_lss6.pdf</u>

<sup>&</sup>lt;sup>99</sup> See Business Connectivity Market Review: Very low bandwidth leased lines, Statement, 28 April 2016, <u>http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/</u>

[×]

Note: Dotted lines show forecast. Source: LLCC data from BT

3.50 An interesting potential development is the forecast decline in 10Mbit/s services. This is consistent with our discussions with operators that suggest 100Mbit/s and to some extent 1Gbit/s Ethernet leased lines are increasingly viewed as entry level speeds for leased lines users.<sup>101</sup> The decline in 10Mbit/s and similar predicted increase in 100Mbit/s volumes may reflect BT's pricing, where 100Mbit/s Ethernet services are priced below 10Mbit/s. Another development is the emergence of EFM services as an alternative for users that do not necessarily need very fast upload and download speeds, whilst NGA may be an alternative for users who also do not need other features of leased lines. Also, the number of 10Gbit/s Ethernet and WDM circuits is forecast to [3<] between 2014/15 and 2018/19, reflecting a general industry trend of moving towards higher bandwidth circuits.

# **Competition developments**

3.51 We set out below some of the main developments in the availability of infrastructure, in particular the position of BT and rival infrastructure providers in the UK, and KCOM in the Hull area. Then we discuss developments such as the emergence of data centres.

<sup>&</sup>lt;sup>100</sup> Volumes of WDM-based services are included in both the 2.5Gbit/s and 10Gbit/s bandwidth categories.

<sup>&</sup>lt;sup>101</sup> For example, in our meetings with stakeholders on pricing and commercial strategies.

## Network infrastructure in the UK excluding Hull

**BT** network locations

3.52 Competition in business connectivity markets is set against a backdrop where BT has significant advantages over other operators arising from its possession of the largest and only ubiquitous UK network. Figure 3.11 shows BT's extensive network of 5,600 local exchanges (black dots) and the 1,100 higher tier Access Serving Nodes (green dots) and 107 Openreach Handover Points (red dots). BT has an extensive duct and fibre network from these main network node locations.

## Figure 3.11: BT network locations and rival infrastructure across the UK



Source: Ofcom based on BT exchange and operator network locations.

- 3.53 Figure 3.11 shows BT's highly interconnected network of nodes across the UK (with the links between these locations covering core and backhaul network segments). One of BT's main advantages in the provision of access segments is that BT has existing connections from local exchanges to virtually all business premises.
- 3.54 BT's rivals have built physical networks to gain some coverage of the main business concentrations and sites. Out of BT's rivals, Virgin Media owns and operates the largest physical network, with its network connecting at least one large business in [3<]% of UK postcode sectors.<sup>102</sup> Virgin has announced plans to invest a further £3bn

# OCP network presence

<sup>&</sup>lt;sup>102</sup> Based on Ofcom analysis.

in network expansion.<sup>103</sup> It estimates this investment should increase the number of households and businesses to which it can offer services by one third over the next five years. Furthermore, it has laid out plans for 'ultrafast connectivity for businesses', with the launch of broadband speeds up to 300Mbit/s for early 2016.<sup>104</sup>

- 3.55 Other providers of wholesale leased lines include Vodafone (following its acquisition of Cable & Wireless), Colt, Level 3, Zayo, Verizon and several smaller companies. Of these smaller companies, CityFibre has recently purchased from KCOM its network UK business outside the Hull area.<sup>105</sup> It also has plans to deploy fibre-based networks in a number of what it defines as 'second-tier' UK towns and cities.<sup>106</sup> It has already built fibre-networks under separate projects with communications providers and local councils, including one in partnership with Sky and TalkTalk in York, and plans to roll out FTTP network in Glasgow.<sup>107</sup> Nevertheless, the other providers' physical networks have a more limited reach than Virgin's. These networks have typically been built in business districts with high densities of potential business users (most notably in central London but also in some other large cities) and on aggregated trunk routes between major population centres.
- 3.56 In the BCMR 2013, we found that BT had SMP in some or all wholesale leased line markets in most parts of the UK. We considered that, as BT had the largest and only ubiquitous network with existing connections to most premises, the large (sunk) costs associated with fibre digs created barriers to competition that were often difficult for CPs to overcome. Thus, even in areas where other CPs had built networks, BT retained a high share of most of the markets we reviewed whilst, outside these areas, the majority of CPs remained reliant on BT's network to supply terminating segments. We also found that MNOs and LLUOs were significant purchasers of leased lines with requirements that were often located outside of the main urban areas where some rival infrastructure exists (see Figure 3.11), and hence relied on BT for a large part of their requirements.
- 3.57 In this review, we look at how far this remains true, how much has changed since 2013 and how we expect competition to develop over the review period. We take account of the recent build that has taken place, some of which has been outside the centres of major cities (mainly by Virgin), and of plans for investment in other areas including smaller UK towns and cities (particularly those of CityFibre). However, even with these developments, most CPs' networks will remain far more limited in extent than BT's, with fewer physical connections to business users.
- 3.58 Furthermore, the cost of new network build remains significant. This means that a CP without an existing connection or network near to a customer site will be at a significant disadvantage to an incumbent supplier with connectivity already at the site. For example, dig costs of more than £100 per metre are possible in urban

 <sup>&</sup>lt;sup>103</sup> <u>http://about.virginmedia.com/press-release/9467/virgin-media-and-liberty-global-announce-largest-investment-in-uks-internet-infrastructure-for-more-than-a-decade</u>
 <sup>104</sup> <u>http://about.virginmedia.com/press-release/9485/virgin-media-trumps-rivals-with-speed-boost-for-</u>

<sup>&</sup>lt;sup>104</sup> <u>http://about.virginmedia.com/press-release/9485/virgin-media-trumps-rivals-with-speed-boost-for-uk-businesses</u>

<sup>&</sup>lt;sup>105</sup> <u>http://www.cityfibre.com/news/2015/12/14/cityfibre-acquires-kcoms-national-network-assets-for-</u> 90m-facilitated-by-180m-fundraising

<sup>&</sup>lt;sup>106</sup> City Fibre estimates it currently has at least some fibre presence to 50 UK towns and cities: <u>http://static1.squarespace.com/static/50a0c308e4b081ffff792a0b/t/5565f691e4b0da31db61bfa9/1432</u> <u>745617126/CityFibre+Infrastructure+Holdings+Plc+Annual+Review+2014.pdf</u> and plans for further investment within these areas and across the UK: <u>http://www.cityfibre.com/gigabit-cities/</u>

<sup>&</sup>lt;sup>107</sup> http://www.cityfibre.com/news/2015/11/25/glasgow-becomes-scotlands-third-gigabit-city

areas,<sup>108</sup> which suggests that even a relatively short 100 metre dig to a site would cost £10,000. The (forward-looking) incremental costs that a CP with existing connectivity will need to incur to provide services to a new customer site will generally be lower than those of OCPs with less extensive network.

- 3.59 For example, where a CP has an existing fibre connection to a site, it would not have to charge a new customer at that site for any build. By contrast, a rival CP without a connection would incur build costs. It is important to note that these costs of build, once incurred, are sunk (i.e. not recoverable on exit). Hence, a rival CP will typically have to recover all of these build costs from the customer either via upfront charges or over the lifetime of any contract.
- 3.60 Even where a CP does not have an existing fibre connection in place, it can still have an advantage over rival CPs without their own network nearby if it already has a connection to that building. This is because the supplier with existing connectivity will be able to use its existing ducts to install fibre, which is typically far cheaper than digging trenches and installing duct.
- 3.61 The nature of retail demand for leased lines also creates additional competitive challenges for CPs. Retail customers typically require an end-to-end circuit (or circuits) between two or more of the retail customer's sites, which are where the "customer ends" of circuits are located. To compete to provide a multi-site retail connectivity solution, a CP must have, or be able to obtain access to, infrastructure supporting leased lines to each site and any connecting segments in between. Our consumer survey evidence, discussed in paragraph 3.7, suggests that the majority of end-users have multiple UK sites that rely on leased lines for connectivity.
- 3.62 In our market assessment set out in Sections 4 and 5, we consider in detail whether, in light of the presence of operators with their own infrastructure, it is now appropriate to identify any parts of the market as effectively competitive. This assessment takes into account the evidence on the state of competition now and expected developments over the timeframe of this review which we have outlined above.

## Network infrastructure in the Hull area

- 3.63 In the Hull area, the incumbent operator, KCOM, has a ubiquitous network connecting to most sites in the Hull area, whereas the amount of other CPs' infrastructure is very limited. Other CPs frequently have no connection to or network infrastructure near (potential) customers, and as such require network extension for connecting new customers. The high level and sunk nature of investment costs associated with network extension means that other CPs often cannot justify the risk of such investments. Prospects for competition, and the incentives of other CPs to invest in network extension and customer acquisition, are further limited by the low demand and limited potential for future demand growth in the Hull area.
- 3.64 Nevertheless, there has been some entry on a small scale in the Hull area, such as by MS3, which rolled out a fibre network,<sup>109</sup> and CityFibre, which has completed the first phase of a 62km fibre access network in the Hull area to provide dark fibre to mobile base stations operated by MBNL.<sup>110</sup> BT has also established a point of

<sup>&</sup>lt;sup>108</sup> http://stakeholders.ofcom.org.uk/binaries/consultations/wla/annexes/csmg.pdf

http://www.ms-3.co.uk/pages/about-us.html

<sup>&</sup>lt;sup>110</sup> <u>http://www.cityfibre.com/news/2015/3/31/cityfibre-provides-dark-fibre-connectivity-to-purebroadbands-wireless-network-in-hull</u>

presence in the Hull area from which it could use KCOM access links to supply customers.

## Data centre locations as network hubs

- 3.65 Data centres, in the broadest sense, are premises whose main purpose is to house computing and communications equipment in secure locations and which therefore require very high capacity links to carry data to and from their facilities. These sites tend to have multiple tenants and may be owned and operated by carriers and/or run by third-party providers that are "carrier-neutral".
- 3.66 Figure 3.12 shows data centre locations around the UK, including the significant concentration of data centres in the London area (the geographic areas referred to as the CLA and LP in this statement are shown in blue and green respectively).

## Figure 3.12: Data centre locations in UK



Source: Ofcom 2016

- 3.67 Data centres fulfil a number of functions, including hosting locations to deliver retail services such as cloud computing and remote data storage/backup. Carriers also locate their own network switching equipment in some data centres to link with their core networks and to other data centres.
- 3.68 With a number of retail services handed over or routed via these locations and operators locating their own networks at these sites, data centres have increasingly

become network nodes or hubs for interconnection between networks. We have considered the implications of this in our assessment of core networks in Section 4 and in more detail in Annex 15.

## **BT/EE merger**

- 3.69 Since publication of the May 2015 Consultation, the Competition and Markets Authority (CMA) cleared BT's acquisition of EE.<sup>111</sup>
- 3.70 We have taken into account the BT/EE merger in our assessment of relevant markets in the BCMR (particularly when we consider the provision of MNO backhaul) as our assessment is conducted on a forward-looking basis.
- 3.71 Our view is that the merger does not materially affect our market analysis or our decisions on which remedies to impose. However, we have indicated at specific points throughout this document where we consider the merger to be particularly relevant to our analysis.

## Stakeholders' responses

- 3.72 BT was the only stakeholder to provide responses to the Market Context section. BT commented on our presentation of the ICT value chain in Figure 3.1 of the May 2015 Consultation. It pointed out that there were differences between Figure 3.1 of the May 2015 Consultation and the equivalent Figure of the March 2013 Statement.<sup>112</sup> Specifically, it noted that VPNs had apparently been moved from the 'managed service' box in the 2013 BCMR Statement to the 'end to end leased line box'. It stated that it was not immediately clear what Ofcom meant by the term 'VPN leased line' used in Figure 3.1 of the May consultation.
- 3.73 BT also questioned the inclusion of the "ICT department of user's organisation" on the left hand-side of Figure 3.1 as it felt that such an ICT department would carry out the same functions as a systems integrator or managed service supplier. BT said that the equivalence, as it saw it, between the systems integration services which a user could buy from an external supplier and those which it could provide itself was a "key observation".<sup>113</sup>
- 3.74 On the specific question of VPNs, we have not changed our position from that in the 2013 Statement and have revised Figure 3.1 above to make this clearer. We have not changed the position of the "ICT department of user's organisation" in Figure 3.1. We interpret BT's "key observation" on the role of a firm's ICT department in the light of comments BT makes about the relationship between retail and wholesale markets generally. We respond to these in Annex 4, where we also provide further explanation of our views on VPNs.
- 3.75 In its consultation response BT also commented on Figure 3.6 of the Consultation (this Figure is also reproduced above). BT stated (paragraph 10.56) that "this definition is not consistent with the change made in the relevant retail services where VPNs are now correctly regards [sic] as an alternative to retail leased lines".

<sup>&</sup>lt;sup>111</sup> <u>https://www.gov.uk/government/news/cma-clears-btee-merger</u>

<sup>&</sup>lt;sup>112</sup> See Figure 2.1 of the 2013 BCMR Statement. There was an inadvertent reversion to an earlier version of the figure from the draft (Feb 2013) version of the Statement.

<sup>&</sup>lt;sup>113</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/BT\_Part\_B.pdf</u>, paragraphs 10.24 – 10.26.

Furthermore, it noted (paragraph 10.60) that Figure 3.6 fails to include "multiplexing" and the "existence of different protocol layers".

3.76 Our view is that BT's comments on Figure 3.6 fall away since we have not made the change to the definition of the retail market that BT claims.

## Section 4

# Market assessment for wholesale Contemporary Interface Symmetric Broadband Origination services

# **4.1 Introduction**

- 4.1 This section sets out our market definition and SMP assessment for the wholesale leased line services provided using newer technologies i.e. Ethernet and WDM.<sup>114</sup> These are referred to as Contemporary Interface Symmetric Broadband Origination (CISBO) services.
- 4.2 In this section, we first present our market definition analysis. We define:
  - a single product market for CISBO services: This includes Ethernet and WDM services at all bandwidths (including EFM services); <sup>115, 116</sup> and
  - three distinct geographic markets: These are Central London Area (CLA), London Periphery (LP) and Rest of UK (RoUK) excluding the Hull area.
- 4.3 Second, we present our SMP determinations in the relevant market(s) identified. Our decisions can be summarised as follows:
  - Market for CISBO services in the CLA: no CP has SMP;
  - Market for CISBO services in the LP: BT has SMP; and
  - Market for CISBO services in the RoUK excluding Hull: BT has SMP.
- 4.4 We then present our assessment of two specific issues. We discuss why we decide to include LLU backhaul and mobile backhaul in the CISBO market. Then we define the boundary between terminating segments and the competitive CI core conveyance market.
- 4.5 We set out our analysis and decisions in these areas under the following subsections:
  - 4.2 Product market definition

4.3 Geographic market definition

<sup>&</sup>lt;sup>114</sup> As set out in Annex 10 of the May 2015 BCMR Consultation, we do not consider TISBO and CISBO services to be in the same product market. Our assessment of competition in the TISBO market is covered in Section 5. Section 6 presents our assessment of competition in wholesale and retail markets in Hull, where KCOM is the incumbent CP.

<sup>&</sup>lt;sup>115</sup> Ethernet, WDM and EFM services are defined in Section 3.

<sup>&</sup>lt;sup>116</sup> The market for CISBO services effectively replaces the markets we defined as "alternative interface symmetric broadband origination" (AISBO) and "multiple interface symmetric broadband origination" (MISBO) in the BCMR 2013. In other words, the CISBO market includes AISBO and MISBO services.

- 4.4 Market power assessment
- 4.5 Mobile and LLU backhaul
- 4.6 CI core
- 4.6 This section also incorporates reasoning and evidence provided in the following Annexes:
  - Annex 4 outlines our approach to product market definition;
  - Annex 5 explains our assessment of variations in competitive conditions within the CISBO product market and how we expect them to develop over the market review period;
  - Annex 6 describes substitution between lower bandwidth CISBO services and, in turn, EFM and NGA services;
  - Annexes 7 and 8 analyse MNO backhaul and LLU backhaul respectively;
  - Annex 9 outlines the approach to assessing SMP we have followed;
  - Annex 10 provides our data analysis used to derive service share and network reach estimates;
  - Annex 13 analyses CPs' dig distances and costs to connect new customers;
  - Annex 15 presents our analysis and views concerning definition of the (competitive) CI core, and how the boundary between core networks and local access and backhaul networks (terminating segments) is defined;
  - Annex 16 discusses factors affecting competition at both a national and a local geographic level and our approach to geographic market definition; and
  - Annex 17 discusses profitability analysis for wholesale leased lines including for CISBO segments.

## 4.2 Product market definition

## 4.2.1 Introduction

- 4.7 This sub-section sets out our analysis and findings in relation to product market definition for CISBO services.<sup>117</sup> First, we consider whether all CISBO services are part of the same market. We then look at whether, and to what extent, they face effective competitive constraints from alternative services.
- 4.8 Our conclusions can be summarised as follows:
  - We define a single market for all CISBO services (i.e. a single market for wholesale Ethernet and WDM products at all bandwidths).

<sup>&</sup>lt;sup>117</sup> These are wholesale leased line services using Ethernet and WDM technology. For more details on these services, see Section 3 paragraph 3.25.

- We include EFM in the CISBO market but exclude asymmetric business broadband (NGA), finding that EFM exerts competitive pressures in particular on lower bandwidth CISBO services and that NGA provides an additional, albeit weaker, out-of-market constraint.
- We exclude dark fibre from the product market. We consider it more appropriate to look at out-of-market constraints from dark fibre in the SMP assessment.
- 4.9 We address each of these points in turn below.

## 4.2.2 Single market for all CISBO services: Ethernet leased lines and WDM

### 4.2.2.1 Introduction and summary

4.10 CISBO services include leased lines supplied over single service Ethernet and WDM at a range of different bandwidths. As set out in Section 3, Ethernet services are currently available in bandwidths from 10Mbit/s to 100Gbit/s. A WDM service, once installed, can be scaled to support multiples of the available bandwidth increments (1, 2.5, 10, 40 and 100Gbit/s). In assessing the relevant market for these services, we refer to the EC Recommendation and Explanatory Note, which sets out a broad market for high-quality access, and explains that a "chain of substitution" may link services of different bandwidth and technology. The Explanatory Note states that NRAs should look for breaks in this chain of substitution:

*"the business retail market is characterised by considerable divergent national conditions. It is therefore for the NRAs to ascertain whether any breaks in the chain of substitution can be observed."*<sup>118</sup>

- 4.11 We consider that the features of this market point towards a single product market. On the demand-side, we observe there is functional substitutability between different services. While customers may have varied demands for bandwidth, demand for a particular bandwidth could in principle be satisfied by a single service at or above the required bandwidth, or by multiple lower-bandwidth services. As a result, there is the potential for close demand-side substitutability across the range of products.
- 4.12 Moreover, end users are steadily increasing their demand for bandwidth, which is likely to strengthen the existing demand-side interactions and pricing interdependence between different products. The evidence we have seen in the context of this review suggests a material proportion of customers currently purchasing services at a particular bandwidth will upgrade to a higher bandwidth product within the period covered by this review. We consider that this feature of the market will make users of lower bandwidth products more likely to switch to higher bandwidth products in response to a small but significant non-transitory increase in price (SSNIP). A reduction in the difference in price between higher and lower bandwidth services could, in effect, bring forward the date of migration which would occur in any event.<sup>119</sup>

<sup>&</sup>lt;sup>118</sup> Explanatory note to the EC Recommendation, page 51.

<sup>&</sup>lt;sup>119</sup> It is sometimes argued that similar considerations could apply to migration from TI to AI services. However, as discussed in Section 5, the available evidence suggests that, in practice, the rate of migration from TI services is not sensitive to changes in the relative prices of TI and AI services.

- 4.13 On the supply-side, the physical network infrastructure of buildings, trenches, ducts and fibres is a prerequisite to the supply of wholesale leased line services, and its construction requires substantial investment. However, once built, such infrastructure can be used to provide any leased line service across the full range of bandwidths and interfaces, both of which are determined solely by the electronic equipment fitted to the ends of fibre strands connected to the customer's sites. Indeed, we see most CPs supplying CISBO services across the bandwidth range (albeit with varying degrees of success) and note that, when viewed in the context of a CP's whole estate of leased lines, the cost of equipment is small relative to the sunk cost of building the physical network infrastructure needed to provide these services. Once rival infrastructures are in place, and sufficiently close to a customer site, that customer will therefore face similar competitive conditions regardless of the bandwidth it uses. These features on the supply-side also suggest that definition of a single product market for CISBO services, with a focus on identifying geographic variations in the extent of competing infrastructure, is appropriate.
- 4.14 We have analysed these features of the market using specific empirical evidence to assess the existence or otherwise of a chain of substitution, looking in particular at evidence on pricing and customer demand. In the BCMR 2013 we identified a break in the chain of substitution at 1Gbit/s. We considered there was a break between two product segments, namely *Ethernet services up to and including 1Gbit/s* (referred to below as lower bandwidth CISBO services) and *Ethernet services above 1Gbit/s and WDM services* (referred to below as very high bandwidth services (VHB)).<sup>120</sup> Therefore, we have given particular consideration in this review to whether the evidence still supports a break in the chain of substitution at 1Gbit/s. However, the evidence we have reviewed in the course of this review suggests that there is no longer such a break at 1Gbit/s.
- 4.15 As discussed in Annex 5, the CISBO market is evolving. There is a trend for customers to demand increasing amounts of bandwidth over time and this is bringing with it a number of changes which we refer to collectively as "standardisation". We use this term because customer migration to higher bandwidths means that speeds which once were only used by a small number of "high-end" customers with specialised demands are increasingly being used by a much wider group of customers who are more typical of leased line users in general. This is already happening but we expect it to continue over this market review period, with important implications for the VHB CISBO segment in particular.
- 4.16 At 1Gbit/s, we see increasing numbers of users from a wider variety of sectors, including retail customers, and increasing use for access connections. This is a change from the time of the last review in 2013, when use of 1Gbit/s for access was less widespread, and is likely to reflect the effect of price reductions as well as the emergence of new uses.
- 4.17 As prices continue to fall and more new uses for capacity emerge over this review period, we expect to see similar developments in the VHB segment. One source of expected growth in demand for higher bandwidths is the increasing adoption of cloud technology which is driving a need to link data centres to offices.
- 4.18 At the same time, other developments are facilitating upwards migration. There is evidence that CPs have responded to the anticipated growth in demand for VHB

<sup>&</sup>lt;sup>120</sup> In the BCMR 2013 we referred to these products segments as the AISBO and MISBO markets, respectively.

services by actively encouraging lower bandwidth users to migrate upwards, suggesting a greater degree of supply-side interaction and pricing interdependence across the entire bandwidth chain than we have previously seen. As a result, new VHB products have been introduced at lower prices which are more attractive to current users of lower bandwidth products, leading to a significant narrowing in previously identified price differentials.

- 4.19 For example, Openreach has recently launched a 10Gbit/s Ethernet service at a considerably lower price point than its existing 10Gbit/s WDM service, apparently in anticipation of growing demand for 10Gbit/s services. The introduction of BT's new 10Gbit/s Ethernet service means that the price of 10Gbit/s has fallen by 47% since the 2013 BCMR Statement. BT's new 10Gbit/s service now offers ten times the capacity of a 1Gbit/s Ethernet service for approximately double the price, resulting in a differential which is very similar to the bandwidth gradient observed lower down the chain. We note that in the 2013 BCMR Statement, we included 100Mbit/s and 1Gbit/s Ethernet services in the same (AISBO) market, and these services had a similar price differential. Publicly available marketing material relating to the new product suggests it may be aimed, at least in part, at current users of its 1Gbit/s service as it is directly compared, in both price and capacity, to a 1Gbit/s service.
- 4.20 We also find evidence of OCPs supplying 1Gbit/s WDM services at a similar price to BT's 1Gbit/s Ethernet services. The low incremental cost of adding bandwidth to WDM services means that we consider all WDM services to be linked by a chain of substitution. The availability of a 1Gbit/s WDM service at a similar price as a 1Gbit/s Ethernet service now connects the lower bandwidth Ethernet services to this chain. Other market developments also suggest that the divide between lower and higher bandwidths no longer exists, such as the increased usage of 10Gbit/s services to supply users at 1Gbit/s.
- 4.21 As a result of these developments, we consider that there would be a material degree of switching from 1Gbit/s to the higher bandwidth CISBO products in response to a SSNIP at 1Gbit/s. Our survey evidence suggests that CISBO users of all bandwidths are price sensitive and that price is an important factor in the decision to migrate to VHB services. This is consistent with evidence from CPs' internal documents which suggests some CPs are trying to influence the migration decision through their product pricing and positioning. Evidence also suggests that the cost of switching between different bandwidths is unlikely to have a material impact on a customer's willingness to migrate in response to a SSNIP, particularly when any migration costs would be incurred at some point anyway by users upgrading to meet rising bandwidth needs. Notwithstanding the trend for increasing bandwidth, we also find some evidence that the potential for substitution is not just one-way; a material proportion of higher bandwidth users would potentially consider switching to one or more lower bandwidth product(s) in response to a SSNIP.
- 4.22 Taking into account all of the above factors, including increasing demand for bandwidth, declining price differentials and increasing evidence of demand- and supply-side interactions and pricing interdependence between 1Gbit/s and VHB services, we consider it appropriate to define a single product market for all CISBO services.
- 4.23 We present our detailed analysis and findings in the following order:
  - Summary of our provisional findings in the May 2015 BCMR Consultation (4.2.2.2);

- Further analysis undertaken since the Consultation (4.2.2.3);
- Overall analysis and response to specific stakeholder comments (4.2.2.4); and
- Summary of our final decision (4.2.2.5).

### 4.2.2.2 Summary of May 2015 BCMR Consultation

4.24 In the May 2015 BCMR Consultation, we set out the analysis leading to our provisional conclusion to define a single product market. In particular, we considered that a chain of substitution linked CISBO services of differing bandwidths and interfaces. In addition, we considered that evidence did not point to fundamental and sustainable differences in competitive conditions between VHB and the lower bandwidth CISBO products.

### Chain of substitution

- 4.25 We explained that, consistent with the EC Recommendation,<sup>121</sup> the starting point for our assessment of product market definition was an analysis of demand-side and supply-side substitution. We said the key question was whether there exists a *chain of substitution* linking CISBO services of differing bandwidths and interface types, and, if so, whether the price constraints arising from this chain are strong enough for the range of services to be part of a single market. We noted the substitution concerned may reflect demand side constraints (users may switch between different products in the chain), and we also noted that supply side interactions could be relevant (suppliers may switch between different products in the chain, may be similarly able to compete across the chain, or may use products in one part of the chain to compete with another).
- 4.26 On the demand side, we considered the main difference between CISBO users to be in terms of their bandwidth requirements. We noted that while customers may have varied demands for bandwidth, each customer's demand could in principle be satisfied by using a single high capacity line or multiple lower capacity lines. In terms of satisfying customer requirements, we therefore considered there was very close demand side substitutability across the range. As a result, we concluded provisionally that customers' choice of different leased line products would depend in practice on their relative prices.
- 4.27 On the supply side, we noted the ability of a CP to offer a circuit or set of circuits depends primarily on what infrastructure it has available and observed that, once in place, a physical access network can be used to supply CISBO services of all bandwidths and interface types. This is because CISBO services themselves differ only in the equipment at the circuit ends, and where circuits use the same interface but offer different bandwidths the equipment is often identical. We said these supply side considerations tend to point to a broad market definition.

<sup>&</sup>lt;sup>121</sup> 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 communication networks and services.

## Lower bandwidth CISBO services linked by chain of substitution

- 4.28 We considered that the evidence, particularly that on the similarity in the costs of provision, did not point to any clear breaks between Ethernet services up to and including 1Gbit/s. We noted the prices of BT's 10Mbit/s and 100Mbit/s services were now virtually identical. We found there were still material price differences between BT's 100Mbit/s and 1Gbit/s services (the latter being approximately 60% more expensive), but noted that a customer taking a 1Gbit/s service would benefit from ten times the capacity of a 100Mbit/s service.
- 4.29 Moreover, our analysis of equipment costs showed these differences in price were not driven by bandwidth-related cost differences. We said that whilst we did not know what prices would be in a competitive market, differences between the prices of circuits of different bandwidths would be small if they were to (only) reflect differences in incremental costs. We therefore considered that any observed variations in price by bandwidth were more likely a function of the pricing strategies of CPs, taking account of regulatory constraints, the strength of competition and interactions between the demand for circuits of different bandwidths.<sup>122</sup>
- 4.30 We noted that supply-side substitution between lower bandwidth CISBO services was technically feasible, as provision of any service up to 1Gbit/s would be on the same underlying network and using virtually identical equipment with an insignificant difference in costs. With near identical costs of supplying any bandwidth, a CP supplying a particular bandwidth (e.g. 1Gbit/s) could start providing services at lower bandwidths requiring only minimal equipment upgrades, and vice versa.
- 4.31 We therefore concluded that price and cost differences were consistent with all lower bandwidth CISBO services up to and including 1Gbit/s being part of a single product market.

# No evidence of a clear break between 1Gbit/s and very high bandwidth CISBO services

- 4.32 We then looked at whether there was still a clear break in the chain of substitution between 1Gbit/s services and very high bandwidth CISBO services.
- 4.33 We examined whether there were technical differences between Ethernet and WDM services. We found that some differences remained, in that WDM services continued to support a wide range of interfaces and offered the ability to increase capacity more quickly. However, we found that, in the context of demand-side substitution, the differences in service features and quality between WDM services and Ethernet services were less significant than we had found them to be in 2013. This was because single service Ethernet allowed circuit emulation of the main specialist interface types (particularly those used for storage applications) and because growing bandwidth demand could be met by a high capacity Ethernet circuit with initially surplus capacity. Therefore, we concluded that apart from those users with very specialist needs, at very high bandwidths the choice between single service Ethernet and WDM services was not necessarily a technical one but would instead derive from the relative prices of Ethernet and WDM services above 1Gbit/s.

<sup>&</sup>lt;sup>122</sup> This is not to say that price differences will only reflect differences in incremental costs, even in an effectively competitive market. However, if differences in incremental costs are small, it may be more likely that differences in competitive prices will also be small. If price differences are small, it may be more likely that customers will switch between services in response to a SSNIP.

- 4.34 We then examined evidence on pricing and costs of Ethernet and WDM services at and above 1Gbit/s. This was to look for evidence of a break in the chain of substitution. In contrast to our finding in the BCMR 2013, we found that the evidence on pricing and costs no longer pointed to a clear break in the chain of substitution above 1Gbit/s Ethernet. In summary this was because:
  - BT's new 10Gbit/s EAD service appeared to "fill" the gap in BT's product range;
  - The differences in costs of WDM and higher bandwidth Ethernet services and those for 1Gbit/s Ethernet have reduced since 2013. Therefore, even if BT's prices still suggest a "gap", this is not explained by equipment cost differences;
  - OCPs are offering 10Gbit/s Ethernet and WDM products at lower prices than BT, filling in the "gap" in the chain that we identified in 2013; and
  - OCPs appear to be successfully competing using WDM services across a range of bandwidths including in competition with 1Gbit/s Ethernet services.
- 4.35 We found that whilst a gap still remained between the price of BT's 1Gbit/s and 10Gbit/s Ethernet services, the differential was far smaller than in 2013. We noted BT's intention to introduce an EAD 10Gbit/s service in September 2015, and observed that indicative prices for this service were significantly cheaper than BT's existing WDM-based 10Gbit/s service, suggesting this product would "fill" the gap in BT's product range.
- 4.36 We compared BT's equipment costs for its 1Gbit/s and 10Gbit/s services, and found there had been a significant closing of the differential between single service Ethernet at 1Gbit/s and 10Gbit/s. We noted differences between the costs of Ethernet and WDM equipment remained more significant, but observed they were a small element of the overall cost stack (particularly when compared with the costs of duct and fibre, which would be common to all bandwidths).
- 4.37 We also looked at the prices charged by OCPs and their equipment costs for very high bandwidth Ethernet and WDM services. Similar to BT, we found OCPs' equipment costs for VHB services were higher than the costs of lower bandwidth standard Ethernet equipment. However, we observed that the step change in OCPs' prices was not as large as seen for BT's prices. A wider assessment of OCPs' pricing suggested that a number of BT's rivals had services that 'span the gap' that existed in BT's product portfolio at higher bandwidths. In particular, we noted that once [3<] prices were included in the assessment, it was difficult to see a clear break in the pricing schedule. We noted these comparisons were not just theoretical as we knew that [3<] to compete both with BT's WDM services and 1Gbit/s Ethernet services. [3<].</p>
- 4.38 Finally we observed that some operators' network deployment strategies may be blurring the previous distinctions made between a fully dedicated end-to-end WDM and 'single service' Ethernet. In particular, we found that operators were using WDM equipment in the network in ways that allowed them to provide the benefits of rapid deployment and scalability of bandwidth to users without the cost of WDM equipment having to be recovered solely from a single end user. For example, we observed that SSE had deployed pre-installed data centre connectivity using WDM<sup>123</sup> and Virgin Media's 'national HCS'<sup>124</sup> service makes use of flexible WDM

<sup>&</sup>lt;sup>123</sup> <u>http://www.ssetelecoms.com/general-admin/uploads/SSET1019\_DS\_WAVE-length\_serv\_V51.pdf</u>

network technologies.<sup>125</sup> These WDM retail services are delivered with Ethernet interfaces that make use of 'shared' WDM infrastructure, which means that once an end-user is connected, provided the CP has spare capacity, it should be able to offer quickly, and at low incremental cost, additional service connections to the same end user or similar service connections to other end users.

4.39 We considered this was likely to result in either price convergence, with reductions in the price of WDM or near-WDM quality services, or convergence in the quality of WDM and other services. We considered this was likely to result in a continuum of retail services overlapping in price, bandwidth and quality.

## Competitive conditions

- 4.40 We recognised BT's share in very-high-bandwidth CISBO services was substantially lower than for CISBO services of bandwidths up to and including 1Gbit/s. However, we did not consider these service share differences pointed to a fundamental and sustainable difference in competitive conditions to the rest of the CISBO market, such that it would be appropriate to define a separate product market. This was because we considered that CPs are able to use their infrastructure to compete across the full CISBO product range. While BT's current pricing had encouraged greater OCP involvement in the higher bandwidth segments, this did not indicate an inherent difference in competitive conditions because:
  - Estimated shares were subject to limitations, which reduced their reliability as an indicator of competitive conditions;<sup>126</sup>
  - Other evidence on pricing and profitability (summarised in Annex 5, paragraph A5.12) pointed to a lack of effective competition in very-highbandwidth CISBO services; and
  - We anticipated that BT's strong position would assert itself over time in the very high bandwidths as users move between segments.
- 4.41 We noted that factors such as customer migration from lower to higher bandwidth circuits would tend to lead to convergence of competitive conditions over time. We noted in this respect the Analysys Mason consumer survey, which suggested that a significant proportion of respondents expected to upgrade their bandwidth over a relatively short timeframe.<sup>127</sup>

<sup>126</sup> These limitations were discussed in detail in Annex 13 of the 2015 BCMR Consultation. In summary they included missing information on on-net provision, the effect of limited volumes of VHB services; the effect of migration from lower bandwidth to very high CISBO; and the effect of CPs' pricing and positioning of their CISBO products.
<sup>127</sup> We noted that consumer survey results from Analysys Mason presented at a BT Ethernet Strategy

<sup>127</sup> We noted that consumer survey results from Analysys Mason presented at a BT Ethernet Strategy conference provide some evidence on expected rates of upgrade. The evidence suggests around 10% of respondents at >100Mbit/s to 1Gbit/s expected to upgrade their Ethernet speeds within 1 year

<sup>124</sup> http://www.virginmediabusiness.co.uk/Documents/VMB\_DS\_HCSBM.pdf

<sup>&</sup>lt;sup>125</sup> A Reconfigurable Add Drop Multiplexor (ROADM) is an optical switching device used in WDM systems. ROADMs allow wavelengths to be added to a WDM transport fibre or extracted (dropped) from a WDM transport fibre without affecting other wavelengths. ROADMs switch optical signals directly (i.e. without converting wavelengths to electrical signals) and are remotely configurable. ROADMs allow CPs to rapidly configure circuits over WDM systems in response to customer orders. While not a necessarily a new technology, we consider that there is now greater evidence that it is being deployed for example at datacentres and in support of national connectivity.

4.42 Nonetheless, we also said that, having defined relevant markets, we did not then ignore variations in competitive conditions within any of those markets. Instead we said variations in competitive conditions were relevant to the assessment of appropriate remedies.

## 4.2.2.3 Ofcom's further analysis

- 4.43 In light of consultation responses, we have gathered some further evidence and conducted additional analysis in a number of key areas including price differentials, demand- and supply-side interactions and pricing interdependence between different bandwidths, end-user price sensitivity, switching costs, and migration trends. The main sources of this further evidence are:
  - Consumer survey for Cl users: We commissioned BDRC to conduct an additional telephone-based consumer survey, focusing on end-users of services that used Ethernet and WDM leased lines connections. The purposes of the survey included:
    - identifying end-users' demand requirements -now and in the future- for 0 different service types (including by bandwidth or technology);
    - drivers of service and supplier choice and possible barriers to switching; and 0
    - awareness and consideration of alternative services, including dark-fibre. 0
  - Further information request to BT and Virgin Media: We requested further information from BT and Virgin Media, as the two largest providers of CI services in the UK, including:
    - o details of the pricing of CI services and the extent to which CI services were sold as part of multi-site or multi-service deals; and
    - internal documents related to price or other business responses to 0 developments in very high bandwidth segments.<sup>128</sup>
  - Meetings with stakeholders: Part of the evidence we used to inform our market analysis in the May 2015 BCMR Consultation was information we had obtained from a series of bilateral meetings with major operators. At those meetings we asked various operators' regulatory and commercial experts about their pricing and strategy with respect to leased lines services. We had another round of meetings with six operators<sup>129</sup> in late 2015 with a particular focus on operators' experience of selling to customers in the higher bandwidth segments (i.e. CI services at 1Gbit/s and above).
  - In addition, we have updated our analysis of pricing differentials to reflect the introduction of BT's 10Gbit/s EAD service in September 2015. We have also conducted sensitivity tests around our analysis.

and around 20% within 3 years. For respondents with more than 1Gbit/s, more than 10% expected to upgrade their connection within 1 year.

https://www.openreach.co.uk/orpg/home/downloads/Ethernet\_Strategy.pdf <sup>128</sup> This part of the request was restricted to documents submitted within the last two years to the main decision making bodies of these providers

<sup>&</sup>lt;sup>129</sup> These are BT, Virgin Media, Vodafone, Colt, Zayo and Verizon.

4.44 We present the key findings from these additional evidence sources below and draw together our overall conclusions from these new evidence sources.

## Updated price assessment

4.45 Figure 4.1 shows BT's prices for Ethernet and WDM services over the last nine years. This time series of prices incorporates BT's price for the 10Gbit/s EAD product, launched in September 2015. We calculate prices on an annualised basis, which includes fixed annual rental fees, any distance-based charges (assuming a 10km main link, based on a consideration of average circuit length from the data provided to us by CPs) and upfront connection charges spread over a 3-year contract term.

## Figure 4.1: BT Ethernet and WDM (OSA) prices over time for a 10km link, (2007-2015)



WES 10G Prices Over Time WES 2.5G Prices Over Time OSA 10G Prices Over Time OSA 10G Prices Over Time EAD 10G Prices Over Time EBD 10G Prices Over Time EAD 10G Prices Over Time EAD 10M Prices Over Time EAD 10M Prices Over Time WES 10M Prices Over Time WES 10M Prices Over Time WES 100M Prices Over Time EBD 10G Prices Over Time

Assumptions: annualised charges based on annual rental, main link (10km) and connections spread over three year term.

Source: Ofcom 2016, based on BT price lists.

4.46 This longer term perspective shows that while price differentials have narrowed throughout the period, the most significant narrowing has occurred since the start of 2015, particularly with the introduction of BT's 10Gbit/s EAD service in September 2015. BT's 10Gbit/s Ethernet service offers 10 times the capacity of its 1Gbit/s service at approximately twice the price. We note that in the 2013 BCMR Statement, we included 100Mbit/s and 1Gbit/s Ethernet services in the same (AISBO) market, when the price of BT's 1Gbit/s Ethernet services was approximately double its 100Mbit/s service.<sup>130</sup>

<sup>&</sup>lt;sup>130</sup> Based on BT price lists in February 2016, if we compare a 10km EAD service, then the price of a 10Gbit/s service is 1.9 times the price of a 1Gbit/s service. This is similar to the multiplier we observed between 100Mbit/s and 1Gbit/s in the May 2013 BCMR Statement (1.7) for 10km EAD services. The

- 4.47 To better examine how these recent reductions in the price differential may have affected customers' propensity to switch between different bandwidths, we look at the relative prices of different BT Ethernet and WDM services at a given bandwidth.
- 4.48 Figure 4.2 shows relative prices based on the latest BT wholesale charges for Ethernet services and the equivalent WDM services for a given bandwidth. In this graph, each line represents the price of a given CISBO service (e.g. BT's 1Gbit/s OSA service). The graph shows for a given service how much it would cost a customer with a particular bandwidth requirement to use that service to satisfy its bandwidth needs. When bandwidth requirements exceed the capacity of the service, we assume the customer takes multiple units of the service to meet its needs. For bandwidth requirements below the capacity of the service in question, we assume the customer operates with excess capacity.

# Figure 4.2: Relative service-based prices of single service Ethernet (EAD and WES) versus WDM services (OSA) for a 10km link<sup>131</sup>



Bandwidth provided over link (Gbit/s)

Source: Ofcom March 2016, based on BT published price list.

- 4.49 The figure shows that for customers with bandwidth requirements of 2Gbit/s and above, the price of a 10Gbit/s Ethernet service is either equivalent to or cheaper than the price of multiple units of 1Gbit/s services, and that the decision at the margin is therefore very finely balanced. Any increase in the price of 1Gbit/s services would be likely to trigger material switching to a single 10Gbit/s service by these users.
- 4.50 For a customer demanding 1Gbit/s of bandwidth, an Ethernet leased line at 1Gbit/s would still be the cheapest means of meeting its bandwidth requirements. However,

differences between EAD 10Gbit/s and 1Gbit/s prices are somewhat larger over shorter distances. The multiplier at 5km is 2.1 and, for EAD circuits at the same exchange (0km), it is 2.6.

<sup>&</sup>lt;sup>131</sup> As above, we ran a sensitivity check for this analysis assuming a 5km main link and find results are broadly similar. In particular, our qualitative conclusions remain unchanged.

we do not consider prices would need to be equivalent to see switching between 1Gbit/s and higher bandwidth services in response to a relative price change. This is because a 1Gbit/s service is not functionally equivalent to a 10Gbit/s service: for approximately twice the price of their existing service, current users of a 1Gbit/s service. service could obtain ten times the capacity by switching to a 10Gbit/s service.

- 4.51 In this context, we note that bandwidth usage is unlikely to be fixed for the majority of users. Many users would prefer higher speeds but just do not value these higher speeds sufficiently to pay for them at current prices. However, a relatively small change in price from current levels may be sufficient to trigger material amounts of switching, depending on how much customers currently using 1Gbit/s services value the additional bandwidth. In addition, demand for bandwidth is constantly increasing over time. Given a material proportion of current users of 1Gbit/s services are likely to upgrade at some stage, a change in relative prices may bring forward the point at which migration becomes attractive.
- 4.52 Overall, we consider that the narrowing of price differentials means that switching in response to a SSNIP at 1Gbit/s is likely.

## February 2016 BDRC CI survey

- 4.53 As noted above, we commissioned an additional survey of CISBO users to address questions relating to current and future demands for bandwidth, service and supplier choice, barriers to switching and attitudes to potential alternative services including dark fibre. The total sample size of CISBO users covered by the February 2016 BDRC CI survey is 241 end-users. This is broken down into three main sample groups based on the type of leased line service used:
  - 124 users of Ethernet leased lines up to and including 100Mbit/s but more than 50Mbit/s (we refer to this group as "medium bandwidth" end-users)
  - 62 users of Ethernet leased lines up to and including 1Gbit/s but more than 100Mbits/s (we refer to this group as "high bandwidth" end-users)
  - 55 users of Ethernet leased lines over 1Gbit/s and WDM (i.e. "very high bandwidth" end-users)
- 4.54 The survey gave useful insights into a number of areas relevant to market definition, including: price sensitivity, customers' reasons for choosing a particular service, other alternatives considered, migration costs and future migration plans. For each area, we are able to gain insight into how, if at all, customers' behaviour and experience varies between lower bandwidth CISBO services and VHB services.
- 4.55 In some instances, the resulting sample sizes when broken down by sample group are too small to generate statistically robust results. In these instances, we consider the results illustrative only. We now summarise the key findings by topic area.

Price sensitivity<sup>132</sup>

<sup>&</sup>lt;sup>132</sup> BDRC CI Survey, February 2016, Figures 43 and 44. For the purposes of market definition, we focus on responses to a price increase imposed by all suppliers. Figure 41 summarises interviewees' responses when asked about a price increase by their own supplier alone.
- 4.56 The total sample of end-users interviewed (241 users) were asked what, if anything would they do, if the price of their current CISBO service increased by 10% across all suppliers.
- 4.57 A minority (13% of total sample) claimed that they would 'not take any action'. The most common claimed action was that they would 'seek to negotiate with the supplier' (82%). Just over half (51%) claimed that they would 'look into switching supplier' and 50% would 'look into using an alternative type of connection'.
- 4.58 Respondents also referred to 'switching to a lower specification service (e.g. lower bandwidth, fewer lines etc.)' (20%); 12% said they 'would switch supplier'; and 9% said that they would use another service.
- 4.59 We asked respondents to think about how certain or uncertain they were that the action they said they would take in response to a price increase was something that their organisation would and could actually do. Out of the respondents that said they would look into switching suppliers, 43% said they were 'certain to' or 'very likely to' to do so. This increased to 85% of respondents when including those 'fairly likely to'.<sup>133</sup>
- 4.60 We note that these results must be interpreted carefully as respondents were asked to think about likely reactions to a *hypothetical* price increase. Indeed, as the question asked about possible actions in response to a 10% price *across all suppliers*, the prior expectation should be that very few end-users would choose 'renegotiation' or 'switching' supplier as an option to avoid a price increases on CISBO services. However, it is possible that these responses reflect end-users' perceptions of current differences between their current supplier and rivals. In this context, it may be that a 10% increase on their current service would be enough to prompt switching to a rival operator or at least prompt the end-user to seek a price equivalent to those available from rivals.
- 4.61 Overall, we consider that the evidence suggests that a large proportion of end-users would take active steps to avoid a price increase, which is consistent with users of CISBO services being sensitive to prices. This is reflected in the numbers that would look into alternative connection types and that might switch to lower specification services or use another service.
- 4.62 We have also looked at responses broken down by different sample groups to get an insight into how, if at all, price sensitivity varies by bandwidth (although we note that low sample sizes may limit the usefulness of these comparisons). These results show that the difference is not marked, although there is some suggestion that VHB service users would be more prepared to take an alternative connection type and that high bandwidth users may be less inclined to switch to a lower bandwidth service than low or VHB users.
- 4.63 In particular:
  - 44% of VHB users interviewed (22 out of 55) said they would *consider* switching to another service in response to a SSNIP. This is compared to 45% of high bandwidth users interviewed (28 out of 62) and 55% out of the medium bandwidth users interviewed (68 out of 124). We note that BDRC did not consider these differences to be statistically significant.

<sup>&</sup>lt;sup>133</sup> Due to low sample sizes we have not reported confidence of taking other actions.

- However, a relatively high proportion of VHB users (16%, i.e. 9 users) said that they *would* use an alternative connection type in response to a SSNIP. This is compared to 5% for high bandwidths (3 users) and 8% for medium bandwidth (10 users). BDRC considered the difference between VHB and high bandwidth results to be statistically significant.
- a significant proportion of current users of VHB services (22%, i.e. 12 users) would consider switching to a lower specification service (i.e. lower bandwidth, fewer lines etc) in response to a SSNIP. This is compared to 15% for high bandwidth (9 users) and 23% for medium bandwidth (28 users). We note that BDRC did not consider these differences to be statistically significant.

#### Reasons for purchasing their current service<sup>134</sup>

- 4.64 We asked all those that could recall migrating between different connectivity services why they chose to migrate.
- 4.65 The most commonly cited factor was "needing a faster connection". This was cited by 83% of all the end-users who recall migrating to their current service (178 out of 215 users). If we break this down by type of connection, 71% of end-users who migrated to VHB services cited this factor (32 out of 45 users), as did 89% of those who migrated to high bandwidth (50 out of 56 users), and 84% of those who migrated to medium bandwidth (96 out of 114).
- 4.66 Results also suggest that changes in relative prices played a key role in customers' decision to migrate. In particular, "cost or price reductions in the market" was the third most commonly cited reason for migration. This was cited by 52% of all the end-users who recall migrating to their current service (112 out of 215 users). Results by type of connection are 58% of end-users who migrated to VHB services (28 out of 45 users), 59% of those who migrated to high bandwidth (33 out of 56 users) and 46% of those who migrated to medium bandwidth (53 out of 114).
- 4.67 We have further broken this down to focus on end-users who mentioned that they migrated from high bandwidth to VHB services. Although the sample size is extremely small for this group, the observations arising are consistent with our arguments outlined above. Four out of the six VHB end-users interviewed who migrated from high bandwidth services cited "cost and price reduction in the market" as one of the important factors for migration.
- 4.68 In addition, we investigated the different activities that consumers undertake within different bandwidth categories. The results generally did not show significant differences between VHB and high bandwidth users.
- 4.69 The survey found that:
  - 'Using software and applications that require a constant connection' was stated as a 'main purpose' by 81% overall and 92% of high bandwidth. This was a greater proportion than for the other types of lines (78% of VHB and 77% of medium bandwidth users).

<sup>&</sup>lt;sup>134</sup> BDRC CI Survey, February 2016, Figures 31 and Figure 15.

- Access to data storage and backup was also among the most common activities as it was cited by 81% of end-users interviewed (85% of VHB compared to 89% of high bandwidth users). Another important activity is cloud computing, including access to data centres, which was stated by 66% of all end-users (62% of VHB users compared to 77% of high bandwidth users). Other important factors included: "Just need high speeds into my largest sites (e.g. Head office)": 69%, 65% and 77% (overall and for VHB and high bandwidth respectively). "Resilient links, e.g. mirroring servers and data" 64%, 78% and 74%.
- 4.70 Overall these results suggest that the decision to migrate is sensitive to movements in relative price. They are also consistent with a reasonably high degree of functional substitutability between high bandwidth CISBO and VHB services and similarity between customers in terms of their usage.

Considering alternative connectivity services<sup>135</sup>

- 4.71 The vast majority of respondents mentioned that they have considered using a different speed or connectivity service over the last 5 years but have not done so. They represent 81% of the total sample interviewed (195 out of 241 respondents). By sample type, they represent 84% of medium bandwidth users (104 out of 124 respondents), 82% of the high bandwidth users (51 out of 62 respondents) and 73% of the VHB users (40 out of 55 respondents).
- 4.72 The 195 respondents who considered using a different speed or connectivity service were asked what alternatives they had considered. Results show that a proportion of the total sample interviewed had considered Ethernet leased lines (6% referred to Ethernet at higher speeds; 2% to Ethernet leased lines at lower speeds; and 3% to High speed Ethernet leased lines) and 1% considered WDM.
- 4.73 Respondents were also asked why they decided to continue to use their existing connection rather than move to the alternative arrangements considered. Around one-third considered that price or value for money was the reason not to change their service. Of the other reasons given, 41% cited that the current product being used was acceptable to them, 22% indicated that the alternative they had considered was not suitable and 8% foresaw a difficulty with making the change so had not done so. These results were broadly consistent across different sample groups.
- 4.74 Overall results suggest that end-users actively consider leased line services of different speeds as alternative ways to meet their business connectivity demand. Users also appear to place weight on relative prices, which could mean that the reductions in price differentials we observe will be reflected in a greater willingness to switch in future, especially as part of a general trend to increased bandwidth demand.

# Migration - expected upgrades<sup>136</sup>

4.75 Respondents were asked about their organisation's likelihood to upgrade their speed of service in the next three years. A material proportion of the 62 high bandwidth users interviewed said they were 'very or fairly' likely to upgrade to VHB services. They were more likely to consider a move to Ethernet services above 1Gbit/s

<sup>&</sup>lt;sup>135</sup> BDRC CI Survey, February 2016, Figures 34 and 35

<sup>&</sup>lt;sup>136</sup> BDRC CI Survey, February 2016, Section 5.3 and Figure 45.

compared to a WDM service (27% compared to 8% of those currently using high bandwidth connections).

- 4.76 A smaller proportion of the 124 medium bandwidth respondents also expressed interest in upgrading to VHB services. We note that 36% said they were 'very or fairly' likely to upgrade to high bandwidth (greater than 100Mbit/s and up to but not including 1Gbit/s) and 27% said they were 'very or fairly' likely to upgrade to 1Gbit/s. However, a smaller proportion said they were 'very or fairly' likely to upgrade to VHB services (8% to Ethernet above 1G and 7% to WDM).
- 4.77 These results are consistent with other evidence we have seen on likely migration to VHB services by current high bandwidth users and suggest that we can anticipate a material amount of migration towards VHB within this review period.

Migration – ease of switching<sup>137</sup>

- 4.78 Respondents were asked what, if any, obstacles or difficulties they faced when migrating to their current CISBO service. We tried to analyse the ease/costs of switching from lower bandwidth to VHB services in particular; however, the sample size is too small to draw meaningful conclusions.<sup>138</sup> Therefore, we present the results for those who migrated to lower bandwidth and VHB CISBO services, regardless of which services they migrated from.
- 4.79 There were 215 respondents who recalled migration to their current CISBO service (45 use a VHB service, 56 use a high bandwidth service and 114 use a medium bandwidth service). Around one third mentioned that their current service replaced another Ethernet leased line connection and 18% mentioned it replaced a VPN mainly underpinned by leased lines.<sup>139</sup> This was broadly consistent across different sample groups of CISBO users.
- 4.80 Results for those who recall migrating to any CISBO service suggest that switching costs can be significant but are not always so.<sup>140</sup> These can be summarised as follows:
  - Out of those who recall migrating to their current service (215 respondents), less than half (41%) said that they experienced an obstacle during migration. The most frequently mentioned obstacles were the time taken to deliver/install the service (9%), the lead time for the service to be up and running (6%), difficulties related to the location of the site (5%) and additional charges incurred for the installation of the new infrastructure (5%).
  - Those who experienced at least one obstacle when migrating to their current high bandwidth connection (90 respondents) were asked whether there was any cost associated with the main obstacle they experienced. Almost half

<sup>&</sup>lt;sup>137</sup> BDRC CI Survey, February 2016, Figure 32 and Figure 33

<sup>&</sup>lt;sup>138</sup> Only 4 respondents mentioned that they migrated from high bandwidth to VHB services. One did not recall facing an obstacle in doing so, one cited "internal cost to invest in new equipment" as the main obstacle, one cited "time taken to deliver the service/long delay in installation" and one mentioned "getting planning permission/wayleave issues"

<sup>&</sup>lt;sup>139</sup> The most common previous connection cited was 'ADSL, cable modem or fibre broadband connection' (48%). This was closely followed by 'ISDN for voice and data' (43%). Almost a third (31%) had replaced their 'analogue leased lines'.

<sup>&</sup>lt;sup>140</sup> A switching cost of a given amount will be more significant in relation to a low value (low bandwidth) service than in relation to a high value (higher bandwidth) service.

indicated that there was no cost (46%) and a further 10% did not know. Around 17% said that the cost was £10,000 or more, but 27% said that the cost was below this figure.

- 4.81 In addition, results also suggest that end-users do not consider migration to VHB to be more difficult or costly compared to lower bandwidth services. We compared the results for medium bandwidth respondents to high bandwidth and VHB respondents combined due to small sample size. Results can be summarised as follows:
  - 45% of medium bandwidth respondents who recall migrating to their current service (52 out of 114 users) said that they faced an obstacle during migration. This is compared to 38% for high bandwidth and VHB respondents combined (38 out of 101 users).
  - 40% of the 52 medium bandwidth respondents who recalled an obstacle mentioned there was no cost associated with the main obstacle and a further 8% did not know. This is compared to 53% and 13% of the 38 high bandwidth and VHB respondents combined.
- 4.82 Overall we consider these results consistent with our view that the costs associated with migration to VHB are not materially greater than migration to the lower bandwidth CISBO services (indeed, if anything, our survey results suggest they could be lower).

# Information requests to CPs

- 4.83 We requested internal documents from BT and Virgin Media regarding their pricing of VHB services and other developments related to the VHB segment. The aim of this request was to understand how various competitive constraints (including potentially lower bandwidths) and market developments feed into the pricing of VHB services from the perception of two of the largest CPs. We complemented this evidence with a review of publicly available marketing material on these CPs' websites relating to their VHB services.
- 4.84 The internal documents we received from Openreach setting out the factors it took into account when considering how to price and position its 10Gbit/s EAD service are of particular interest as they appear to run counter to some of the arguments set out by BT in its response to our consultation. These internal documents were also consistent with a slide set published on Openreach's website on the new product.
- 4.85 These documents suggest that the introduction of the new 10Gbit/s service was motivated by an anticipation of growing demand for 10Gbit/s and was [%]. This is consistent with our view that demand for 10Gbit/s services is growing, and that current users of 1Gbit/s will be one of the main sources of this increase in demand.
- 4.86 For example, in the slide set published on Openreach's website to market its EAD 10Gbit/s product, it made the following statements: <sup>141</sup>
  - "End customer bandwidth needs are increasing. This is driving inevitable (and already visible) growth in the demand for 10G connectivity in support of the Business and Infrastructure markets, including the mobile sector."

<sup>&</sup>lt;sup>141</sup> See Openreach slide deck named "EAD 10G - available to order now", available at <u>https://www.ciz-openreach.co.uk/Business/content/309/EAD-10G-available-to-order-now-slide-deck</u>

- the EAD 10Gbit/s "has been specifically designed to meet growing demand from customers for a simple to consume, cost-effective, high bandwidth single circuit."
- it positions the EAD 10Gbit/s product with reference to other EAD services and explicitly compares the price and capacity of the new 10Gbit/s service with its 1Gbit/s service. For example, it considered that "the new EAD 10G service is a variant of [the] existing EAD portfolio". It also marketed one of the benefits of EAD 10G as having "10 times the bandwidth from around 2 times the price of 1G today". <sup>142</sup>
- 4.87 This marketing material is significant because it appears to be positioning the new 10Gbit/s EAD service (at least in part) as a cost-effective solution for current lower bandwidth users who may wish to upgrade to VHB services. In particular, marketing the new product with reference to the price and capacity of the 1Gbit/s service strongly suggests that current users of this service are one of the target customer groups for the new product. This suggestion is in apparent contradiction with BT's position that there is limited substitutability between 1Gbit/s and VHB services.
- 4.88 In addition, Openreach's internal document on pricing the EAD 10Gbit/s provides strong evidence of pricing interdependence with 1Gbit/s services. In particular, the documents show that in setting the price of the new service, Openreach considered a number of commercial factors, including the substitutional and potential migration impacts across the Ethernet portfolio including 1Gbit/s. This appears to be at odds with the position BT set out in its response to the May 2015 Consultation, i.e. that there is a clear break in the chain of substitution at 1Gbit/s. If that were the case, we would expect to see very limited (if any) consideration of the potential for switching from lower bandwidths in setting the price of its new VHB service. However, in the documents we have seen, and whilst Openreach notes uncertainty surrounding [۶<], it appears to have considered [۶<].
- 4.89 It also appears that the introduction of the new 10Gbit/s EAD service was motivated, at least in part, by growing demand for a lower cost VHB service than was previously available: consistent with our view that demand for VHB is becoming increasingly 'standardised' as users migrate up the bandwidth chain.
- 4.90 In particular, the internal pricing document mentioned the following: <sup>143</sup>
  - [×]
  - [≻]
- [×]
- [%]
  - 이 [≻]
- [%]

<sup>&</sup>lt;sup>142</sup> As noted below, "ten times as much for twice the price" appears to have been something of a ruleof-thumb for setting relative prices of CISBO services throughout the bandwidth range (though with exceptions at various times).

<sup>&</sup>lt;sup>143</sup> Q2, BT response to S135 Notice under Communication Act, dated 16 October 2015. [\*]

- [×].
- [%]

4.91 [}<].

"[><]",

[%]

- 4.92 Further evidence gathered from BT and Virgin Media also suggests substitutability between services at 1Gbit/s and VHB services.
  - [3<].144
  - Virgin Media pointed out that [3<], suggesting there is not much to differentiate VHB Ethernet from lower bandwidths in terms of order complexity.<sup>145</sup>
- 4.93 In addition, Virgin Media and BT's internal documents are consistent with our views that there is likely to be material migration from lower bandwidth CISBO services to VHB services and that VHB services are becoming increasingly 'standardised'. For example:
  - Virgin Media estimated that [3<] of its customer base of high bandwidth services • (above 100Mbit/s and up to and including 1G) migrated to services above 1Gbit/s between 2012 and 2015. However, it had not seen a "shift" in the profile of customers for VHB services. 146
  - [**}<**]<sup>147</sup>
  - In a BT document it mentioned that the key market trends are the move to higher bandwidths (1G and above) driven by growth in [3<].<sup>148</sup>
  - In an internal document by BT there is a reference to a request to Openreach to develop 10Gbit/s handover to replace 1Gbit/s connections in order to improve [3<].<sup>149</sup> This is consistent with our view that there is growing demand from current users of 1Gbit/s for VHB services. Indeed, as the trend for increasing numbers of consumers to demand higher speeds is a general one, this suggests that there could be growing demand for VHB backhaul links from LLU (and VULA) operators.
- 4.94 Moreover, CPs seem to be seeking ways to influence the decision to migrate to VHB, and take this into account when setting prices (and other terms and conditions) of lower bandwidth services. For example:

<sup>144</sup> Q2, BT response to S135 Notice under Communication Act, dated 16 October 2015. [%] <sup>145</sup> Appendix D, Q2, Virgin Media response to S135 Notice under Communication Act, dated 16

October 2015. <sup>146</sup> Appendix F, Q2, Virgin Media response to S135 Notice under Communication Act, dated 16 October 2015.

<sup>&</sup>lt;sup>148</sup> Appendix D, Q2, Virgin Media response to S135 Notice under Communication Act, dated 16 October 2015.

<sup>&</sup>lt;sup>148</sup> Q2, BT response to S135 Notice under Communication Act, dated 16 October 2015. [×]

<sup>&</sup>lt;sup>149</sup> Q2, BT response to S135 Notice under Communication Act, dated 16 October 2015. [%]

● [**泽**]<sup>150</sup>

# Additional pricing meetings with CPs<sup>151</sup>

- 4.95 We had pricing meetings with six CPs; namely BT, Colt, Virgin Media, Zayo, Vodafone and Verizon. These meetings provided useful insights on CPs' views in relation to various areas including types of VHB and lower bandwidth customers, expected growth in the VHB segment, pricing strategy, switching costs between lower bandwidth and VHB services and equipment cost trends.
- 4.96 Overall the discussions supported a view that there is strong pricing interdependence throughout the bandwidth chain. In addition, there appears to be substitutability between 1Gbit/s and 10Gbit/s for customers, particularly for bandwidth requirements of 2 or 3Gbit/s. For example:
  - [⅔] said that 10Gbit/s has become the standard product for some consumers as "Prices in 10 Gbit/s have come down. It is starting to be the default backbone for carriers and data centres". In addition, [⅔] observed that the same rule of thumb for pricing bandwidth differentials applied throughout the bandwidth chain, including VHB services: supporting our view that there is no longer a break in prices at 1Gbit/s.
  - Zayo said that, [℅].
  - Vodafone said that its pricing policy is mainly based on [3<], which is supportive of our view that there is a high degree of substitutability between 1Gbit/s and 10Gbit/s services for some users.
  - This is also consistent with further evidence we had from CP responses to the Market Questionnaire. For example, [%].
- 4.97 Other CPs told us they were adjusting their prices to try to encourage migration away from multiple 1Gbit/s services to a single 10Gbit/s services, which suggests some CPs are taking switching from 1Gbit/s services into account when pricing their 10GBit/s services. For example, [3<]<sup>152</sup> In a follow-up discussion with SixDegrees on its response to the 2015 BCMR Consultation, it noted that the Ethernet switches it now used [3<]. SixDegrees noted that when it purchased wholesale metro Ethernet solutions one provider was offering services up to 6Gbit/s on its [3<] with sub-rates of any bandwidth increment below this.</p>
- 4.98 In its pricing meetings with us, [3<]. However, we consider that these views do not appear to be consistent with the evidence on Openreach's pricing of the EAD 10Gbit/s service discussed above, and we place more weight on this latter evidence as it formed the basis of actual business decisions. Moreover, we consider that both views are in principle consistent with increasing price sensitivity and migration ("tipping") as price differentials narrow.
- 4.99 In relation to customer upgrades and switching costs, CPs appear to anticipate material growth in the VHB segment: consistent with our views about how this

<sup>&</sup>lt;sup>150</sup> Q2, BT response to S135 Notice under Communication Act, dated 16 October 2015. [X]

<sup>&</sup>lt;sup>151</sup> Pricing meetings with: BT on 29/10/2015, Colt 3/11/2015, Verizon 26/10/2015, Virgin Media 11/11/2015, Vodafone 13/11/2015, Zayo 4/11/2015

<sup>&</sup>lt;sup>152</sup> Virgin's pricing presentation to Ofcom, 11 November 2015.

segment is likely to evolve in this review period. In addition, although there is some recognition that switching costs may be higher between 1Gbit/s and VHB than between the lower bandwidths, it does not appear that these switching costs are significant enough to affect the decision to migrate. For example:

- [3<] noted that upgrading costs were cheaper at bandwidths up to 1Gbit/s than at higher bandwidths, as circuits at all bandwidths up to 1Gbit/s would normally be provided on the same platform. Migration to higher bandwidths would require a change of equipment and there would also be installation fees. However, although switching costs were higher in absolute terms for migrations to >1Gbit/s, as a proportion of prices, they were similar to those at lower bandwidths (and so would be of similar significance when compared to a SSNIP). In addition, [3<] mentioned that there is degree of flexibility which enabled commercial customers in effect to reduce the costs of upgrades. For example, if customers anticipate a growth in demand they can pay the installation fees for a 10Gbit/s service and a monthly rental for 1Gbit/s. However, [3<] considered that companies would probably take the full bandwidth from day one as the price points are close enough that they are of little importance for the big companies who are driving the VHB demand.</li>
- In terms of upgrades, [3<] noted that "Enterprises that are growing will need to shift more data around, and need more bandwidth to do it" and "30 - 40Gbit/s seems to be the cut-off point for fibre being more appealing". [3<] suggested "Switching costs are generally low and doesn't affect customers' decisions to upgrade for example" but noted: "If equipment is capable of upgrading this is quite easy but depends on situation and the equipment"
- [℅] argued that they believed switching costs are not a major factor when upgrading as: "Customers switch if they need bandwidth, regardless of cost associated with doing. [It's] a need driven decision".
- 4.100 We note that BT said the nature of demand for VHB services remained distinct from lower bandwidth services and that the increase in demand for VHB services was primarily from new users rather than customers upgrading from the lower bandwidths. However, this appears to run counter to BT's own views expressed in the EAD 10Gbit/s pricing documents and marketing materials [>] and directly compares the new service to the 1Gbit/s service in terms of capacity and price. The introduction of the new EAD 10Gbit/s product seems therefore to be a reflection of, and indeed a driver of, the changes in the market which we are also seeing and which we expect to lead to growing convergence between VHB and other parts of the CISBO market over the market review period.<sup>153</sup> BT's comment that the nature of VHB and other demands are distinct then seems more consistent with the market in earlier times, before these changes began to take effect. We also note that other CPs commented that the composition of end-user demand for VHB services was beginning to change.
- 4.101 We also note that not all of BT's comments in its pricing meeting with us supported its view of lower bandwidth and VHB services being distinct. In particular, it mentioned that [3<]. We consider this consistent with our view of demand-side interactions between lower bandwidth and VHB services as it suggests that customers choose between both options depending on the price/cost.

<sup>&</sup>lt;sup>153</sup> See Annex 5 for a discussion.

### Overall conclusions from new evidence and analysis

- 4.102 Taken together, we consider the new evidence and analysis provides further support for the following conclusions:
  - a) There is a high degree of functional substitutability across the bandwidth range.
  - b) Material amounts of migration from lower bandwidth CISBO to VHB are anticipated over the next few years, and the migration decision is sensitive to price.
  - c) Price differentials have narrowed significantly since the last review, such that the gap between Ethernet services at 1Gbit/s and 10Gbit/s is very similar to the bandwidth gradient observed lower down the chain, and to the gap between 100Mbit/s and 1Gbit/s Ethernet services considered part of the same (AISBO) market in the 2013 BCMR Statement. Users at all bandwidths are sensitive to prices and would consider migration in response to a SSNIP.
  - d) Switching costs do not appear to be a material barrier to migration, and are not higher (as a proportion of prices) when migrating to VHB than when migrating to lower bandwidth CISBO services.
  - e) Prices appear to reflect a significant degree of demand- and supply-side interaction between 1Gbit/s and VHB services.
- 4.103 We take into account this new evidence, as well as the evidence and analysis contained in the May 2015 Consultation, to set out our overall analysis following consideration of stakeholder comments, before reaching our final conclusions.

## 4.2.2.4 Overall analysis and consideration of specific stakeholder comments

- 4.104 This Section sets out our overall analysis and conclusions in relation to the relevant market for CISBO services in light of both stakeholder comments on the May 2015 Consultation and the further analysis we have conducted since (summarised at 4.43 above). In doing so, we set out specific stakeholder comments and our response to these before drawing our overall conclusions.
- 4.105 We begin by setting out our general approach to testing for a chain of substitution across all CISBO services. We then apply this approach firstly to examine the existence of a chain of substitution linking lower bandwidth CISBO services up to 1Gbit/s and subsequently to a further chain linking lower bandwidth CISBO services to VHB services.
  - (a) Approach to testing for a chain of substitution

We test for a chain of substitution by considering the potential for demand and supply-side substitution in response to a SSNIP

4.106 Our starting point in analysing the boundaries of this market is the EC Recommendation and Explanatory Note, which sets out a broad market for highquality access and explains that a chain of substitution may link services of different bandwidth and technology. Consistent with the EC Recommendation, we therefore consider the key question to be whether there is a chain of substitution linking all CISBO services, or whether any breaks in the chain of substitution can be observed.

- 4.107 There are strong a priori reasons to consider that all CISBO services would be linked by such a chain of substitution. On the demand-side, there is a high degree of functional substitutability between different services. While customers may have varied demands for bandwidth, demand for a particular bandwidth could in principle be satisfied by a single service at or above the required bandwidth, or by multiple lower-bandwidth services. As a result, there is the potential for very close demand side substitutability across the range of products.
- 4.108 Moreover, end-users are steadily increasing their demand for bandwidth, which is likely to strengthen the existing demand-side interactions and pricing interdependence between different products. The evidence we have seen in the context of this review suggests a material proportion of customers currently purchasing services at a particular bandwidth will upgrade to a higher bandwidth product within the period covered by this review. We summarise this evidence below in our discussion of migration trends.
- 4.109 This feature of the market makes users of lower bandwidth products more likely to switch to higher bandwidth products in response to a small but significant non-transitory increase in price (SSNIP). A reduction in the difference in price between higher and lower bandwidth services would, in effect, bring forward the date of migration which would occur in any event at some point.
- 4.110 On the supply-side, there are further grounds to support a single market. Physical network infrastructure of buildings, trenches, ducts and fibres is a prerequisite to the supply of leased line services, and its construction requires substantial investment. However, once built, such infrastructure can be used to provide any leased line service across the full range of bandwidths and interfaces, both of which are determined solely by the electronic equipment fitted to the ends of fibre strands connected to the customer's sites. Indeed, we see most CPs supplying CISBO services across the bandwidth range (albeit with varying degrees of success) and note that, when viewed in the context of a CP's whole estate of leased lines, the cost of equipment is small relative to the sunk cost of building the physical network infrastructure needed to provide these services.
- 4.111 We examine whether such a chain of substitution links all CISBO services using the Hypothetical Monopolist Test (HMT) framework set out in detail in Annex 4. In brief, this approach starts with a focal product- in this case, a particular CISBO service (or set of services)- and it is assumed there is a single supplier of this focal product (i.e. the hypothetical monopolist). The test considers how end-users and suppliers of other CISBO services would react to a SSNIP applied to this focal product. If demand and/or supply-side switching to/from another CISBO service(s) were likely to occur on a scale sufficient to render the price increase unprofitable, the focal product is widened to include this service(s). Another SSNIP is then applied to the wider product set. The test is repeated in this way until a price increase by a hypothetical monopolist would be profitable, and at this stage the relevant market is defined.
- 4.112 For reasons we set out in detail below, we apply a qualitative version of this test, looking at evidence on the likely degree of switching in response to a SSNIP on the services in question by both the demand and supply sides of the market.
- 4.113 In considering the likely demand-side response, we look at evidence from a variety of sources on:

- 4.113.1 Functional substitutability. This provides an indication of whether end users could, in theory, switch between different services (although does not necessarily suggest they would).
- 4.113.2 Price differentials. Where price differentials between two services are large, switching between the two may be inhibited (although this will depend on the difference in value which end users attach to the services).
- 4.113.3 Cost differentials. The relevant price benchmark for the HMT is the competitive price level. As actual prices may not be reflective of this benchmark, we also consider cost differentials. We would expect to see differences in competitive prices reflect, amongst other factors, differences in incremental cost.
- 4.113.4 Migration trends. As anticipated future migration will tend to make end users more sensitive to a SSNIP, we consider evidence on the likely scale of planned migration between services.
- 4.113.5 Switching costs. Higher switching costs are likely to lead to lower levels of switching in response to a SSNIP, all else equal. We therefore consider evidence on the costs of switching between different bandwidths in assessing the likely demand-side response to a SSNIP.
- 4.113.6 Price sensitivity. Evidence on end user price sensitivity can come from a variety of sources, including actual behaviour in response to price changes and stated behaviour (e.g. in response to survey questions about reactions to a hypothetical price increase).
- 4.114 In looking at supply-side interactions, we consider the potential for suppliers to switch between different CISBO services in response to a change in relative price. We also look for evidence of products in one part of the chain being used to compete with another and for pricing interactions between products of different bandwidths.
- 4.115 In the BCMR 2013, we found that a chain of substitution linked the lower bandwidth CISBO services up to and including 1GBit/s, but found a break in the chain of substitution between 1Gbit/s services and VHB services (including Ethernet services above 1Gbit/s and all WDM services). Accordingly, in applying this framework, we pay particular attention to the potential link between the lower bandwidth CISBO services and VHB CISBO services.

Stakeholder comments on our approach to testing for a chain of substitution

- 4.116 Only BT commented on our approach to testing for a chain of substitution. In doing so, it focussed particularly on the application of this approach to testing for a chain of substitution linking lower bandwidth CISBO services with VHB CISBO services.
- 4.117 BT stated that Ofcom's chain of substitution analysis is inconsistent with the Commission and the Competition and Markets Authority (CMA) guidelines, and therefore does not support a single market definition. It said that the key question is whether the prices of products at one end of the chain do in fact exercise a competitive pressure on products at the other end. It argued that the Hypothetical Monopolist Test (HMT) is the relevant test for assessing whether this is the case and that Ofcom should test all possible combinations of bandwidths in conducting its analysis. It also argued that the HMT should be based on observable competitive

pricing, whereas Ofcom's approach based on equilibrium prices focusing on equipment cost differences is unjustified.

4.118 BT alleged that Ofcom had failed to reach the legal and evidential standard required by the Commission and the Competition and Markets Authority (CMA). In addition to the reasons given above, it argued that, by equating competitive price differences with equipment cost differences, Ofcom's approach was contrary to previous Ofcom practice when investigating bandwidth breaks for Ethernet and contrary to Ofcom's use of wholesale prices as a benchmark for the competitive price of TI services. BT also argued that this approach to testing for bandwidth breaks was inappropriate because the industry practice of a bandwidth gradient (with price differences between circuits of different bandwidths in excess of cost differences) has been long-standing and because Ofcom's remedy proposals, in particular that for dark fibre, would in BT's view result in regulated prices which did not reflect incremental cost differences.

Our conclusions on approach to testing for a chain of substitution

- 4.119 We do not accept that our approach to market definition is inconsistent with the EC Recommendation or with standard approaches to market definition. We set out our approach to market definition in more detail in Annex 4, where we explain that our approach is taken directly from the EC Guidelines. We have applied this framework to our assessment of all wholesale product markets considered in this review, including TI services.
- 4.120 We disagree with BT and consider we have followed a very similar approach to examining whether there is a chain of substitution in this review as we took in the BCMR 2013. In particular, we have looked for evidence of a break between 1Gbit/s services and higher bandwidth services by considering whether any differences in functionality, prices or costs are sufficiently marked that they would prevent a material proportion of users switching between 1Gbit/s and higher bandwidth services in response to a SSNIP. We have considered some new sources of evidence, most notably in relation to actual demand- and supply-side interactions and pricing interdependence between different services in the bandwidth chain, and consider this appropriate in light of evolving market circumstances.
- 4.121 We do not place much weight on differences in competitive conditions when defining the relevant product market for CISBO services in this review, but this reflects our finding that there is no break in the chain of substitution at 1Gbit/s. This is consistent with our approach in the BCMR 2013, where we found that there was a break in the chain of substitution.
- 4.122 When two products are not close demand or supply-side substitutes, it may nonetheless be appropriate to view them as a single market for the purposes of any assessment of SMP and remedies provided competitive conditions are sufficiently homogenous. In other words, it may be appropriate to widen two or more initially narrow product markets to reflect very similar competitive conditions in the markets under consideration. It was therefore appropriate to consider this in the BCMR 2013, having established that there was a break in the chain of substitution. However, in this review we have found that all CISBO products are connected by a chain of substitution and lie in the same relevant market. Accordingly it is not necessary to consider whether there is homogeneity of competitive conditions across the same market. Nonetheless, we have carried out some analysis of differences in competitive conditions across the CISBO market in Annex 5. This feeds into our assessment of the appropriate remedies to impose in the CISBO market.

- 4.123 We agree with BT that the HMT is a relevant framework when considering the potential for demand- and supply-side switching, and we apply that framework when testing for the existence of a bandwidth chain below. We look at a range of factors listed above to assess whether and to what extent we would see switching between these bandwidths in response to a SSNIP imposed by a hypothetical monopolist of 1Gbit/s services. We also consider the reactions of CPs active in other product segments.
- 4.124 In responding to other stakeholders' comments below, we set out how we consider an increase in the price of 1Gbit/s services would be likely to affect end-users' behaviour. We also explain how we take into account customer switching costs and customers who would have migrated regardless of whether or not a SSNIP was applied, as well as the evidence we have gathered on price sensitivity (which, in contrast to BT's assertion, suggests a material proportion of 1Gbit/s users would be likely to switch to a VHB service in response to a price increase).
- 4.125 We disagree with BT that the HMT framework necessarily requires the application of a quantitative SSNIP test and consider the qualitative approach we have adopted to be consistent with both the EC Regulatory Framework<sup>154</sup> and standard competition law practice.
- 4.126 We agree with BT that competitive prices should be used when applying the HMT. As a matter of principle, though, we do not agree that competitive prices are necessarily best proxied by prices set under regulation. There may be many reasons why a regulated outcome may not mimic the competitive benchmark: for example due to imperfect information about the regulated entity's costs or uncertainty over the potential for efficiency gains, or because pricing incentives may be distorted by market power or even the regulation itself. Even within the context of a charge control set to bring average prices for a basket of services into line with a forecast of average costs, there is still scope for average charges to be above cost where revenues are higher or costs lower than expected when the control was set. In other cases, where it does not face cost based charge controls. BT may be able to set prices reflecting a degree of market power. In the specific context of BT's charges for 1Gbit/s services and higher bandwidth CISBO services, we note that BT had considerable pricing flexibility under the 2013 charge control which may have allowed prices for these services to depart from the competitive level, particularly in relation to VHB services.<sup>155</sup>
- 4.127 Despite this, we do use actual prices of these services when assessing the likelihood of customers switching from 1Gbit/s to higher bandwidth CISBO services. As we explain in more detail below, we consider evidence on declining incremental cost differentials in addition to evidence on actual prices, partly because we consider actual prices may not reflect the competitive benchmark and partly to provide a guide as to the likely future direction of travel in actual prices. We consider both prices and costs to be relevant to our assessment of the chain of substitution, but place more weight on actual prices when assessing the potential for end user switching.
- 4.128 Overall we consider our approach to testing for a chain of substitution to be appropriate and consistent with the EC Regulatory Framework and standard competition law. We therefore apply this approach in testing first for a chain of

<sup>&</sup>lt;sup>154</sup> See for example footnote 26 of the SMP Guidelines.

<sup>&</sup>lt;sup>155</sup> See Annex 5.

substitution linking the lower bandwidths up to 1Gbit/s and then for a chain of substitution linking these lower bandwidth CISBO services with VHB CISBO services.

- (b) We find a chain of substitution linking lower bandwidth CISBO services
- 4.129 We set out our reasoning and evidence for concluding there is no break between lower bandwidth leased lines up to 100Mbit/s and Ethernet First Mile (EFM) below. As in the May 2015 Consultation, we consider whether there is a break between Ethernet services at 100Mbit/s and 1Gbit/s Ethernet. As in the BCMR 2013, we find there are price differences between lower bandwidth CISBO services at 100Mbit/s and 1Gbit/s. To comply with the requirements of the charge control, BT has reduced its Ethernet charges: initially targeting reductions at 100Mbit/s and subsequently at 1Gbit/s since the 2013 BCMR Statement.<sup>156</sup> Despite these changes, 1Gbit/s service is still approximately 60% higher than the price of 100Mbit/s (for a same-exchange circuit), though for nearly ten times the capacity. The prices for 10Mbit/s and 100Mbit/s services are virtually identical.
- 4.130 However, CISBO services themselves differ only in the equipment at the circuit ends, and where circuits use the same interface but offer different bandwidths the equipment is virtually identical. As a result, these differences in BT's charges are not driven by bandwidth-related cost differences. Current Ethernet technologies available from vendors<sup>157</sup> allow CPs to use near identical equipment to deliver services at 10Mbit/s, 100Mbit/s or 1Gbit/s. The difference in cost between 10Mbit/s and 100Mbit/s and 1Gbit/s is very small (insignificant) and relates to the optics used at 1Gbit/s. <sup>158</sup> Hence, any observed variations in price by bandwidth are more likely a function of the pricing strategies of CPs, taking account of regulatory constraints, the strength of competition and interactions between the demand for circuits of different bandwidths.
- 4.131 The evidence, particularly on the similarity in the costs of provision, does not point to any breaks between services offered at differing bandwidths. Whilst we do not know what prices would be in a competitive market, we can say that differences between the prices of circuits of different bandwidths would be small if they were to (only) reflect differences in incremental costs.
- 4.132 Supply-side substitution between CISBO services is technically feasible, as provision of any service up to 1Gbit/s would be on the same underlying network and using virtually identical equipment with an insignificant difference in costs. With near identical costs of supplying any bandwidth, a CP supplying a particular bandwidth (say 1Gbit/s) could start providing services at lower bandwidths requiring only minimal equipment upgrades, and vice versa.
- 4.133 Overall, we consider that price and cost differences are consistent with low, medium and high CISBO being part of a single product market. We note that all stakeholders

<sup>&</sup>lt;sup>156</sup> For an overview, see: <u>https://www.elibrary-</u> <u>openreach.co.uk/downloadfile/221?contentid=293&pagetitle=2015\_Ethernet\_price\_reductions\_and\_o</u> pportunities\_-\_slide\_deck

pportunities - slide deck <sup>157</sup> BT and Virgin Media s.135 requests on cost of equipment used in providing EAD products and optical services.

<sup>&</sup>lt;sup>158</sup> Evidence shows that identical base equipment is used for 10 Mbit/s, 100Mbit/s and 1Gbit/s. The only difference between on the one hand 10 and 100Mbit/s and 1Gbit/s is the small form factor pluggable (SFP) optics used. These are thumb-sized devices that plug into the base equipment and contain the optics and electronics to support the difference bandwidths. The difference in the costs of SFP at 100Mbit/s and 1Gbit/s is insignificant.

agreed it was appropriate to include CISBO services up to and including services at 1Gbit/s in the same product market.

(c) No separate market for very high CISBO

Market developments mean it is appropriate to define a single market for all CISBO services

- 4.134 In the 2013 BCMR Statement, we identified a separate product market for MISBO services, defined as services capable of supporting speeds above 1Gbit/s, and we noted that CPs have a choice of equipment when delivering very high speed requirements that can support more than one interface type.
- 4.135 In the BCMR 2013, we found that, at the time, there was a clear break in the product chain between 1Gbit/s Ethernet services on the one hand, and higher bandwidth Ethernet and WDM services of any bandwidth on the other hand. The primary evidence we relied on was the substantially higher costs of the equipment used to provide MISBO services (both Ethernet >1Gbit/s and WDM services) and also the large step change in the per circuit price when moving from 1Gbit/s to above 1Gbit/s Ethernet services. We considered that this significant price difference, which the available evidence suggested could be explained by equipment cost differences, made it unlikely that there would be material substitution between circuits of more than 1Gbit/s and lower bandwidth circuits. In other words, users would be unlikely to respond to a small price change given large cost-related differences in prices of different bandwidths.
- 4.136 In addition, in the BCMR 2013 we observed differences in competitive conditions between AISBO services at up to and including 1Gbit/s, on the one hand, and MISBO services on the other, particularly in the WECLA.<sup>159</sup> At the time, the clear break in the chain suggested that there were separate markets for AISBO (at up to and including 1Gbit/s) and for MISBO circuits, and we therefore considered it appropriate to reflect the differences in competitive conditions we observed in our market definitions.
- 4.137 Evidence gathered for this review suggests there have been material changes. Price differentials have declined significantly such that we may now expect to see significant switching to VHB services in response to a SSNIP on lower bandwidth CISBO services (and vice versa). Whilst differentials remain, our pricing meetings with CPs suggest these are now consistent with differences lower down the bandwidth chain and are not sufficiently large to deter switching. As noted above in relation to our discussion of Figure 4.1, BT's new EAD 10Gbit/s service offers ten times the capacity of a 1Gbit/s Ethernet service for approximately double the price. We observe that in the 2013 BCMR Statement, we included 100Mbit/s and 1Gbit/s Ethernet services in the same (AISBO) market, and these services had a similar price differential.
- 4.138 The evidence on migration trends from the Analysys Mason (as discussed in paragraph 4.41 above)<sup>160</sup> and the February 2016 BDRC CI surveys, from CPs'

<sup>&</sup>lt;sup>159</sup> See the BCMR 2013 Statement, paragraphs 3.288 – 3.289 and 3.310 at: <u>http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity/statement/Sections1-</u> <u>4.pdf</u>

<sup>&</sup>lt;sup>160</sup> As noted above this evidence suggested around 10% of respondents at >100Mbit/s to 1Gbit/s expected to upgrade their Ethernet speeds within 1 year and around 20% within 3 years. For

internal documents and from our discussions with CPs, suggests that demand for bandwidth continues to increase and that a material proportion of lower bandwidth users is likely to consider upgrading to VHB services over this review period. Results from the February 2016 BDRC CI survey support the view that the decision to migrate is heavily influenced by price, suggesting a SSNIP on lower bandwidth products would be likely to bring forward the migration decision for a material group of lower bandwidth users. Moreover, internal documents from CPs suggest they are pricing services with a view to influencing the migration decision from 1Gbit/s to VHB.

- 4.139 Despite these migration trends, the February 2016 BDRC CI Survey suggests the potential for substitution is not one way. A material proportion of current VHB service users indicated they would consider switching to a lower specification service (for example, by reducing bandwidth or number of lines) in response to a SSNIP. As those users who recalled migrating cited changes in price as an important factor in the decision to migrate, it is perhaps unsurprising that an increase in the higher bandwidth service might then trigger switching back to a lower bandwidth service. The same survey showed a high degree of similarity in usage of 1Gbit/s and VHB services, suggesting the potential for functional substitutability in both directions. These pieces of evidence suggest the potential for demand-side switching down the bandwidth chain, as well as up.
- 4.140 On the supply-side, there is evidence of increasing interaction and pricing interdependence between 1GBit/s and 10Gbit/s services. In particular, CPs' internal documents suggest CPs are using attractively-priced 10Gbit/s services to compete for customers migrating from 1Gbit/s services, and to encourage them to do so. As we noted in the May 2015 Consultation, we are aware of one CP, [³<], using a WDM service to compete with BT's 1Gbit/s Ethernet service, apparently pricing its WDM service at a similar level. Differences in equipment costs are declining, and small when viewed in the context of the high sunk costs associated with infrastructure investment. As the same infrastructure can be used to provide all CISBO services, this points towards the potential for a CP with an existing connection to a customer site to switch between providing lower bandwidth CISBO and VHB CISBO services quickly and without incurring significant cost. In these circumstances, it is more appropriate to define a single market including Ethernet and WDM services of differing bandwidths.</p>

Stakeholder responses to the single market for all CISBO services

- 4.141 Seven CPs broadly agreed with our provisional finding that there was no break between 1Gbit/s services and VHB CISBO services. These CPs include Vodafone, Six Degrees Group, [%], Hyperoptic, Sohonet, GTC and Scottish Futures Trust.
- 4.142 BT, Virgin Media, CityFibre and the IIG disagreed with our provisional finding in relation to VHB services and argued there was still a separate market for CISBO services above 1Gbit/s. These stakeholders commented on the following issues:
  - i) technical assessment;
  - ii) price differentials;

respondents with more than 1Gbit/s, more than 10% expected to upgrade their connection within 1 year. <u>https://www.openreach.co.uk/orpg/home/downloads/Ethernet\_Strategy.pdf</u>

- iii) cost differentials;
- iv) relevance of overlap in 1Gbit/s Ethernet and 1Gbit/s WDM prices;
- v) switching costs;
- vi) migration trends; and
- vii) supply-side interactions.
- 4.143 We set out stakeholders' comments in more detail on all aspects of our analysis relating to the chain of substitution in our assessment below, as these are central to our product market definition conclusions. We summarise and respond to comments on competitive conditions separately in Annex 5.
  - (i) Technical assessment

The differences in service features and quality between WDM services and Ethernet services have become less significant

- 4.144 The two main methods used to support very high CISBO services are:
  - **Single service Ethernet:** CPs can install Ethernet equipment at the customer premise that can only deliver a given maximum speed. Leading equipment vendors such as ADVA and CISCO sell Ethernet boxes starting at 10Mbit/s up to Gbit/s speeds of 2.5, 10, 40 and 100.
  - Wave Division Multiplexing (WDM): CPs can deploy WDM equipment that enables multiple beams of light each of a different wavelength to be sent down a single optical fibre simultaneously. Each beam of light typically supports a service connection with a data rate up to 40Gbit/s with typically two beams being used to provide a 100Gbit/s service connection. WDM equipment typically supports a wide range of service connection interfaces and protocols including Ethernet, traditional interface (SDH) and other interfaces such as those associated with data storage applications, e.g. Fibre Channel. WDM equipment typically consists of a number of shelf units, equipment monitoring and control units, transponder plug-in-units providing the interfaces and processing for one or more service connections and filters to combine and separate the light beams between the transponders and optical fibres. In some WDM equipment optical switches are also included. The provision of additional service connections may require additional transponder, filter and shelf units to be added depending on the utilisation of the units already equipped.
- 4.145 Our technical assessment does not suggest there have been significant changes in the feature set of WDM and it continues to support a range of interfaces and offers the ability to increase capacity quickly. Nevertheless, in the context of demand-side substitution, we think that the functional differences between single service Ethernet and WDM services have become less significant:
  - Use of WDM to access niche interfaces: our circuit data does not allow us to determine exactly what proportion of users might prefer WDM for its ability to support specialist interface types (i.e. those requiring connections to storage area networks). However, and importantly, single service Ethernet allows circuit

emulation of some of the main specialist interface types, for example those used for storage applications (i.e. Fibre Channel over Ethernet).<sup>161</sup>

- Ability to scale bandwidth with WDM: In the 2013 BCMR Statement, we noted that a key advantage of WDM was its scalability. As such, users with an initially low requirement (say, 1Gbit/s), but with rapidly expanding capacity needs might select WDM as the most competitive service available when considered over the period of increasing demand. We contrasted this with Ethernet, where, if existing capacity (say, 1Gbit/s) is fully utilised, new fibre circuits must be added to expand capacity which is costly and will have a potentially far longer lead time.<sup>162</sup> However for users who want limited capacity with limited increase over time, a high capacity Ethernet service (e.g. at 10Gbit/s) is likely to be a perfectly adequate substitute for a WDM service. For users who have an initially large capacity requirement (greater than 10Gbit/s) then WDM is likely to be the preferred choice as long as it is cheaper than purchasing multiple lower capacity links.
- 4.146 Therefore, apart from those users with very specialist needs, at very high bandwidths the choice between single service Ethernet and WDM services is not necessarily a technical one. Instead, it derives from the relative prices of Ethernet and WDM services above 1Gbit/s, which we discuss below.

Stakeholder comments and our conclusions on our technical analysis

- 4.147 BT commented that all parties seemed to agree on including single service Ethernet above 1Gbit/s in the same market as WDM in the BCMR 2013 and that it could not see why the discussion on capabilities and technical features of WDM and Ethernet services was relevant to whether or not there is a break at 1Gbit/s.
- 4.148 BT is correct in its observation that all stakeholders agreed in the BCMR 2013 on including single service Ethernet above 1Gbit/s in the same market as WDM. We nonetheless conduct an assessment of functional substitutability as we consider that functional differences are one potential barrier to switching between bandwidths and interfaces which should be examined when testing for a break in the chain of substitution. It is appropriate to conduct each market review looking at the market afresh as things may change. For example, it is possible the usage of leased lines could evolve over time in a way that meant the need for a particular functionality which was previously found to be a barrier to switching is no longer a barrier, and vice versa. Although we find that some differences remain in terms of supporting niche interfaces and offering the ability to add bandwidth capacity quickly, we conclude that for most users the choice between Ethernet and WDM would not be a

<sup>&</sup>lt;sup>161</sup> This means that a CP could install a single Ethernet link at an enterprise's main site to support its local area network (for site to site data) and storage area network (for data back-up at a data centre). See for example: <u>http://www.cisco.com/c/en/us/products/collateral/data-center-virtualization/storage-area-network-solutions/white\_paper\_c11-472771.html</u>. One CP told us that it was "[<code>%]</code>": meeting with [<code>%]</code>.

<sup>&</sup>lt;sup>162</sup> We observed that WDM services were used to support lower speed services at 1Gbit/s. However, our price analysis suggested that WDM services were sold at significant premium to low bandwidth AI services. We considered that if the customer had gone to the effort and cost of installing WDM capacity, this suggested that even if the end-user was initially using limited capacity, that user wanted a service which could be scaled very quickly. We considered that if the end-user was only ever likely to need capacity below 1Gbit/s with a specific interface, it would be more efficient to purchase a single service 1Gbit/s link rather than paying for more expensive WDM services.

technical one but would instead derive from the relative prices of these services above 1Gbit/s.

- (ii) Price differentials
- 4.149 We do not consider that the evidence on pricing and costs points to a break in the chain of substitution above 1Gbit/s Ethernet. In summary:
  - BT's new 10Gbit/s EAD service is approximately twice the price of its 1Gbit/s Ethernet service, representing a significant narrowing of previous price differentials;
  - The cost differential between lower bandwidth Ethernet services and VHB CISBO services has reduced since 2013, consistent with declining price differentials;
  - OCPs have commented that the same pricing rule now applies across the bandwidth chain and that the price differential is not large;
  - OCPs appear to be successfully competing using WDM services across a range of bandwidths including in competition with 1Gbit/s Ethernet services;
  - Some OCPs are adjusting their prices to encourage migration from multiple 1GBit/s services to a single 10Gbit/s service.

#### BT's price differentials have narrowed

- 4.150 In the BCMR 2013, we observed a large gap between prices of 1Gbit/s Ethernet services and Ethernet services above 1Gbit/s and WDM. We relied on BT prices, because the available evidence suggested price differences appeared driven to a significant extent by differences in the cost of equipment. We discuss below that these equipment costs have narrowed and suggest smaller cost differences between bandwidths when taking into account duct and fibre costs, but we first present updated analysis of BT's prices.
- 4.151 Since the last review, BT has reduced the price of its WDM and Ethernet 1Gbit/s services and has recently introduced a new 10Gbit/s EAD service at a significantly lower price than its previous single service 10Gbit/s Ethernet product. Our updated pricing analysis, presented above, shows that this has resulted in a significant narrowing of the previous price differential.
- 4.152 The introduction of BT's new 10Gbit/s Ethernet service means that the price of 10Gbit/s has reduced by 47% since the 2013 BCMR Statement. We now find that, for customers with bandwidth requirements of 2Gbit/s and above, the price of a 10Gbit/s Ethernet service is either equivalent to or cheaper than the price of multiple units of 1Gbit/s services. Whilst, for a customer demanding 1Gbit/s of bandwidth, an Ethernet leased line at 1Gbit/s would still be the cheapest means of meeting its bandwidth requirements, we do not consider that prices would need to be equivalent for switching between 1Gbit/s and higher bandwidth services to occur in response to a small relative price change. This is because a 1Gbit/s service is not functionally equivalent to a 10Gbit/s service: for approximately twice the price of their existing service, current users of a 1Gbit/s service could obtain ten times the capacity by switching to a 10Gbit/s service. We consider that this narrowing of the previous price differential is likely to have significantly increased the potential for switching between 1Gbit/s services in response to a SSNIP.

4.153 As we noted above, the difference between the price of BT's new 10Gbit/s service and its 1Gbit/s Ethernet price is now very similar to the bandwidth gradient observed lower down the chain. In the 2013 BCMR Statement, we included 100Mbit/s and 1Gbit/s Ethernet services in the same (AISBO) market, and these services had a similar price differential.<sup>163</sup> [3<] has told us that, as a rule of thumb, the price of CISBO services increases as a square root of the increase in bandwidth and noted that the price gap between 1Gbit/s and 10Gbit/s services was consistent with this rule, which also applied in other parts of the bandwidth chain. We note that the application of rules of thumb like the square root rule across the entire bandwidth chain would tend to result in pricing interdependence.

Stakeholder comments on the narrowing of BT's price differential

- 4.154 BT and Virgin Media challenged our views on the narrowing price differentials between VHB and lower bandwidth CISBO services. They both argued that price narrowing by itself says nothing about whether there is a break in the chain of substitution.
- 4.155 BT added that what we are observing is a long-term fall in prices for higher bandwidths. It argued that the boundary today is between 1Gbit/s and 10Gbit/s and this will change in time and it is likely to move between 10Gbit/s and 100Gbit/s. However, it considered this will happen in several years' time and definitely outside the relevant timeframe of this review.<sup>164</sup>
- 4.156 BT contended the data we had used to compare prices of different services. It argued that Ofcom had assumed a reference distance of 10km for the main link but had provided no analysis of how distance (i.e. circuit length) might affect market boundaries. It also argued that BT is a minority player in the supply of VHB services so BT's prices cannot be taken as a definitive basis for the competitive price of these services for the purposes of an HMT.
- 4.157 BT argued that the price gap is still large and if we were to apply a SSNIP at current prices it would show a clear break. To support this view, BT submitted a paper in which Analysys-Mason claimed to show that a SSNIP on either the 1Gbit/s or the 10Gbit/s price would not be constrained by customers switching between bandwidths.
- 4.158 Virgin Media also argued that a SSNIP test applied to 1Gbit/s EAD would not support a conclusion that users would switch to 10Gbit/s if their technical service requirements are currently met by a 1Gbit/s service. It referred to Figure 4.1 of the May 2015 BCMR Consultation, which shows that the annualised price of the 10Gbit/s EAD was still roughly double that of 1Gbit/s EAD.

Our response to stakeholder comments on the narrowing of BT's price differentials

4.159 We do not rely solely on the declining price differential between 10Gbit/s and 1Gbit/s services in reaching our view on product market definition. It is the combination of this declining price differential along with anticipated growth in demand for bandwidth

<sup>&</sup>lt;sup>163</sup> At the time of the BCMR 2013, the ratio of BT's EAD 1Gbit/s price to its EAD 100Mbit/s was 2.3 for a same exchange circuit, though the ratio tended to fall as the length of the circuit increased. Since then, BT has reduced its 1Gbit/s prices relative to its 100Mbit/s prices, and the ratio for a same exchange circuit is now approximately 1.6.

<sup>&</sup>lt;sup>164</sup> See for example, BT response to the May 2015 Consultation, paragraph 12.56-12.58 and Virgin's response page 23.

(particularly at 10Gbit/s), evidence that users considering migration may be responsive to relative price changes, and our analysis of customer switching costs, which leads us to conclude there is greater potential for switching between bandwidths on the demand-side. We also take into account evidence of demandand supply-side interactions and pricing interdependence between VHB services and lower bandwidth CISBO services, including evidence on how CPs (including BT) price and market their VHB services, which further supports the existence of a chain of substitution.

- 4.160 No stakeholder disagreed with our observation that prices for higher bandwidth services were declining. BT considered our price comparison reflected a general trend of declining prices for higher bandwidths (although it disagreed with the prices we had used for this comparison, which we discuss further below). However, some stakeholders (notably BT and Virgin Media) disagreed with our conclusion that there was no longer a clear break in prices between 1Gbit/s and higher bandwidth services, and argued that to demonstrate the existence of a chain of substitution we would need to conduct a quantitative SSNIP test.
- 4.161 As set out above, we are not required to conduct a quantitative SSNIP test in order to establish that there is a chain of substitution. We do not rely on one in this context because we consider it unlikely to be conclusive, given the following issues:
  - Leased line retail prices are not easily observed (because they are typically purchased as part of an overall connectivity solution) and wholesale prices may not be a good benchmark for the competitive level. Different CPs appear to charge different prices for apparently similar services;
  - In any event, in the context of declining prices and equipment costs, it is not clear that current wholesale prices would provide a good guide to average prices throughout the review period. For example, in the course of the last review period, the price of BT's cheapest wholesale 10Gbit/s product declined by over 47%.<sup>165</sup>
  - Similarly, in the context of a general trend towards increasing bandwidth usage, the current distribution of demand by bandwidth is likely to change throughout the review period. A related issue is that as migration occurs, the characteristics of end users of a service of a particular bandwidth may change and demand for services of that particular bandwidth may become more or less price sensitive as a result.
- 4.162 In light of the above, we apply a qualitative SSNIP framework in assessing the likely degree of switching from 1Gbit/s to 10Gbit/s in response to a small but significant increase in the price of 1Gbit/s services. We do this by first looking at price differentials across the bandwidth chain and then considering evidence on price sensitivity and any barriers to switching.
- 4.163 As set out in paragraphs 4.45 to 4.52 above in our updated analysis of prices, price differentials have narrowed considerably since 2013. The resulting degree of substitutability between 1Gbit/s and 10Gbit/s services will depend to an extent on the distribution of end user demands for bandwidth, which we are unable to observe. As

<sup>&</sup>lt;sup>165</sup> We took the lowest price for a 10Gbit/s services using either single service Ethernet (WES/EAD) or WDM (OSA) based on prices in the 2013 BCMR Statement compared to the most recent price points in Figure 4.1 above.

noted above, users wanting 2Gbit/s will already face a finely balanced choice at the margin and the degree of substitutability could be very high. At 3Gbit/s and above, users may already find it cheaper to switch to 10Gbit/s. Our discussions with CPs suggest that where increments of 1Gbit/s are involved, multiple 1Gbit/s circuits and single 10Gbit/s circuits (with excess capacity) are used interchangeably (for example our discussions with Vodafone and SixDegrees). A change in the relative price of services for these users could be expected to prompt a significant volume of switching.

- 4.164 Indeed, we discuss in paragraph 4.175 below evidence presented by Analysys-Mason that suggests demand for multiple 1Gbit/s is a significant proportion of BT's 1Gbit/s EAD volumes (20%). If this demand were representative of the wider market, then in the context of the SSNIP test, 20% is a material proportion of links that are likely to be highly sensitive to small changes in relative prices of 1Gbit/s and 10Gbit/s services.
- 4.165 Even for users currently taking a single 1Gbit/s circuit only, we consider there is potential for a material degree of switching to a 10Gbit/s circuit in response to a further narrowing of the differential (such as might be seen following a SSNIP at 1Gbit/s). The evidence we have seen from the Analysys Mason survey for Openreach, our own BDRC CI survey, CPs' internal documents and pricing meetings with CPs suggest that a material proportion of current users of 1Gbit/s are likely to migrate to 10Gbit/s services within the course of this review period. The February 2016 BDRC CI survey suggests this decision to migrate is likely to be sensitive to price, which is consistent with our understanding from CPs' internal documents that some CPs are trying to encourage this migration through the way they set their prices of 10Gbit/s services. In light of our assessment that the costs of migrating between bandwidths are likely to be insignificant (see below) and in any event less relevant in a context of increasing demand for bandwidth, we conclude that there is potential for switching between 1Gbit/s and 10Gbit/s services in response to a small relative increase in price of 1Gbit/s.
- 4.166 In response to BT's comment that we should exclude from our assessment of switching those customers who plan to migrate anyway, we disagree. For an assessment of whether a SSNIP would be profitable for a hypothetical monopolist of 1Gbit/s services today, the migration that would occur earlier than planned as a result of any SSNIP is a relevant constraint as it would result in a reduction of revenues relative to the counterfactual. In the wider context of considering whether there is still a break in the chain of substitution at 1Gbit/s for the forward-looking period covered by this review, the fact that a material proportion of users of 1Gbit/s plan to migrate to 10Gbit/s is also relevant as the new users of VHB services will increasingly be those who have recently migrated from lower bandwidths. As discussed in Annex 5, BT is likely to have an advantage in retaining its existing share of these customers as they migrate.
- 4.167 We also find evidence from the February 2016 BDRC CI survey of the potential for switching in the reverse direction, i.e. for current users of VHB services to switch to (multiple) 1Gbit/s services if they were faced with an increase in the price of their service (see paragraph 4.139 above). This provides further support for a chain of substitution linking 1Gbit/s with VHB services as it suggests that switching could occur both up and down the chain for these bandwidths.
- 4.168 In response to Virgin Media, we do not consider that the current price gap between 1Gbit/s and 10Gbit/s indicates a break in the chain of substitution at this point. On the contrary, we consider the price gap that exists today to be consistent with demand-

and supply-side interactions and pricing interdependence throughout the bandwidth chain. In particular, when compared with price gaps between other bandwidths in the chain, it appears consistent with the price premium applied to bandwidth differentials of the same magnitude lower down the bandwidth chain, as we noted above.

- 4.169 In response to BT's comment, we do not consider the SSNIP test applied by Analysys-Mason ("AM") in its report on market definition is evidence of a break in the chain at 1Gbit/s.
- 4.170 The AM report argued that there is a break in the chain of substitution between Ethernet services above 1Gbit/s and those at or below 1Gbit/s based on: (i) price differentials; and (ii) the number of customers using multiple 1Gbit/s EAD links on the same route.<sup>166</sup>
- 4.171 AM compared the price of 1Gbit/s and 10Gbit/s EAD circuits to see which option is cheaper for a customer that desires a particular amount of bandwidth.<sup>167</sup> AM found that whichever was the cheapest option would continue to be so, even if its price was assumed to rise by 5-10% (a SSNIP). AM considered that this suggests that a hypothetical monopolist of one particular circuit type could impose a SSNIP without causing its customers to migrate to the other type.
- 4.172 Implicit in AM's approach is that there is, in principle, a strong interdependence between the demands for circuits of different bandwidths, since choices are driven by relative prices. Before turning to AM's calculations, we make three initial observations:
  - The inferences drawn by AM are highly sensitive to the assumptions made about relative prices.
  - AM only uses BT's prices. However other CPs price in a way that reduces the price gaps in BT's current product portfolio see for example the comparison between WDM and Ethernet prices (see figure 4.4).
  - There is an inherent degree of imprecision around AM's figures. For example, the pricing assumptions could be varied since: (i) prices may change (as explained in paragraph 4.152, price differentials narrowed during the 2013-2016 market review period); (ii) some operators may enjoy discounts;<sup>168</sup> (iii) BT's current prices may depart from the competitive level. Moreover AM's figures incorporate a number of other assumptions e.g. no discounting of future costs.
- 4.173 Even if we were to just focus on AM's figures, they do not support the inferences that it draws. In particular, under AM's assumptions, the total cost (over three years) of two 1Gbit/s EAD circuits is £51,720. AM argues that, following a SSNIP this would rise to £54,306-£56,892 which is still £108-£2,694 cheaper than the cost if the customer were to migrate to a 10Gbit/s EAD circuit (£57,000). However we consider that this evidence does not demonstrate that there is a break in the chain of substitution:

<sup>&</sup>lt;sup>166</sup> AM also argued that technical and operational factors create barriers to switching, in particular the need to replace equipment at each end of the circuit. We consider barriers to switching below.

<sup>&</sup>lt;sup>167</sup> AM also carried out the same exercise to compare the price of 1Gbit/s EAD circuits and 2.5Gbit/s WDM circuits.

<sup>&</sup>lt;sup>168</sup> [**}<**].

- For that slight increase in cost the customer receives substantially more bandwidth (namely 10Gbit/s rather than 2Gbit/s). That additional bandwidth is likely to be valuable to the customer, particularly as demand for bandwidth is rising over time.
- As explained above, there is an inherent degree of imprecision around AM's figures. A difference of the order of £108-£2,694 over three years is likely to be within the margin of error for calculations of this type.
- 4.174 In any event, AM's calculations predate the launch of BT's 10Gbit/s EAD product. The actual price of this product differs from AM's assumptions.<sup>169</sup> Keeping AM's other assumptions the same, the total cost (over three years) of a 10Gbit/s EAD circuit is £48,660. A 5-10% SNNIP would increase this to £51,093-£53,526. This range encompasses the total cost of two 1Gbit/s EAD circuits calculated by AM (£51,720).
- 4.175 As well as its evidence on price differentials, AM claimed that few customers use multiple 1Gbit/s links on the same route. It stated that there are at least [⅔] customers with single links; [⅔] customers with double links and [⅔] customers with triple links. AM stated that even, if customers with multiple 1Gbit/s links were willing to migrate to a 10Gbit/s service following a SSNIP, the number of such customers would likely be insufficient to constrain a hypothetical monopolist. We do not agree that this shows there is a break in the chain of substitution.
  - The data provided to AM relates to 2015. Given the likelihood that demand for bandwidth will grow over this market review period, the number of customers taking multiple links may well grow both in absolute terms and as a proportion of the total.
  - We do not agree that customers taking a single 1Gbit/s circuit would be entirely insensitive to an increase in 1Gbit/s prices. As their need for bandwidth grows, such customers may face a choice between upgrading to multiple 1Gbit/s circuits or a 10Gbit/s circuit. In addition, as discussed earlier, evidence from the February 2016 BDRC CI survey suggests that price changes are likely to have an impact on the level of demand for bandwidth.
  - Further, the number of multiple links is not as insignificant as AM suggests. On its figures, multiple 1Gbit/s links account for just over 20% of 1Gbit/s EAD links.<sup>170</sup> Moreover, there are only 3,960 OSA 10Gbit/s circuits. The number of customers taking multiple 1Gbit/s EAD links appears sufficient to affect the profitability of a rise in 10Gbit/s prices if this deterred migration to higher bandwidth circuits which would otherwise have taken place.
- 4.176 In response to BT's comments about the data we used for our price comparison, we have conducted sensitivity tests around the assumed distance. In particular, we calculated the prices based on an assumption of a 5km main link.<sup>171</sup> The results are presented below and are consistent with the price comparison based on a 10km link above and show a similar narrowing of the differential since the 2013 review.

<sup>&</sup>lt;sup>169</sup> AM assumed that the connection charge was £2,100 and the annual charge was £14,860. The actual figures are £6,000 and £10,500 respectively.

<sup>&</sup>lt;sup>170</sup> A total of [%] multiple links ([%] double links and [%] triple links) compared to [%] single links.

<sup>&</sup>lt;sup>171</sup> Our analysis of BT circuit data shows that the average circuit length is between 5 km and 10 km.



Figure 4.3: BT Ethernet and WDM (OSA) prices over time for a 5km link (2007-15)

Assumptions: annualised charges based on annual rental, main link (5km) and connections spread over three year term.

Source: Ofcom 2016, based on BT price lists.

- 4.177 We agree with BT that its VHB prices cannot be taken as a definitive basis for the competitive price of these services. We could do so if BT truly were a minority player in a competitive market, as we would then expect it to act as a price taker and the industry price would be at or close to the competitive level. However, several CPs have told us that [≫] and Openreach itself told us that [≫]. We do not consider that BT is a price taker in the supply of these services. In addition, we consider that BT is likely to have market power in the CISBO market (see SMP assessment below) and this may lead to its prices for VHB services being above the competitive level. We also consider that, to the extent that BT is constrained by regulation in the way it suggests, the hypothetical absence of that regulation (as per the modified greenfield approach) would be likely to result in a strengthening of its market position, and this is also discussed further in Annex 5.
- 4.178 Overall, in light of our updated analysis of BT's price differentials and of stakeholder comments received, we conclude that price differentials have narrowed sufficiently since the BCMR 2013 that we would be likely to observe material amounts of switching between 1Gbit/s and VHB services in response to a SSNIP.
  - (iii) Cost differentials
- 4.179 In the BCMR 2013 we placed significant weight on the observation that BT's very high bandwidth services entailed substantially greater equipment costs than its lower bandwidth standard Ethernet services. However, an important feature of telecommunications markets is that the cost of equipment declines quite rapidly over time such that we can expect these cost differentials to diminish.

4.180 In light of this, we have examined whether there is a clear difference in the cost of equipment used in supplying standard Ethernet services at 1Gbit/s or below and very high bandwidth services (using WDM or standard Ethernet). We set out below our view that the differences are far less significant than at the time of our previous review. <sup>172</sup>

# **[≻]**<sup>173</sup>

[×]	[]>]		[ <u>×</u> ]	
[]		[×]	[×]	[×]
[×]	[×]	[×]	[×]	[]
[×]	[×]	[×]	[×]	[]
[]	[×]	[×]	[×]	[)<]

Source: Ofcom 2015, based on s.135 requests.

- 4.181 The evidence, presented in Table 4.1 above, shows that the cost of modern Ethernet equipment at 10Gbit/s is significantly lower than the cost of the equipment used with BT's legacy WES/BES services at 2.5 and 10Gbit/s. Therefore, there has been a significant closing of the cost differential between single service Ethernet at 1Gbit/s and 10Gbit/s.<sup>174</sup> Differences between the costs of Ethernet equipment and those of WDM equipment remain more significant. For example, the cost of equipment associated with the WDM service would be just under [3<] and just under [3<]. This compares to around [3<].</p>
- 4.182 However, it is important to note that equipment and other upfront costs<sup>175</sup> are only one element of the cost stack, which will also include other costs such as duct and fibre. These costs (in particular, the costs of duct) are typically a higher proportion of the total cost of providing a service and they do not increase with the bandwidth of the service. Given that dig distances are a key cost driver, this will diminish the importance of any differences in equipment costs.
- 4.183 In the May 2015 Consultation, we concluded that a large component of the difference in BT's prices which we observed between its Ethernet and WDM services was not related to incremental differences in equipment cost.<sup>176</sup> Given this,

<sup>&</sup>lt;sup>172</sup> Our analysis is based on cost data provided by BT and Virgin Media in response to s135 requests, and was complemented by discussions with OCPs.

<sup>&</sup>lt;sup>173</sup> That is, including the cost of equipment at both ends of the circuit.

<sup>&</sup>lt;sup>174</sup> For example, the total costs of equipment per circuit for a 1Gbit/s Ethernet service would be less than  $\pounds[\Im]$ , whereas the cost of single service Ethernet at 10Gbit/s would be [ $\Im$ ]. The declines in Ethernet are very significant compared to cost estimates provided by BT for its WES and BES services, which were [ $\Im$ ] for WES 2.5Gbit/s and [ $\Im$ ] for 10Gbit/s. <sup>175</sup> In addition to equipment costs, there could be other costs which are higher for high bandwidth and

<sup>&</sup>lt;sup>175</sup> In addition to equipment costs, there could be other costs which are higher for high bandwidth and WDM services. For example, additional management or design and testing costs may be incurred for more complex network configurations. However, these observed differences are not likely to be a function of technology or bandwidth choice, but rather are driven by the underlying connectivity needs of a particular customer. At all bandwidths and technologies there will be a range of customers with different needs (i.e. varying levels of network complexity from simple point to point connections to highly meshed multi-site configurations). In this context, it is important to recall that our price analysis is concerned with possible likely substitution behaviour from an end-user perspective. In particular, the complexity of a given end-user's requirements in terms of commissioning and design costs would be quite similar at different bandwidths, whilst such costs might be spread across a number of services of different bandwidths purchased as part of a single contract.

<sup>&</sup>lt;sup>176</sup> We have also analysed BT's cost recovery and margins on services at different bandwidths. We note that current WES and BES charges (both rental and connection) are significantly in excess of costs.

we concluded that the fact that equipment costs have fallen over time and can be expected to do so in future meant that the cost differences between lower and very high bandwidth CISBO services were far less significant for product market definition than at the time of the BCMR 2013. Since the May 2015 Consultation, we observe a narrowing of BT's prices with the introduction of its 10Gbit/s EAD service, as we would expect following a narrowing of cost differentials and given the trend for increasing demand for VHB services (as discussed earlier).

Stakeholder comments on our analysis of cost differentials and our response

- 4.184 BT and Virgin Media argued that although cost differentials have narrowed, there is still a significant gap between VHB and lower bandwidth CISBO services. In addition, they claimed that our analysis related to the costs of equipment only and did not give proper consideration to other cost differentials. They suggested that WDM and higher bandwidths would have higher physical infrastructure costs due, for example, to dual-fibre working. Other cost elements cited by BT and/or Virgin Media included planning and design, installation and testing.
- 4.185 In addition, Virgin Media said we had not explained why we had changed our approach relative to 2013. It said that our main reason for not finding the more significant cost differences between Ethernet and WDM equipment as evidence of a break in the chain of substitution was that these costs "*are not likely to be a function of technology or bandwidth choice, but rather are driven by the underlying connectivity needs of a particular customer*".<sup>177</sup>
- 4.186 BT argued that our analysis assumed that common costs should be recovered equally with no bandwidth gradient. BT added that it has a policy of differential recovery of common cost across services (bandwidth gradient), which Ofcom had previously acknowledged and endorsed as being economically efficient.
- 4.187 In the May 2015 BCMR Consultation, we compared differences in BT's equipment costs for 1Gbit/s and 10Gbit/s Ethernet and WDM services with the differences we observed in 2012/13. This was intended to give an indication of the degree to which the observed price differential reflected a difference in underlying costs, as well as the direction of travel of any differences in the incremental costs in these services, which may be expected to influence the price differential going forward.
- 4.188 In response to BT's and Virgin Media's comments on the costs we had left out of our analysis, we note that these costs do not vary by bandwidth. We consider it appropriate to focus only on costs which do vary by bandwidth as it is these costs which will drive any difference in incremental costs, and may therefore be expected to influence the price differential.<sup>178</sup> We have therefore not updated our analysis to include these omitted costs.
- 4.189 We agree with BT and Virgin Media that there is still a gap in the cost of supplying Ethernet services at 1Gbit/s compared with WDM services. However, we do not consider this gap to be evidence of a break in the chain of substitution at 1Gbit/s. Firstly, there has been significant convergence in the equipment costs of 1Gbit/s and 10Gbit/s Ethernet services, consistent with a closing of the gap which previously existed in the bandwidth chain. In addition, we consider the cost differential between 1Gbit/s Ethernet and 1Gbit/s WDM less relevant in light of market developments

<sup>&</sup>lt;sup>177</sup> Virgin Media's response to the May 2015 BCMR Consultation, dated August 2015

<sup>&</sup>lt;sup>178</sup> Although price differentials may not *only* reflect incremental cost differences.

including operators successfully competing for 1Gbit/s services using WDM products, which has filled the previous gap between 1Gbit/s Ethernet and 1Gbit/s WDM services. As noted above, the importance of WDM equipment at customer premises is also declining as the market standardises around Ethernet interfaces.

- 4.190 We take Virgin Media's comment on our change in approach (which it says we have not justified) to refer to the fact that, in the May 2015 BCMR Consultation, we presented incremental cost differentials in the context of the entire cost stack (including duct and fibre costs) whereas, Virgin Media argued, we had looked at the cost differential in isolation in the BCMR 2013. As we set out in the May 2015 BCMR Consultation, we consider it appropriate to view the remaining cost differential relative to total costs and prices when considering its possible relevance for substitution between services and hence for market definition. This is consistent with standard approaches to market definition, in which it is usual to consider substitution in response to a small *percentage* (usually 5% or 10%) change in prices. Therefore, even if we do not conduct a quantified SSNIP test, it is appropriate to consider the significance of the remaining cost differential relative to the level of prices and total costs, rather than to take account only of the absolute size of the differential. In light of the narrowing of price differentials since the BCMR 2013, we conclude that any remaining cost differentials are less relevant for potential substitutability than they were previously. We also find evidence to suggest these cost differentials have narrowed significantly since the last review, which is consistent with what we observe in relation to pricing.
- 4.191 In response to BT's comment, we have not assumed that common costs should be recovered equally across services. However, a large component of the differential in BT's prices was not related to incremental differences in equipment cost, and therefore it is at least possible that the difference in competitive prices could be smaller than the difference in (then) current prices whilst remaining larger than the difference in incremental equipment costs. BT is correct to consider the bandwidth gradient to be consistent with principles of economic efficiency, but this does not mean that the current bandwidth gradient used by BT is necessarily the one that maximises economic efficiency.
- 4.192 Overall we conclude that cost differentials between 1Gbit/s and 10Gbit/s single service Ethernet appear to have narrowed significantly since the BCMR 2013, consistent with the observed decline in price differentials. Whilst a material difference remains between Ethernet and WDM equipment costs, we observe that, given the narrowing of previous price differentials, the existence of any continued difference in cost is now less relevant for market definition than we had previously found and should be viewed in the context of the overall costs of providing a CISBO service.
  - (iv) Overlap in prices between 1Gbit/s Ethernet and WDM services
- 4.193 We have looked at the prices charged by OCPs and at their equipment costs for high bandwidth Ethernet and WDM services. Similar to BT, OCPs' equipment costs are higher than the costs of lower bandwidth standard Ethernet equipment, but the step change in OCPs' prices is not as large as seen for BT's prices. A wider assessment of OCPs' pricing also suggests that a number of BT's rivals have

services that 'span the gap' that exists in BT's current product portfolio at higher bandwidths.<sup>179</sup>

4.194 For example, Figure 4.4 below sets out [3] typical starting prices for services at 1Gbit/s and above. BT's charges often include a 'main-link' distance-based charge. Therefore, to make [%] charges comparable we have shown BT's charges for a 10km circuit with and without a main link (i.e. lighter segment of the BT chart is the non-distance related costs and the dark segment is the main link charge up to 10km). For example, BT's Ethernet charges at 1Gbit/s (without a distance component) would be about £5k p.a, whereas with a distance element the charge would be nearly £9K p.a.

## Figure 4.4: Comparison of BT charges relative to [×]<sup>180</sup>

[%]

Source: Ofcom 2015, based on published BT charges and indicative [3<] prices

- 4.195 As with the cost estimates, once [%] prices are included in the assessment, it is difficult to see a break in the pricing schedule between high bandwidth and WDM products and single service Ethernet products. These comparisons are not just theoretical as we know that  $[\]$  has successfully used its  $[\]$  to compete both with BT's WDM services and 1Gbit/s Ethernet services. [%].
- 4.196 We also note that there is some diversity in operators' network deployment strategies, that may blur the previous distinctions made between a fully dedicated end-to-end WDM service and 'single service' Ethernet. Operators are now using WDM equipment in the network in ways that allow them to provide the benefits of rapid deployment and scalability to users without the cost of WDM equipment having to be recovered solely from a single end user. For example, SSE have deployed pre-installed data centre connectivity using WDM<sup>181</sup> and Virgin Media's 'national HCS<sup>182</sup> service makes use of flexible WDM network technologies.<sup>183</sup> These WDM retail services are delivered with Ethernet interfaces that make use of 'shared' WDM infrastructure, which means that once an end-user is connected, provided the CP has spare capacity, it should be able to offer quickly and at low incremental cost additional service connections to the same end user or similar service connections to other end users.
- 4.197 The implication is that these services can be deployed quickly, for initial and additional service connections but without a large premium for each end-user where dedicated end-to-end WDM systems are deployed. This can be seen either as price convergence, with reductions in the price of WDM or near-WDM quality services bringing them closer in price to Ethernet services, or as convergence in the quality

<sup>&</sup>lt;sup>179</sup> As discussed in Section 2, during our evidence gathering phase, we discussed with CPs (both BT and OCPs) their pricing and commercial strategies for business connectivity markets.

<sup>&</sup>lt;sup>180</sup> Price comparisons are based on service-based charges over a three year contract and BT's charges include any upfront connection and equipment costs.  $[\times]$  charges reflect its estimates of typical market-based charges for these services on the assumption that no network extension costs are required. <sup>181</sup> http://www.ssetelecoms.com/general-admin/uploads/SSET1019\_DS\_WAVE-length\_serv\_V51.pdf

<sup>&</sup>lt;sup>182</sup> http://www.virginmediabusiness.co.uk/Documents/VMB\_DS\_HCSBM.pdf

<sup>&</sup>lt;sup>183</sup> As noted above, ROADMs allow CPs to rapidly configure circuits over WDM systems in response to customer orders. While not necessarily a new technology, we consider that there is now greater evidence that it is being deployed for example at datacentres and in support of national connectivity.

of WDM and other services. The result appears increasingly likely to be a continuum of retail services overlapping in price, bandwidth and quality.

4.198 We find from our analysis of the cost and pricing evidence above that while there is differentiation across the product range, it does not point to a "break" in the chain between very high CISBO and CISBO of up to and including 1Gbit/s.

Stakeholder comments on overlapping Ethernet and WDM prices and our response

- 4.199 BT said that it is incorrect to characterise the bandwidth of WDM by the bandwidth of each wavelength. It considered that Ofcom was suggesting that 1Gbit/s WDM "tributaries" could create a bridge between 1Gbit/s services and those above 1Gbit/s, but argued this was "emphatically not the case" as the WDM multiplex "will normally be above 1Gbit/s". As an illustration, BT noted that as part of the EAD 10Gbit/s service BT is considering an option which includes a multiplexer giving 8x1Gbit/s circuits.<sup>184</sup>
- 4.200 BT argued that the overlap in prices of 1Gbit/s Ethernet and 1Gbit/s WDM services does not support the existence of a chain of substitution. It argued that the fact that two products may co-exist at a given price is insufficient to conclude there is a chain of substitution as the consequential complementary costs of switching are unlikely to be overcome by a SSNIP.
- 4.201 In the May 2015 BCMR Consultation, we set out our evidence (replicated above) for provisionally concluding that a number of BT's rivals offered services that 'spanned the gap' that existed at the time in BT's product portfolio at higher bandwidths.
- 4.202 A key part of our evidence for this was taken from a comparison of [۶<] typical starting prices for WDM services at 1Gbit/s and BT's 1Gbit/s Ethernet service. We replicate this Figure from the May 2015 BCMR Consultation in Figure 4.4 above, which shows that once [۶<] prices are included in the schedule, there is no clear break in the pricing schedule between high bandwidth and WDM products on the one hand and single service lower bandwidth Ethernet products on the other.
- 4.203 We consider this overlap in pricing of 1Gbit/s Ethernet and 1Gbit/s WDM services to provide strong support for a chain of substitution linking 1Gbit/s Ethernet services to higher bandwidth WDM services.
- 4.204 There is widespread agreement amongst stakeholders, including BT, that there is no break in the chain of substitution from 1Gbit/s WDM services to higher bandwidth WDM services. The low incremental cost of increasing bandwidth in WDM services means that end users can switch from 1Gbit/s WDM services to higher bandwidth WDM services quickly and at low cost. The existence of a 1Gbit/s WDM service at a similar price point to BT's 1Gbit/s Ethernet service means current customers of a 1Gbit/s Ethernet service may now be able to switch to a 1Gbit/s WDM service without incurring any material increase in charges. Therefore, there is a strong case to consider that a material proportion of customers facing a price increase on a 1Gbit/s Ethernet service may be able and willing to switch to a 1Gbit/s WDM service, thus

<sup>&</sup>lt;sup>184</sup> BT was here replying to paragraph 4.63 of the May 2015 Consultation where we referred to network solutions such as ROADM which allow users to get the scalability benefits of a WDM service without actually having WDM at the customer premises. We suggested that this was an example of convergence between VHB (WDM) services and single service Ethernet services e.g. at 1Gbit/s.

linking the 1Gbit/s Ethernet service with the chain of substitution linking WDM products.

- 4.205 We agree with BT that the mere fact that two products exist at the same price does not necessarily mean that customers would switch between them in response to an increase in the price of one. However, the evidence discussed above on functional substitutability, switching costs and customer price sensitivity supports our view that such switching would be likely to occur (see paragraph 4.102).
- 4.206 Overall we conclude that the apparent overlap in the pricing of 1Gbit/s Ethernet and WDM (i.e. VHB) services means we would be likely to see a material amount of switching from 1Gbit/s Ethernet to 1Gbit/s WDM services in response to a SSNIP, providing further support for a chain of substitution.
  - (v) Switching costs unlikely to be a material barrier to migration
- 4.207 BT argued that customers face significant switching costs between different services and bandwidths. It considered price elasticity would be low as switching costs are likely to exceed any price differentials between different bandwidths of the access service.
- 4.208 BT claimed that we disregarded two types of costs of switching. First, it argued that customers incur switching costs to upgrade equipment at each end of the circuit. In addition, it said customers will face other consequential costs of upgrading bandwidth across the rest of the network to support the higher bandwidth of the access circuit.<sup>185</sup>
- 4.209 Finally BT argued that ignoring switching costs is in contrast to arguments about costs of switching from TI to AI services. It added that switching costs to migrate to VHB CISBO services are even higher than those associated with migration from TI to AI.
- 4.210 Both BT and Virgin argued that the existence of switching costs would make it more likely that a SSNIP test would show a break at 1Gbit/s. We recognise the potential for switching costs to affect customers' propensity to switch between bandwidths in response to a relative price change. To investigate this issue further, we have therefore gathered further evidence on the likely scale and impact of these costs for customers considering migrating up from 1Gbit/s to higher bandwidth services.
- 4.211 Evidence from the February 2016 BDRC CI consumer survey and the pricing meetings we held with CPs does not suggest that customers face high switching costs when they migrate to VHB services. In particular, from our survey, those who recall migrating to any CISBO service suggest that switching costs can be significant but are not always so.<sup>186</sup>
- 4.212 As mentioned above in paragraphs 4.80-4.81, we found that:
  - Less than half of respondents (41%) said that they experienced an obstacle during migration. Out of those that did experience an obstacle (90 respondents)

 <sup>&</sup>lt;sup>185</sup> See for example, BT response to the May 2015 BCMR Consultation, paragraph 12.52-12.55.
<sup>186</sup> A switching cost of a given amount will be more significant in relation to a low value (low bandwidth) service than in relation to a high value (higher bandwidth) service.

46% indicated there was no additional cost and a further 10% did not know; with 27% experiencing costs of below £10,000 and 17% above this figure.

- The results also suggest that end-users do not consider migration to VHB to be more difficult or costly compared to lower bandwidth services.
- 4.213 Overall we consider these results consistent with our view that the costs associated with migration to VHB are not materially greater than migration to the lower bandwidth CISBO services (indeed, if anything, our survey results suggest they could be lower).
- 4.214 To the extent switching costs exist, however, we consider they are less likely to impact the switching decision in the context of a market in which demand for bandwidth is continually increasing and migration (along with any associated costs) would be likely to occur at some point anyway. In this context, switching costs become less relevant as a 1Gbit/s customer, for example, is effectively choosing between a) adding another 1Gbit/s link (which has an installation cost) or b) upgrading to 10Gbit/s, or just deciding on the timing of migration.
- 4.215 We do not think that the comparison with migration from TI to AI is relevant. TI is legacy technology and incentives to migrate from TI to AI services are different from migration between CISBO services. In addition, switching costs for TI are likely to represent a higher proportion of service costs as these are low value services and because migration from TI to AI usually entails a change in the technology of the end-user's application (such as moving from an ISDN PBX to an Ethernet-based VoIP system). In addition, the evidence suggests that rates of migration from TI to AI services are not sensitive to changes in relative prices.
- 4.216 Overall we conclude switching costs are unlikely to present a material barrier to migration from 1Gbit/s to VHB services in response to any SSNIP.
  - (vi) We anticipate material migration towards VHB services in this review
- 4.217 As discussed in Annex 5, the CISBO market is evolving. There is a trend for CISBO customers to demand increasing amounts of bandwidth over time and this is bringing with it a number of changes which we refer to collectively as "standardisation". We use this term because customer migration to higher bandwidths means that speeds which once were only used by a small number of "high-end" customers with specialised demands are increasingly being used by a much wider group of customers who are more typical of leased line users in general. This is already happening but we expect it to continue over this market review period, with important implications for the VHB CISBO segment in particular.
- 4.218 At 1Gbit/s, we see increasing numbers of users from a wider variety of sectors, including retail customers, and increasing use for access connections. This itself is a change from the time of the last review in 2013, when use of 1Gbit/s for access was less widespread, and is likely to reflect the effect of price reductions as well as the emergence of new uses.
- 4.219 As prices continue to fall and more new uses for capacity emerge over this review period, we expect to see similar developments in the VHB segment. One source of expected growth in demand for higher bandwidths is the increasing adoption of cloud technology which is driving a need to link data centres to offices.

- 4.220 BT's own forecasts are consistent with customers upgrading bandwidths over the timeframe of the review (see Section 3). Although some of the increased demand for higher bandwidth services could be explained by new supply rather than customers upgrading speed, the evidence we have seen suggests a material number of lower bandwidth CISBO users will migrate to VHB services over the next few years.
- 4.221 For example, consumer survey results from Analysys Mason presented at a BT Ethernet Strategy conference provide some evidence on expected rates of upgrade. The evidence suggests around 10% of respondents at >100Mbit/s to 1Gbit/s expected to upgrade their Ethernet speeds within 1 year and around 20% within 3 years. For respondents with more than 1Gbit/s, more than 10% expected to upgrade their connection within 1 year. <sup>187</sup> The BDRC CI survey finds a similar picture, with a material proportion of >100Mbit/s to 1Gbit/s users surveyed saying they were very or fairly likely to upgrade to VHB (27% to Ethernet and 8% to WDM) within the next three years. In addition, over the period 2012 to 2015 [%<]. This is consistent with CPs' internal pricing documents and our meetings with CPs, which both highlighted a growing demand for VHB services.</p>
- 4.222 This anticipated migration is having an important effect in blurring previous market boundaries for two reasons. Firstly, we set out above why we consider planned migration is likely to make end users more responsive to a SSNIP. We consider the fact there appears to be a material proportion of current 1Gbit/s users who plan to upgrade to VHB at some point over the next few years means there are also likely to be a material proportion who would switch to VHB earlier in response to a SSNIP: effectively bringing forward the date of their planned migration. Clearly, the strength of this constraint will depend on how much earlier their planned migration is brought as a result of the SSNIP, but nonetheless we consider this is a factor supporting a greater degree of price sensitivity.
- 4.223 Secondly, CPs appear to be responding to growing demand for more 'standardised' VHB services in a way that is facilitating upward migration and further blurring the previous boundaries between lower bandwidth CISBO and VHB services. In particular, evidence from CPs' internal documents and from our pricing meetings with CPs suggest some CPs are adjusting their pricing and product offering to encourage lower bandwidth users to migrate from 1Gbit/s to 10Gbit/s services. This response by CPs is driving declining price differentials, further reinforcing the likelihood of demand-side substitutability.
- 4.224 Of particular note in this respect is Openreach's introduction of its new 10Gbit/s EAD product at a considerably lower price point than its existing 10Gbit/s WDM service. According to internal pricing documents, this appears to have been in anticipation of growing demand for 10Gbit/s services. Publicly available marketing material relating to the new product suggests it may be aimed, at least in part, at current users of its 1Gbit/s service as it is directly compared, in both price and capacity, to a 1Gbit/s service.
- 4.225 In addition, the evidence suggests that one CP has used a WDM service to compete with BT's 1Gbit/s Ethernet service. Taken together, these developments suggest a far greater degree of competitive interaction and pricing interdependence than we have previously seen between these services.

<sup>&</sup>lt;sup>187</sup> See <u>https://www.openreach.co.uk/orpg/home/downloads/Ethernet\_Strategy.pdf</u>

4.226 As a result, we consider anticipated growth in demand for VHB services is a key factor behind our observation that there is no longer a break at 1Gbit/s.

#### Stakeholder comments on migration trends and our response

- 4.227 BT argued that the boundary between the high-bandwidth and very-high-bandwidth customers was shifting: in its view the boundary was currently between 1Gbit/s and 10Gbit/s and, beyond the timeframe of the review, the boundary will move to between 10Gbit/s and 100Gbit/s.<sup>188</sup> BT noted that bandwidth is only a proxy for the value of a site to a supplier. The identity of these sites is not changing as a consequence of rising bandwidth demand and the competitive supply to the sites is not intrinsically changing as a consequence of some narrowing of prices at different bandwidths. It is simply that over time, the bandwidth to these sites is increasing and therefore the bandwidth which delineates 'honeypot' sites from other sites is also increasing.
- 4.228 Virgin Media accepted that there has been a movement of demand up the bandwidth scale towards 1Gbit/s products (which it considered to be driven in part by BT's pricing strategy in relation to its 10Mbit/s and 100Mbit/s wholesale products). However, Virgin Media argued that the divide between 1Gbit/s and higher bandwidth solutions remains.
- 4.229 In particular, Virgin Media noted that Ofcom had referred to evidence in the Analysys-Mason survey showing migration from lower bandwidths to very high bandwidths. Virgin Media's view was that the survey data, as presented, does appear to indicate migration up the bandwidth scale, but only in the case of customers with services at lower bandwidths increasing their bandwidth requirements, Virgin noted that these customers could still remain within the existing AI market.
- 4.230 We note stakeholders' widespread support for our observations on migration trends in the CISBO market and the potential for these trends to blur previous market boundaries as they unfold. BT argues that the divide between 1Gbit/s and higher bandwidth solutions still remains, but does not provide any additional evidence for these claims. We have responded to its comments on a SSNIP test still showing a break at 1Gbit/s above, and concluded the evidence does not support its claims. We disagree with BT that the boundary will shift to 10Gbit/s as we consider (and have received no evidence to the contrary) that the scalability of WDM services means that a break in the chain of substitution above 1Gbit/s is unlikely.
- 4.231 The Analysys-Mason survey in question found that, in 2014, around 21% of endusers currently taking services above 100Mbit/s and up to and including 1Gbit/s expected to increase their bandwidth requirements over the next three years. Whilst we agree that, in principle, these users may be able to upgrade their requirements without purchasing a service above 1Gbit/s, we do not consider this detracts from the general point being made that we anticipate the demand for bandwidth to continue to increase during this review period.
- 4.232 We do not agree that the survey related to customers at the lower bandwidths only as it also included customers currently taking a 1Gbit/s service. Whilst these customers could in theory take multiple 1Gbit/s circuits to satisfy any increase in their

<sup>&</sup>lt;sup>188</sup> This therefore appears to be something of an acceptance that the 2013 MISBO market definition with a market boundary at 1Gbit/s might no longer be appropriate, or at least would become increasingly less so over time.

requirements, the declining price differentials discussed above mean this choice is less likely to be attractive as the introduction of BT's 10Gbit/s EAD service means that taking two 1Gbit/s circuits is approximately equivalent in price to a single 10Gbit/s Ethernet circuit.

- 4.233 In any case, the February 2016 BDRC CI survey directly addresses the question raised by Virgin, as we now have evidence that end-user's anticipated increase in bandwidth requirements are likely to translate into significant upgrades from 1Gbit/s to VHB segments. As discussed in paragraphs 4.75 to 4.77 above, 27% (8%) of current high bandwidth users are either 'very" or "fairly' likely respectively to upgrade to Ethernet above 1Gbit/s (WDM). In addition, our discussions with CPs summarised above provides further support for our views on migration from 1Gbit/s to higher bandwidths, and the associated 'standardisation' of the VHB segment.<sup>189</sup>
- 4.234 Overall, we conclude that the anticipated migration towards VHB services means current users of 1GBit/s services are more likely to switch to VHB services in response to a SSNIP. We also observe that this trend is driving increasing interaction between lower bandwidth CISBO services and VHB services on the supply-side, which is a further factor blurring previous market boundaries.
  - (vii) Supply-side interactions
- 4.235 In the May 2015 BCMR Consultation, we said that "supply-side interactions" could be relevant to the existence of a chain of substitution connecting CISBO services, in addition to substitution on the demand side. We noted the ability of a CP to offer a circuit or set of circuits is founded primarily on what infrastructure it has available and noted this does not vary by product or circuit type. We observed that, once in place, a network could be used to supply CISBO services of all bandwidths and interface types because CISBO services themselves differ only in the equipment at the circuit ends. We considered these supply side considerations tended to point towards a broad market definition.<sup>190</sup>
- 4.236 BT argued in its response<sup>191</sup> that we had relied on supply-side substitution and that, in so doing, we had been inconsistent with "every other market review". It said that in other market reviews (such as the BCMR 2013) we had discounted supply-side substitution on the grounds that, in practice, CPs supplying CISBO services of one bandwidth would be likely already to be supplying other bandwidths and so could not be regarded as potential entrants; further, where CPs are not already present, the costs of entry would be too high.
- 4.237 At a high level, we note that the purpose of market definition is to identify all relevant competitive constraints, as this informs the assessment of whether an operator has SMP. The crucial task is to correctly identify the nature and strength of all competitive constraints provided this is done appropriately, and no constraints are omitted or double-counted, it should not ultimately matter whether a constraint is labelled as a supply-side interaction, supply-side substitution, expansion by existing operators or new entry (to name a few possibilities).<sup>192</sup>

<sup>&</sup>lt;sup>189</sup> We explain the process of 'standardisation' in Annex 5.

<sup>&</sup>lt;sup>190</sup> Paragraphs 4.34 and 4.35 of the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>191</sup> Paragraphs 12.31 – 12.33.

<sup>&</sup>lt;sup>192</sup> The discussion of supply side substitution in the BCMR 2013 recognised that the expansion of other operators can be taken into account in the assessment of market power (paragraph A3.28). As we noted earlier in this section, regulators have recognised that there are similarities between supply
- 4.238 The key point is that leased line services of different types are delivered over the same physical network infrastructure (buildings, trenches, ducts and fibres) and, once built, such infrastructure can be used to provide any leased line service across the full range of bandwidths and interfaces. Near-identical equipment can be used to deliver services at 10Mbit/s, 100Mbit/s and 1Gbit/s with minimal differences in costs between them. Once an operator has a connection capable of providing a given CISBO service to a customer therefore, it is capable of supplying that customer (or another customer at the same site) with a different CISBO product (e.g. by changing speed) without incurring significant additional costs.<sup>193</sup>
- 4.239 Therefore an operator that just supplies 10Gbit/s Ethernet connections (say) to a particular site is likely to be constrained by other operators that supply that same site with connections at other bandwidths. Given the assumption that multiple connections are in place at a site, those other operators would be able to begin supplying 10Gbit/s connections rapidly and at minimal cost following a SSNIP.
- 4.240 This highlights the key question as whether or not more than one operator in fact has network close enough to customer sites to connect rapidly and at low cost. The strength of the constraint is therefore primarily a matter of geography rather than bandwidth.<sup>194</sup>
- 4.241 As explained above, how we label this constraint is of limited relevance. Rather, the key point is the importance of infrastructure presence and the ability of suppliers to use that infrastructure presence to compete across bandwidths. The potential for infrastructure to be used at all bandwidths will tend to mean (along with demand-side substitutability) that customers at a particular site will face similar competitive conditions regardless of the bandwidth they use.
- 4.242 Where there is sufficient rival infrastructure in place, our view is that all customers will benefit from effective competition, even if BT appears to have a relatively stronger position in some bandwidths. As a result, our focus is on identifying areas where the extent of rival infrastructure is sufficiently great that we can remove regulation in all bandwidths.

side substitution, entry and expansion. For example, "Distinguishing between supply-side substitution and potential competition in electronic communications markets may be more complicated than in other markets .... What matters, however, is that potential entry from other suppliers is taken into consideration at some stage of the relevant market analysis, that is, either at the initial market definition stage or at the subsequent stage of the assessment of market power (SMP)." Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services, footnote 24.

<sup>193</sup> BT argues that the costs increase materially at bandwidths above 1Gbit/s. However the incremental costs of equipment are falling and we expect this trend to continue. They are unlikely to be a deterrent to the supply of VHB services in the example given the relatively high margins on such services. In addition, equipment costs of this kind are unlikely to be considered sunk costs and so their presence would not confer an advantage on an incumbent supplier. Rather they are part of the incremental cost differential between services and, as noted earlier, we expect incremental cost differences to be reflected in prices.

<sup>194</sup> We recognise some difference in competitive constraint may currently exist given the higher value of VHB customer sites is likely to mean CPs are prepared to dig further to connect to one of these sites than a lower bandwidth user. However, as we set out in Annex 5, we consider this differential is likely to narrow over the course of this review as new VHB users become increasingly more like current lower bandwidth users due to anticipated migration. We note the significant decline in price differentials since the last review is likely to mean that, already, a 10Gbit/s connection is significantly less valuable than it has been in the past.

- 4.243 Accordingly, in the discussion below of the relevant geographic market we consider carefully the density of competing infrastructure in different areas. We then, in the SMP assessment, consider what the level of infrastructure means for the constraints on BT.<sup>195</sup> Thus, given the issues are discussed elsewhere in this statement, it is not necessary for us to consider supply side substitution further: other than to note that we continue to view the fact that all CISBO services are provided over the same infrastructure as a factor which tends to support a wider product market.
- 4.244 We further note that our approach in other market reviews has taken into account both demand and supply-side considerations. For example, in the Wholesale Broadband Access Market Review, we started with an assessment of whether there was a chain of substitution linking standard and superfast asymmetric broadband services and residential and business services. We then went on to consider, on the supply-side, any additional constraints that could come from asymmetric broadband providers that were not currently present in the supply of all types of asymmetric broadband services.<sup>196</sup>

#### 4.2.2.4 Ofcom's conclusions on Ethernet and WDM product market definition

4.245 Based on the above evidence and in light of stakeholder comments, we consider it appropriate to define a single CISBO market for all Ethernet and WDM services at all bandwidths, as they are linked by a chain of substitution.

#### 4.2.3 Asymmetric broadband and EFM

- 4.246 As discussed in Section 3, asymmetric broadband services and EFM services offer alternative ways of meeting some businesses' connectivity needs, and we therefore consider whether they should be included in the CISBO market.
- 4.247 We find that asymmetric broadband services are outside of the CISBO market and that EFM services are in the CISBO market. We summarise our assessment in this section. Further detail of our analysis is set out in Annex 6.

#### 4.2.3.1 Summary of consultation

#### Asymmetric broadband

4.248 In the 2013 BCMR Statement we found that asymmetric broadband services were outside the AISBO and TISBO markets. In the May 2015 BCMR Consultation, we noted that there had been changes in the market since the last review. In particular the availability and take up of broadband services based on next-generation access (NGA) technologies such as fibre-to-the-cabinet has increased significantly. These

<sup>&</sup>lt;sup>195</sup> Where there are variations in competitive conditions within these markets, these are best taken into account in our impact assessment of remedies, through a careful assessment of costs and benefits.

<sup>&</sup>lt;sup>196</sup>We note that in our review of Wholesale Broadband Access in 2014, we looked at whether supplyside substitution was a relevant additional constraint. We found that CPs that were not currently present in the supply of some (or all) asymmetric broadband business services would face low barriers to begin supplying those services. This is because these CPs already have existing presence at BT exchanges to serve other customer segments with asymmetric broadband (e.g. residential or other business grades). See paragraphs 3.104 to 3.114:

http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/statement/WBA-Statement.pdf

services offer significantly higher upload and download bandwidths than current generation (ADSL/ADSL2+) broadband.<sup>197</sup>

- 4.249 We proposed that asymmetric broadband services (including NGA) are out of the market for CISBO services based on:
  - our assessment of the qualitative differences between broadband services and leased lines:
  - available data on the limited impacts on leased lines growth overall and migration to NGA despite increased capabilities of NGA:
  - evidence from our consumer survey;
  - evidence from CPs' marketing and CPs' responses to our market questionnaire • about substitutability between the two; and
  - consideration of barriers to switching.
- 4.250 We considered that substitutability was insufficiently strong to include asymmetric broadband in the CISBO market.
- 4.251 Nevertheless, we considered that there could still be some competitive interactions between asymmetric broadband and CISBO services. Accordingly, we explained that we would take the impact of asymmetric broadband on competition for low CISBO services (up to 10Mbit/s) into account in our market power assessment. In other words, we would consider asymmetric broadband as an 'external' constraint.

#### Ethernet First Mile

- 4.252 As discussed in Section 3, EFM allow CPs to run Ethernet over a copper pair or multiple bonded copper pairs in the access segment to connect the "first mile" from the customer to the nearest node. In the UK, CPs most commonly lease BT's copper exchange lines to connect customer premises to the nearest local serving exchange.<sup>198</sup> From exchange locations, connectivity can then be provided in a similar manner to leased lines, using the CPs' backhaul and core transmission networks.<sup>199</sup>
- 4.253 We proposed that wholesale services provided using EFM are in the same market as CISBO services for the following reasons:
  - there are not significant qualitative differences between EFM and other lower • bandwidth Ethernet leased lines;
  - evidence also suggests that CPs position EFM as a lower cost type of leased line service:

<sup>&</sup>lt;sup>197</sup> We further noted the revised EC Recommendation refers to a single "High Quality Access" market that may include terminating segments of leased lines and 'business-grade' broadband services (both current generation broadband and NGA based services). <sup>198</sup> BT is required to provide unbundled local loops as a remedy for its SMP in the wholesale local

access market.

<sup>&</sup>lt;sup>199</sup> EFM is presented to the customer with an Ethernet interface and provides dedicated symmetric capacity to the end-user and in that respect it is identical to an Ethernet leased line. The key difference between EFM and leased lines is the use of copper unbundled loops in the access segment and resulting impacts on the services offered.

- users of CISBO might not face significant barriers to switching;
- price evidence is consistent with a chain of substitution including EFM-based services and Ethernet leased lines; and
- the increase in EFM take-up may reflect EFM as a lower cost substitute for low CISBO services.
- 4.254 Our analysis suggested that EFM would be a good substitute for some leased lines customers, especially those currently on or considering migration to low bandwidth CISBO services.
- 4.255 For the avoidance of doubt, our view is that substitution between EFM-based services and low bandwidth CI leased lines takes place at the retail level. The possibility of substitution to retail EFM-based services then potentially exerts an indirect price constraint on wholesale low bandwidth CISBO prices. Although substitution takes place at the retail level, we have taken account of EFM lines in our calculations of CPs' shares of the CISBO market, which is a wholesale market. This approach to calculating market shares is similar to that adopted in the WBA market, where LLU operators are credited with a market share whether or not they sell a WBA service to other operators. In other words, LLU operators are assumed to self-supply a (notional) WBA service which underpins their retail sales. It may similarly be helpful to think of a "notional" upstream EFM-based wholesale CISBO service that is provided by an EFM operator to itself to support its retail service. It would then be this notional service which takes a share of the wholesale CISBO market.<sup>200</sup>

#### 4.2.3.2 Stakeholders' responses

- 4.256 Stakeholders comments are summarised in detail in Annex 6. Most stakeholders did not express any concerns regarding our proposed product market findings for NGA and EFM. Vodafone and Six Degrees expressed some concerns about our proposals to include EFM in the relevant market.
- 4.257 BT agreed that EFM was a substitute for CISBO services, but argued that NGA services should also be included within the market.
- 4.258 BT and KCOM questioned whether the application of the SMP regulation in the wholesale CISBO market applied to Ethernet First Mile (EFM).

#### 4.2.3.3 Our overall assessment

#### Asymmetric broadband

- 4.259 Annex 6 presents our full analysis of competitive constraints from asymmetric broadband. On the basis of our analysis we conclude that asymmetric broadband is outside relevant leased lines markets, as:
  - our assessment of the qualitative differences between broadband services and leased lines highlights that there remain a number of key differences in technological and service features;

<sup>&</sup>lt;sup>200</sup> See also the discussion of EFM in the Hull area in Section 6, paragraphs 6.36 - 6.37.

- the growing availability of NGA has increased the speeds available with asymmetric broadband, but the available migration data suggests that there has not been an obvious change in leased lines growth overall and BT reports very few cases where customers ceased BT's Ethernet or TI services due to NGA migration;
- evidence from the consumer survey suggests that a minority of users might consider switching to NGA as an alternative to a leased line, but does not suggest that NGA and leased lines are close enough substitutes to be placed in a single market;
- evidence also suggests that most CPs do not market asymmetric broadband as a substitute for leased lines, because of the key differences between services. This evidence includes CPs' marketing of broadband to consumers on their websites, as well as the vast majority of CPs' responses to our questionnaire and CFI about substitutability between the two; and
- consideration of barriers to switching highlights that end-users with large legacy networks and/or those who use specialised applications in particular are likely to face higher switching costs moving to broadband in the short term.
- 4.260 In addition to the above factors, we note that price comparisons show that there is a considerable difference between the prices of broadband and leased lines services. The size of the price differentials, together with evidence on migration appears consistent with the asymmetric broadband and leased line markets being separate.
- 4.261 Overall our analysis suggests that substitutability is insufficiently strong to include leased lines and asymmetric broadband in the same market, and that this will remain so over the course of the three-year review period. Nevertheless, we do take into account in our SMP assessments below the 'external constraint' that might arise from leased lines users switching to asymmetric broadband.

# EFM

- 4.262 Our full assessment of stakeholders' comments and further analysis is set out in Annex 6. On the basis of our analysis we conclude that EFM is in the CI market for the following reasons:
  - the qualitative assessment generally shows there are not significant qualitative differences between EFM and other Ethernet leased lines. The main differences between the two relate to distances of EFM from the exchange and the bandwidths and SLAs that can be supported. However, customers with requirements up to 30-40Mbit/s, for which use of EFM is feasible, are likely to consider EFM as a substitute for an Ethernet service;
  - evidence also suggests that CPs position EFM as a lower cost type of leased line service, suitable for those customers that do not require high bandwidths. This is evidenced by the way CPs market EFM to consumers on their websites, along with responses to our questionnaire that supported the information we have on marketing;
  - consideration of barriers to switching highlights that end-users with Ethernetready infrastructure in place might not face significant barriers to switching;

- relative price comparisons are consistent with a chain of substitution including EFM-based services and Ethernet leased lines. We further note that reductions in the price of BT's Ethernet services at 100Mbit/s may have been in response to competition from EFM at the low end of the market. It can be viewed that 10Mbit/s is a 'largely redundant' speed for standard Ethernet, and this may in part reflect the emergence of EFM as an alternative.
- 4.263 In addition, there has been a significant increase in EFM volumes since our 2013 Review. We do not hold enough data to determine whether this significant increase might be a migration from leased lines, SDSL or asymmetric broadband. However, when considered in light of broader evidence, the increase in EFM take-up may seem like a reasonable consequence of the identified incentives for consumers to migrate to EFM as a lower cost substitute for low bandwidth CISBO services.
- 4.264 For the avoidance of doubt, we are not, as part of this review, deciding that EFMbased services should be subject to SMP regulation even though we consider that these services should form part of the CISBO market. We explained this in our clarifications and corrections document to the May 2015 BCMR Consultation.<sup>201</sup>
- 4.265 We have included EFM in the CISBO product market due to the indirect constraint it imposes (arising from substitution for other CI services at the retail level) rather than as a direct constraint (which would reflect wholesale level substitution for CISBO services).<sup>202</sup>
- 4.266 We consider that the existing requirement on BT to provide MPF lines in the Wholesale Local Access market, together with continued availability of regulated products suitable for LLU backhaul, would allow CPs to compete using EFM.<sup>203</sup> This is reflected for example in TalkTalk acting as a competitor to BT for EFM services.

#### 4.2.4 Dark fibre sold to end-customers

- 4.267 We have considered whether dark fibre sales to end customers exert competitive constraints on CISBO services.<sup>204</sup>
- 4.268 We conclude that dark fibre exerts only a limited constraint on CISBO services and that these constraints are not strong enough for dark fibre to be included in the product market definition. We take account of constraints from dark fibre as an 'out of market' constraint in our competitive assessment.

#### 4.2.4.1 Summary of consultation

4.269 In the May 2015 BCMR Consultation, we examined dark fibre usage to see how much dark fibre is sold to end-users, which services it was being used for, and by whom. This was to establish the quantitative impact that including dark fibre sales would have on shares in different segments of the market, the geographic pattern of

<sup>&</sup>lt;sup>201</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/Clarifications\_and\_corrections.pdf

 <sup>&</sup>lt;sup>202</sup> This is because the wholesale inputs to EFM cannot be used to support Ethernet leased lines (or vice versa), for which a fibre connection would be required.
 <sup>203</sup> We consider that actual competitive conditions in CISBO markets are best captured by including

<sup>&</sup>lt;sup>203</sup> We consider that actual competitive conditions in CISBO markets are best captured by including EFM services in the market, notwithstanding the possible reliance of EFM on regulated CISBO backhaul circuits where BT has SMP, and our adoption of the modified greenfield approach.
<sup>204</sup> This does not include dark fibre sold to operators at the wholesale level. Dark fibre purchased by CPs in order to provide active services to end-users is already included in our service shares.

its impact, whether dark fibre usage remains confined to a small number of very large users and whether it was being used as an upstream service to support a range of active services across market segments.

- 4.270 Our estimates of the volumes of dark fibre sales to end-users found these volumes to be small in relation to the CISBO market as a whole, though more significant when compared to very high bandwidth CISBO volumes.
- 4.271 We estimated the proportion of dark fibre used to provide very high bandwidth connectivity. We used sales to universities, media and finance companies as a proxy for the proportion of dark fibre connectivity used to provide very high bandwidth services as these are likely to be the main users of VHB services. We found the proportion of dark fibre sold to those customers to be between 10% and 30% depending on the supplier. Assuming for illustrative purposes that 2-3 wavelengths are lit on each fibre on average, we estimated that the equivalent of 1,700 2,550 very high bandwidth ends were self-supplied using dark fibre outside the CLA and the LP. We considered that including these sales in service share calculations would have had a material impact on BT's share of very high bandwidth CISBO in the Rest of the UK (RoUK).
- 4.272 We also looked at the geographic distribution of dark fibre usage, and found that, as a proportion of CISBO services, most usage was concentrated in the Central London Area CLA. Outside London (i.e. in RoUK), we found most postcode sectors contained no dark fibre ends. We also found that postcode sectors where there was at least one dark fibre end were scattered throughout the UK and were not concentrated in the Central Business Districts (CBDs). We found that the majority of dark fibre ends were sales to particular customers who buy a large number of ends at one location and from one supplier. We therefore considered that dark fibre sales to end users are a niche and not a guide to competitive conditions more generally.
- 4.273 We also considered that most dark fibre seemed likely to be used outside the very high bandwidth CISBO segment. We noted that for users of dark fibre themselves, the boundary between product segments observed in active services (e.g. lower and higher bandwidth) made little sense and that the supplier of the dark fibre may itself not know what service is being provided over it, particularly for a large multi-site contract. We noted this made it very difficult to speculate about the alternative active service that a dark fibre user might have purchased instead.
- 4.274 Based on our assessment, we therefore considered that, whilst dark fibre usage may be confined to a niche in *customer* segment terms, in *product* segment terms it is a factor which tends to broaden the market. We noted that by its nature, dark fibre is capable of being used to supply a service of any bandwidth and interface.

# 4.2.4.2 Stakeholders' responses

- 4.275 BT claimed that we had understated the degree of competition for VHB services by excluding dark fibre. This is because estimated service shares exclude volumes of circuits self-provided by end user organisations using commercially available dark fibre from third party providers.
- 4.276 BT added that we completely ignored any effect from dark fibre on the estimated service shares whether for very high bandwidth or high-bandwidth CISBO services. It argued that correcting for this error alone would show its service share estimates

for very high bandwidth CISBO services as below 10% in CLA and LP, below 20% in CBDs and less than 25% in the Rest of the UK.<sup>205</sup>

#### 4.2.4.3 Our overall assessment

- 4.277 As noted in the May 2015 Consultation, we recognise that dark fibre is a viable alternative to a leased line for some CISBO users. In principle, dark fibre could have some constraining effect on the prices a CP could charge to those users for an active service. However, the fact that prices for all CISBO services would be likely to be set on a bespoke basis in the absence of any regulation means that any such constraining effect would not protect the majority of customers. In light of stakeholder comments received, we have gathered additional evidence to further assess the strength of competitive constraints from dark fibre. The main sources of this further evidence are:
  - Information request to dark fibre users: we requested information from dark fibre end users. <sup>206</sup> This information request asked for details on the nature and reasons for using dark fibre compared to active services. We have also asked them about the prices of dark fibre compared to active services.
  - Consumer survey for Cl users: As discussed earlier, we commissioned BDRC to conduct an additional telephone-based consumer survey, focusing on endusers of services that used Ethernet and WDM leased lines connections. The survey explored end-users' awareness and consideration of alternative services, including dark-fibre.
  - *Meetings with stakeholders*: We had bilateral meetings with various operators in late 2015, where we discussed their views on the extent to which end users consider dark fibre and active services as substitutes.

# Evidence suggests dark fibre constraints are limited to a small minority of CISBO users

- 4.278 Evidence for this market review period shows that constraints from dark fibre are limited. This is based on the following grounds:
  - Dark fibre is not considered to be a close substitute by a large majority of CISBO users and it is mainly used by a niche customer segment;
  - The volume of dark fibre circuits is limited and hence will not have a big impact on the SMP findings in the CISBO market; and
  - Dark fibre is inherently capable of being used at any bandwidth and, in practice, is used across the CISBO product range. Hence, we do not assess its impact on the VHB segment separately. In fact, including dark fibre in the product market would tend to support the definition of a single product market without bandwidth breaks for this reason.
  - (i) February 2016 BDRC CI survey evidence

<sup>&</sup>lt;sup>205</sup> See BT response to the May 2015 BCMR Consultation, Part A, paragraph 5.5.

<sup>&</sup>lt;sup>206</sup> We requested information from the main dark-fibre operators on their end-users. Based on these responses we contacted end-users directly with a short set of questions and we received complete responses from 31 end-users.

- 4.279 In the February 2016 BDRC CI Survey, we asked respondents whether they were currently using dark-fibre solutions to connect *any* of their business sites. Overall, 17% of the sample interviewed claimed they were using dark-fibre solutions to connect their business sites. A greater proportion claimed some sort of use of dark fibre among the highest bandwidth users (42% for VHB services compared to 15% for high bandwidth and 6% for medium bandwidth). Overall, the (mean) average number of sites respondents claimed they had connected was 3.5.<sup>207</sup>
- 4.280 Awareness of dark-fibre was high for respondents irrespective of the speed of the main CISBO service they used. Almost all users with VHB connections were aware of dark fibre (98%); the equivalent figures were 94% for high bandwidth and 86% for medium bandwidth users.
- 4.281 Those who did not currently use dark-fibre were asked how likely they were to consider using dark-fibre as an alternative to their current communications service, using a scale of 1 (would not consider at all) to 10 (strongly consider). We found that respondents using higher bandwidth services were more likely to consider using dark fibre. 34% of VHB users gave a likelihood of between 7 and 10 compared to 23% for high bandwidth users and 15% for medium bandwidth.
- 4.282 The above results suggested that a larger proportion of VHB users in our sample were using dark-fibre. Furthermore, of those users not currently using dark fibre, a higher proportion of VHB users said that they were more likely to consider using dark fibre in future. Nonetheless, we found that a proportion of high and medium bandwidth CISBO users also claimed to use dark fibre. As there are currently many more users of high and medium bandwidth CISBO services than VHB users, this suggests that demand for dark fibre would be spread across high and medium and VHB users.
- 4.283 The (verbatim) reasons given for those either likely or unlikely to consider are listed in Table 4.2 below.

Likely to consider	Unlikely to consider
"Because you can scale up without having to pay any more. All you need is the equipment on either side of the dark	"Just because there is no need." (ELL≤100Mbit/s)
fibre." (ELL ≤ 1Gbit/s)	"I prefer a provider to do it for us." (ELL≤1Gbit/s)
business is very particular in the way it goes about things. It likes to own and control all elements. If I had a dark fibre I would own the network." (WDM)	"Because we are not interested in managing all these services ourselves." ELL ≤ 100Mbit/s)
"It sounds like an interesting alternative. Especially because of issues here digging up the roads." (ELL ≤ 100Mbit/s)	"We have never had a problem with our existing leased lines. It is much easier to get a managed service from Virgin or Ethernet than supply it ourselves. What we need is

# Table 4.2 Reason given for consideration or not of dark fibre

<sup>&</sup>lt;sup>207</sup> Figures 47 and 48 of the February 2016 BDRC CI Survey. We have not reported the average number of sites connected by different bandwidths due to very low sample sizes, but there do not appear to be significant differences between different bandwidth segments.

	[what] we get already." (ELL $\leq$ 1Gbit/s)
"Always looking all the time to upgrade to different connections. We need fibre as we need to deliver above 20mega across our sites." (ELL≤100Mbit/s)	"Dark fibre is more expensive" (ELL≤1Gbit/s) "I think we are comfortable and happy with
	what we have got already." (ELL≤100Mbit/s)
"I would consider Dark fibre if there was a supplier in our area. I would definitely look into it if there was a cost benefit. There is no harm in asking especially if there are benefits to it. However in our locality there	"No corporate policy to use dark fibre. Not a route our businesses would globally go in." (ELL≤1Gbit/s)
doesn't seem to be an option." (ELL≤100Mbit/s)	"Would not consider Dark Fibre because we have no expertise in implementing it. That is only reason." (ELL≤1Gbit/s)
"Independence and control. Potentially cost-dependent upon availability i.e. incumbent suppliers lack of duct sharing." (WDM)	"We have already looked into it does not do what we wanted we could not get it to work in Hull." (ELL≤1Gbit/s)
"We believe it gives the most flexible solution to move forward." (ELL≤100Mbit/s)	"Just because of the nature of the sites that it's connecting. The distance between them is quite a long way away." (ELL≤100Mbit/s)
"We would look into using Dark Fibre. We would look at the price and the resilience and if it gave flexibility. We would look at the pros and cons of using it." (ELL≤1Gbit/s)	
"I think if I can get access and light it's attractive as it gives us end to end service management capability." (WDM)	

Source: February 2016 BDRC CI Survey, pp 65-66.

- 4.284 As suggested by Table 4.2 above, the reasons given for those likely to consider dark fibre were: flexibility, control, price and independence. Those not likely to consider referred to: a lack of 'need', a preference for third party management, issues over cost and also availability.
  - (ii) Information request to dark fibre users
- 4.285 As noted above, we sent an information request directly to a number of dark fibre end users. The reported results below are based on our sample of dark fibre users that responded.
- 4.286 Overall, this information request suggested that dark fibre was sold to a relatively limited number of industry sectors; there was a concentration of demand within central London; and there were a small number of users that accounted for a significant proportion of dark-fibre demand.
- 4.287 Putting aside dark-fibre sold to the 'Communication and IT' sector (45% of the sample); 'Media and broadcasting' and 'Education and Research' (mostly universities) were the second largest sectors (each representing 13% of the sample). Other major sectors included 'Finance' and 'Local Government.' (10% of the sample each).

- 4.288 We did not find that company size was a significant determinant of dark-fibre demand. The sample suggested that demand for dark-fibre is split quite evenly between SMEs (46%) and large businesses (54%).
- 4.289 From our sample of users, 31 respondents provided information on the number of dark-fibre circuit pairs they purchase and in which locations. The aggregate number was 2,150 circuit pairs. However, one very large end-user accounted for a significant majority of circuit pairs. Excluding this end-user, the mean average number purchased by the sample was just over four circuit pairs. Again, excluding the largest purchaser, we estimate that around three fifths of these circuits were to sites within central London (i.e. the CLA).
- 4.290 The evidence also suggests that dark fibre customers do not consider active services as a close substitute:
  - We asked end-users why they chose dark fibre instead of an active service. Although end-users referred to value for money (where high installation costs were offset by the low ongoing costs of dark-fibre), they also mentioned flexibility<sup>208</sup>, reduced reliance on third party supply<sup>209</sup> and a long tail of other factors.<sup>210</sup>
  - In addition, we asked end-users to compare the price of their dark fibre service to the alternative active service. We note that around half of the respondents mentioned that they did not gather information on prices of active services, which further suggests that they do not consider it as a potential substitute to the dark fibre product.
- 4.291 Evidence shows that dark fibre use is not limited to VHB services. We asked endusers on the types of connection speeds they have over dark fibre. Out of a sample of 120 dark fibre circuits, 10Gbit/s was the most popular connection rate, however, around 23% of the circuits were used for a single 1Gbit/s. Results are shown in Figure 4.5.

<sup>&</sup>lt;sup>208</sup> Flexibility had a number of dimensions: flexibility to upgrade and to increase the number of wavelengths; ability to expand with no additional charges; flexibility over the services it can provide on the lines, with the option to run multiple services over the same line; flexibility of the bandwidth amount; flexibility with the process of scalability and the upgrade possibilities; and, commercial flexibility.

<sup>&</sup>lt;sup>209</sup> Reasons given for this included a) reduced incidences of faults, b) easier to debug, c) more reliable when managed in-house and d) direct reliability for the clients. Capacity was also an important reason. This encompasses those wishing for more network capacity, faster connections, and larger amounts of bandwidth for both themselves or clients. Similar to not wanting reliance on third party equipment, 'Control' was mentioned by end-users. This was in terms of being able to control speeds, ability to self-manage, and a desire to have independent lines.

<sup>&</sup>lt;sup>210</sup> This included reduced latency, security, existing infrastructure already being in place, stability, being able to offer clients wholesale services and no active services are available in a specified locations.



Figure 4.5: Number of circuits provided over dark fibre by type of services

Source: Ofcom 2016, based on analysis of a sample of dark fibre users

- 4.292 Further information that dark fibre is used to supply bandwidths other than VHB is provided in Annex 20 showing that:
  - [%]
  - [**\<**]<sup>211</sup>
    - (iii) Pricing meeting with CPs<sup>212</sup>
- 4.293 In our pricing meetings with CPs, we asked CPs about their pricing strategy for dark fibre services and their views on competition between dark fibre and active services. Evidence from these meetings is broadly consistent with our view that dark fibre exerts limited constraints on active services.
- 4.294 [X] said that dark fibre prices are generally below active services, but noted this is not necessarily the case. This is because dark fibre prices depend on the demand and supply of dark fibre on a route-by–route basis. It added that dark fibre is not in direct competition with active services. It rather sees them as complementary in some cases. [X] also mentioned that dark fibre is used by special customers as it has high start-up cost and requires special skills.
- 4.295 [⅔] considered that dark fibre becomes appealing as a customer goes up the bandwidth chain particularly at 30G or 40G. It considered that customers compare active services and dark fibre prices and their choice of service depends on the cost, security and ability to maintain a dark fibre service.

<sup>&</sup>lt;sup>211</sup> [**}**]

<sup>&</sup>lt;sup>212</sup> Pricing meetings with: BT on 29/10/2015, Colt 3/11/2015, Verizon 26/10/2015, Virgin Media 11/11/2015, Vodafone 13/11/2015, Zayo 4/11/2015

- 4.296 [3<] mentioned that it does not take dark fibre prices into account when pricing active services. It mentioned that it generally sets prices based on the available market intelligence data and dark fibre prices are not published.
- 4.297 Virgin Media mentioned that it does not see dark fibre as a substitute to active services and it required a different skill set to manage the service. [3<].
- 4.298 [≻].
  - (iv) Updated analysis of impact of dark fibre
- 4.299 We updated the analysis presented in the Consultation to assess the quantitative impact of the inclusion of dark fibre sales in the CISBO market and the geographic pattern of its impact.
- 4.300 Table 4.3 shows our estimates of the volume of dark fibre sales to end-users, compared to active sales in the CISBO market

Market segment	CLA	LP	CBDs	Rest of UK (excl. Hull)	UK Total
CISBO	32,563	12,467	14,033	264,743	310,758
Dark fibre	1,737	354	190	3,838	5,929
Potential share of dark fibre	5%	3%	1%	1%	2%

#### Table 4.3 Dark fibre and CISBO volumes

Source: Ofcom analysis. Geographic areas used in this table – the CLA, LP, CBDs, RoUK, and UK Total – are defined in section 4.3.

- 4.301 The table shows that dark fibre volumes are small in relation to CISBO volumes overall so including them in the CISBO market would make little difference to market shares. Even allowing for 2 3 wavelengths to be lit per fibre on average, dark fibre would account only for between approximately 3.5% and 5.5% of combined CISBO and dark fibre volumes in the UK as a whole.
- 4.302 Results also show that most dark fibre use takes place in the RoUK, although relative to total CISBO circuits, dark fibre is proportionately more common in London, in the CLA in particular.
- 4.303 Our updated analysis of the geographic distribution of dark fibre usage outside London (RoUK) finds that most postcode sectors contain no dark fibre ends. Postcode sectors where there is at least one dark fibre end are scattered throughout the RoUK and are not concentrated in the large cities outside London (the "CBDs"). Those postcode sectors with more than 10 dark fibre ends (91 out of 452 postcode sectors with at least one dark fibre end) account for some 70% of total dark fibre volumes in the RoUK, with an average of 29 ends per postcode sector.
- 4.304 In fact our analysis shows that a large proportion of dark fibre ends are sales to particular customers who buy a large number of ends at one location, and from one supplier. The postcode sector with the largest number of ends in the RoUK is a Bath sector, and 130 of the 144 dark fibre ends known to be in that postcode sector are purchased by a single customer in the publishing industry. Other large users appear to be media companies, universities, colleges and local authorities. We consider that this reinforces our view that dark fibre sales to end-users are a niche and not a guide to competitive conditions more generally.

#### We disagree with BT that excluding dark fibre underestimates competition in VHB

- 4.305 As set out above, BT argued that excluding dark fibre underestimates the level of competition, particularly in the VHB services. However, we disagree with BT and consider it would not be appropriate to assess the impact of the dark fibre on VHB services separately.
- 4.306 As the evidence above suggests, dark fibre is being used flexibly as an upstream service supporting a range of active services across different market segments: not just VHB. As we noted in the May 2015 BCMR Consultation, for users of dark fibre themselves, the boundary between product segments which are observable in active services makes little sense. Dark fibre is, by its nature, capable of being used to supply a service of any bandwidth and interface. The supplier of the dark fibre may itself not know what service is being provided over it, especially if it is part of a large, possibly multi-site, contract. Usage may also change over time if the need for capacity between different sites changes. We therefore consider that if we were to include dark fibre in the relevant market it would further strengthen the chain of substitution between CISBO services and provide additional grounds to define a single market.
- 4.307 Moreover, the evidence we have seen from both the February 2016 BDRC CI survey and from our pricing meetings with CPs suggests that a material proportion of retail dark fibre is used to support lower bandwidth services (i.e. not VHB). We provide further evidence on the use of retail dark fibre to supply lower bandwidth customers in Annex 20.
- 4.308 Therefore, if we were to assess the impact of including dark fibre on our competition assessment, we would include retail dark fibre sales in our estimates of service shares of the overall CISBO market, reflecting the fact that it is used to supply services at lower bandwidths as well as VHB. As retail dark fibre sales are small in relation to all CISBO circuits, they would not have a material impact on our assessment of competition.<sup>213</sup>
- 4.309 In any event, we continue to consider the constraint from retail dark fibre is not sufficiently strong to include in the same market as CISBO services. Instead, we take into account the "out-of-market" constraint of dark fibre in our assessment of SMP.

#### 4.2.5 Summary of our decisions for product market

- 4.310 Our decision on product market definition for this market review can be summarised as follows:
  - We define a single market for all CISBO services (i.e. a single market for wholesale Ethernet and WDM products at all bandwidths)

<sup>&</sup>lt;sup>213</sup> Notwithstanding our reservations on computing the impact of dark fibre on VHB services only, in the May 2015 consultation, we presented the potential impact of dark fibre on the VHB segment for illustration. This was primarily because we put weight on our analysis of competitive conditions in defining the relevant market for CISBO services. However, as this is no longer the case, and in light of the further evidence we have since obtained on dark fibre usage at lower bandwidths, we no longer consider this appropriate.

- We include EFM in the CISBO market but exclude asymmetric business broadband (NGA), finding that EFM exerts competitive pressures in particularly on lower bandwidth CISBO services and that NGA provides an additional, albeit weaker, out-of-market constraint.
- We exclude dark fibre from the product market. We consider it more appropriate to look at out-of-market constraints from dark fibre in the SMP assessment.

# 4.3 Geographic market definition

# 4.3.1 Introduction and summary

- 4.311 In this section we present our decision on the identification of relevant geographic markets for supply of CISBO services:
  - In sub-section 4.3.2, we explain our geographic analysis and proposals in the May 2015 Consultation;
  - In sub-section 4.3.3, we summarise stakeholders' comments on our proposals;
  - In sub-section 4.3.4, we respond to stakeholder comments and set out overall approach to geographic market definition; and
  - In sub-section 4.3.5, we present our geographic market assessment based on that approach and respond to stakeholder views on geographic markets.
- 4.312 In summary, we have defined three geographic markets for CISBO services in the UK (excluding Hull): the Central London Area (CLA), London Periphery (LP) and Rest of the UK (RoUK).
- 4.313 In our product market assessment, we identified a single CISBO market based on a chain of substitution between CISBO services at different bandwidths. Consistent with the single CISBO market, we find the presence and extent of rival infrastructure to be the main driver of competition. Consequently (and whilst we take into account other indicators), we consider that the CISBO market is more likely to be competitive at all bandwidths where there is sufficient rival infrastructure in an area, and conversely, BT is more likely to have SMP where there is insufficient rival infrastructure in an area. We consider that these observations are likely to hold even if observed service shares in a given area suggest competition is more or less intense in some bandwidths than others. The existence of a chain of substitution on the demand side and the potential for rapid expansion into other segments on the supply side (where infrastructure already exists) means that, once rival infrastructures are in place and sufficiently close to a customer site, the customer at that site will face similar competitive conditions regardless of the bandwidth it uses.
- 4.314 We do not look at customer choice on a site-by-site (or customer-by-customer) basis, as it would not be practical or proportionate to do so. Instead we identify geographic areas within which conditions of competition are sufficiently homogeneous, focusing on identifying areas where the presence and extent of rival infrastructure is more likely to be sufficient to support a finding that BT has no SMP, thereby allowing us to remove regulation at all bandwidths in that area.
- 4.315 For us to identify these geographic areas, we consider that most customers need to have a choice of provider for there to be effective competition in a particular area.

However, deciding whether there are sufficient OCPs for effective competition in an area requires a degree of judgement. For example, we need to account for the fact that a range of factors influence the ability of CPs to provide services to customers even in close proximity. The actual distance CPs are willing to dig will also vary by customer so we use a range of distances to improve robustness.

- 4.316 Our assessment of infrastructure competition suggests that the density of rival infrastructure in the CLA sets it apart from other areas of the UK as having significantly more rival network infrastructure. In contrast, in most of the rest of the UK, BT appears to face relatively little challenge from rival infrastructure. Most of the postcode sectors we examined in the RoUK have zero or one OCP present (typically Virgin Media). Nonetheless, our assessment of rival infrastructure suggests that two areas outside of the CLA require specific attention: the LP and the CBDs.
- 4.317 Both of these areas have a greater extent of rival infrastructure than the RoUK. We look in detail at both areas and conclude it is appropriate to define a separate market for the LP, as the extent of rival infrastructure in this area along with other competitive indicators and its contiguity with the CLA set it apart from the RoUK. We do not define a separate market for the CBDs, as our more detailed assessment shows they are more similar to the RoUK than the LP. Nonetheless, we consider variations in competitive conditions as between the CBDs and other parts of the RoUK in our SMP assessment.
- 4.318 We have also taken account of other indicators of competitive conditions, such as service shares and profitability. On the whole, we consider that these indicators are consistent with our assessment based on the presence of infrastructure.

#### 4.3.2 Summary of consultation proposals on geographic markets

- 4.319 We proposed to define the Central London Area (CLA), the London Periphery (LP) and the Rest of UK (RoUK) as geographic markets relevant to the supply of CISBO services.
- 4.320 We explained that the purpose of geographic market definition was to determine areas with competitive conditions that are clearly distinct from the surrounding area, and broadly homogeneous within. We identified such areas primarily on the basis of an analysis of variations in the extent of rival infrastructure. We noted that it would be neither practicable nor proportionate to attempt to deal with all geographic variations in competitive conditions by defining distinct geographic markets, and that variations in competitive conditions within markets could be taken into account as part of our remedy assessment.<sup>214</sup>
- 4.321 We relied on 'network reach' (NR) analysis (network reach is a measure of the average number of OCPs with infrastructure within a given 'buffer distance' of businesses at a postcode sector level) to identify candidate areas to assess in more detail. We identified the CLA, the LP, the RoUK, and the Central Business Districts (CBDs) as the initial set of geographic areas that showed differences in terms of the presence and density of rival infrastructure.

<sup>&</sup>lt;sup>214</sup> This is consistent with the BEREC common position on geographic aspects of market analysis (definition and remedies) at:

http://berec.europa.eu/eng/document\_register/subject\_matter/berec/regulatory\_best\_practices/comm on\_approaches\_positions/4439-berec-common-position-on-geographic-aspects-of-market-analysisdefinition-and-remedies

4.322 We present in Figure 4.6 a map of the UK showing at a high level some of the key areas of focus.



Source: Ofcom 2015. The area covered by the WECLA is equivalent to the CLA and the LP combined.

- 4.323 We recognised the CLA as an area with a particularly dense concentration of rival infrastructure and businesses, and with the greatest potential for competition for CISBO services of all bandwidths to be fully effective. We determined the CLA boundary as formed by postcode sectors fulfilling at least one of two conditions, which we used as our Boundary Test:
  - businesses having on average five or more OCPs within a 100m buffer distance, and;
  - businesses having on average four or more OCPs within a 100m buffer distance and in addition, 90% of businesses being within 100m of at least two OCPs.<sup>216</sup>
- 4.324 Our aim was to ensure that most if not all (potential) CISBO users in the CLA would be protected by effective competition.
- 4.325 We noted that the choice of criteria for drawing a precise boundary for the CLA is not straightforward, but that our assessment indicated that however the precise criteria are determined, the area that emerges is very similar to the CLA.<sup>217</sup>

<sup>&</sup>lt;sup>215</sup> Figure 4.6 shows how the presence of rival infrastructure – as estimated using our network reach analysis – varies across the UK, and presents larger scale illustrations for London and central areas of five other large cities where the presence of rival infrastructure appears to be considerably greater than in the rest of UK. Differences in the network reach values of the postcode sectors shown in Figure 4.6 are indicated using different colours.

<sup>&</sup>lt;sup>216</sup> We also included a small number of postcode sectors that were within the CLA boundary but which did not meet these criteria.

- 4.326 We proposed to define the outer boundary of the LP to be the same as that of the WECLA defined in the BCMR 2013. This was because we observed there had been limited changes in the extent of rival infrastructure and we considered that retaining the boundary would provide regulatory stability. We proposed to define the Rest of the UK as the UK outside the CLA, the LP and the Hull area. We proposed to define the CBDs as the central areas of five large cities outside London, where network reach and business density were higher than in other parts of the RoUK.<sup>218</sup>
- 4.327 Having identified these four geographic areas to focus on, we considered four indicators of competitive conditions:
  - The presence of rival infrastructure;
  - The distribution of service shares;
  - Pricing and profits; and
  - Other structural indicators of competition, including the scale and density of demand, the types of business present, and the extent of links to more competitive areas elsewhere.
- 4.328 We placed most weight on the presence of rival infrastructure. Our assessment of this 'presence' indicator considered differences in the proximity of infrastructure to businesses in each area; the number of rival networks; and their coverage. We considered that areas where the average business had two or more OCPs' networks within 200m had greater potential for competition than other areas. We used this metric as a way of identifying areas where competitive conditions appear to differ from the RoUK, at least to an extent that merits further analysis. However, we considered that areas were unlikely to be effectively competitive unless they satisfied the more stringent criteria used to define the CLA boundary.
- 4.329 Our assessment pointed to significant differences in competitive conditions between the areas, with conditions for competition appearing most favourable in the CLA, and least favourable in the RoUK.
- 4.330 We noted that competition in the LP benefited from its proximity to and interactions with the CLA as well as from a relatively high concentration of businesses and a high value of demand. These factors differentiated the LP from the CBDs which, moreover, comprised five small and geographically separate areas with significant variation between them. We observed that competitive conditions in the CBDs differed somewhat from those in other parts of the RoUK, but not sufficiently to mean that the CBDs should be defined as a separate geographic market, and that competition in the CBDs was unlikely to become effective or sustainable over the market review period.

We asked the following question:

Question 4.3: Do you agree with our approach to geographic market definition and our proposed geographic market definitions? In particular do you agree with our

<sup>&</sup>lt;sup>217</sup> In Annex 18 of the May 2015 Consultation, we conducted detailed sensitivity analysis for the CLA based on different presence criteria. Additional results are reported in Annex 10 of this Statement.
<sup>218</sup> For the purposes of our assessment, the CBDs were defined as blocks of contiguous postcode sectors with an average network reach of 2 or more, for a buffer distance of 200m.

proposals to define the Central London Area (CLA) and the London Periphery (LP) as separate geographic markets? If not, what alternative would you propose and why?

# 4.3.3 Stakeholders' responses

4.331 A number of stakeholders, including PAG members (Vodafone, Colt, TalkTalk and Sky) supported the geographic markets proposed, but thought we had overstated the amount of competition in the CLA for all CISBO services. On the other hand, BT and the IIG considered our approach masked the full extent of the London competitive area. They also considered a number of other urban areas should be identified as competitive; and that VHB CISBO services were competitive nationally. Below we summarise the main points raised, including overall views on geographic analysis; views on geographic areas; and contiguity.

#### Overall views on geographic analysis

- 4.332 The PAG (Vodafone, Colt, TalkTalk and Sky) submitted a report (produced by Towerhouse) on geographic analysis. In general the PAG report and other stakeholders supported our geographic markets. The PAG strongly agreed that CBDs are not sufficiently different from surrounding areas to justify separate markets. However, the PAG was concerned about our views on a fully competitive CLA for all CISBO services.
- 4.333 BT considered that we had erred in the geographic markets identified, which followed from not identifying separate CISBO product markets.<sup>219</sup> BT considered, in any case, that our geographic analysis started from the incorrect premise that markets were either national or local.<sup>220</sup> BT questioned Ofcom's view that the ability of CPs to compete using the same infrastructure was homogenous across different CISBO bandwidths. BT argued that CPs invest in their own network to serve as many of their target customers as possible.<sup>221</sup> BT's view therefore was that geographic markets followed where CPs had deployed physical access and core network infrastructure. It referred to these networks as 'spindly' targeted to business sites in comparatively dense clusters across the UK.
- 4.334 BT suggested four primary geographic markets:
  - a city market which extends beyond the WECLA for London and CBDs which have multiple CPs present and are fully competitive;
  - VHB services >1Gbit/s of all technologies which is nationally fully competitive
  - A market based on Virgin and EFM footprints for bandwidths up to and including 1Gbit/s

<sup>&</sup>lt;sup>219</sup> Namely separate CISBO markets for services up to and including 1Gbit/s and above 1Gbit/s. <sup>220</sup> BT argued that some firms' multi-site requirements may be concentrated locally and can be served entirely on-net by a provider with a network. Furthermore, 30% of business sites across the UK are within reach of 2 or more CPs, so a significant proportion of multi-site demand should be on-net. BT further noted that CPs target their network to customer concentrations, e.g. Colt targets customers wishing to connect across major European cities.

<sup>&</sup>lt;sup>221</sup> In other parts of BT's submission it noted that even if CPs have presence and are technically capable of serving customers, CPs will not necessarily target all of them due to marketing/sales costs.

- All other geographic areas in the UK not covered by the above.<sup>222</sup>
- 4.335 IIG observed that the CLA, LP and CBDs are at least as competitive as the WECLA in the BCMR 2013.<sup>223</sup> IIG submitted that although this may not have yet translated into substantially lower BT market shares, this would happen over time.<sup>224</sup>
- 4.336 Other respondents, however, thought that BT had a number of advantages relative to CPs including within the CLA. Six Degrees highlighted that BT is generally the "provider of last resort" in off-net connectivity therefore it was more likely to be viable for BT to extend its network than for its rivals. Hyperoptic thought that the definition of the CLA was too focused on business premises only.<sup>225</sup>
- 4.337 The PAG considered that BT's national footprint was important for competition in the supply of LLU and MNO backhaul. LLU and MNO backhaul purchasers have a preference for relatively few suppliers who can offer backhaul connectivity across a wide geographic area. BT's national footprint gives it the ability to supply all sites. As such, BT can leverage its advantage outside the CLA to those purchasing mobile and LLU backhaul on a national basis, including within the CLA. The PAG suggested our geographic assessment should at least assess connectivity to mobile base stations.
- 4.338 The Scottish Futures Trust suggested that we investigate the Scottish market in more detail and consider the requirements of SMEs based in rural Scotland.

#### Views on geographic areas

- 4.339 Stakeholders commented on the competitive indicators we used and the geographic areas we identified.
- 4.340 The PAG considered we should apply shorter buffer distances to our network reach analysis. Vodafone was concerned that Ofcom had used nationwide data for digdistances, whereas its evidence suggested shorter dig distances in the CLA, Vodafone noted that [3<]% of its digs in London were 40m or less. Colt suggested that a dig distance of 75m was more appropriate. Six Degrees also submitted that in its experience dig distances beyond 10-50m were not considered viable as supported by the median data presented by Ofcom.
- 4.341 PAG members argued that the cost of network build was often far higher in the CLA.<sup>226</sup> It stated that dig costs in the CLA could not be justified for 1Gbit/s and certainly not for 100Mbit/s CISBO services. Other stakeholders commented on

<sup>&</sup>lt;sup>222</sup> BT did not clarify but we presume this latter category to exclude the Hull area.

<sup>&</sup>lt;sup>223</sup> IIG considered that we underestimated the scope for efficient investment and entry by BT's rivals. In its view, CPs may be able to provide efficient networks in geographic areas with a smaller market share. In addition, other CPs may be better able to build new networks to reflect the current and future needs of customers. IIG referred to significant new investments by its members since the last review.
<sup>224</sup> IIG also noted that Ofcom appeared to treat the development and prospect of competition in Hull differently to the rest of UK where Ofcom had considered that investments by CityFibre indicate potential for competition (whilst ignoring this prospect in other areas).
<sup>225</sup> It thought that demand for CISBO services was expanding to other locations such as residential

<sup>&</sup>lt;sup>225</sup> It thought that demand for CISBO services was expanding to other locations such as residential buildings, advertising kiosks, street furniture. BT has a clear advantage in the CLA and to a lesser extent in the LP for these services, given the ubiquity of BT's ducts and fibre network over that of its rivals.

<sup>&</sup>lt;sup>226</sup> This is due to a large proportion of digs in the carriage way, which has implications for permissions and road closures and night working.

practical issues that raised the cost of dig particularly in the CLA.<sup>227</sup> BT and IIG argued for longer buffer distances based on evidence that a number of CPs had dug further than 100 or even 200 metres in the past.

- 4.342 The PAG expressed concern that the network reach indicator only measured potential rather than actual competition. It argued that we should account for the advantages BT has from its existing fibre and physical duct by looking at businesses actually supplied.<sup>228</sup>
- 4.343 The PAG also considered that not all competitors were equal and we should focus on 'Principal Operators'. The PAG argued that not all suppliers offer a comprehensive range of services (or wholesale to others) and therefore do not offer a direct constraint on BT throughout the market. The PAG considered that we should differentiate between suppliers and include only "Principal Operators" as we had done in other contexts such as Ofcom's WBA Market Review.
- 4.344 Some stakeholders considered BT had advantages in the CLA in the supply of specific access product types equivalent to BT's access product known as Ethernet Access Direct Local Access (EADLA). Hyperoptic considered there was a lack of competition from OCPs for EADLA equivalent services.<sup>229</sup> GTC and Sohonet also agreed with our geographic assessment, but had concerns over the availability of access services from Openreach in the CLA.<sup>230</sup> [3<] suggested that we look at the current outcomes for businesses in the CLA and use it as a measure of whether or not the market definition is appropriate.<sup>231</sup>
- 4.345 BT and IIG expressed concern that Ofcom now relied on a Boundary Test to identify competitive areas. They argued that we had changed, without justification or evidence, the threshold for determining competitive geographic areas:
  - BT and IIG noted that the new thresholds were way beyond standards used in the previous BCMR or other market reviews such as Ofcom's WBA review. IIG also considered we presented no hard evidence why the number of OCPs chosen was appropriate.

<sup>&</sup>lt;sup>227</sup> Six Degrees noted that there is a strong differentiation between radial distance and actual dig distance, and rarely are digs "as the crow flies". Therefore, it considered that a 100m radial distance seems overly optimistic. Colt also argued that not all flexibility points can be built from.
<sup>228</sup> The PAG argued that we should have considered the extent of BT's advantage based on the

<sup>&</sup>lt;sup>226</sup> The PAG argued that we should have considered the extent of BT's advantage based on the number of fibre connected buildings within the CLA. This tends to entrench BT's SMP over its existing customer base as there are high costs of switching to other suppliers who do not have a fibre connection. The PAG also noted that obtaining wayleaves were a material issue, particularly in multi-tenanted buildings within the CLA that BT would not face. The PAG argued that in order to take into account BT's advantages, we should augment our large business site database with NR analysis based on the location of currently supplied leased lines.
<sup>229</sup> It considered that when digging is required, the cost is prohibitive on a Local Access product and

 <sup>&</sup>lt;sup>229</sup> It considered that when digging is required, the cost is prohibitive on a Local Access product and also likely for a non-Local Access product as prices diminish over time.
 <sup>230</sup> GTC considered that a separate access market existed for the provision of fibre to newly-built

<sup>&</sup>lt;sup>230</sup> GTC considered that a separate access market existed for the provision of fibre to newly-built homes (FTTNH). Another CP, [3<], generally agreed but had concerns about de-regulation of the CLA. It noted its reliance on Openreach for access services, but it had access to alternative dark fibre providers to backhaul from those locations. <sup>231</sup> [3<] referred to the 'abysmal' broadband speeds for residential and business users in the

<sup>&</sup>lt;sup>231</sup> [3<] referred to the 'abysmal' broadband speeds for residential and business users in the Farringdon/Barbican area in London, which may suggest a need to subtly refine the definition in some places. It considered that the poor service in these areas seemed incompatible with the presence of many operators with their own infrastructure and inclusion within the CLA geographical market. It urged us to verify our findings with a reference to the 'reality on the ground'

- IIG referred to academic research<sup>232</sup> that suggests that three competitors are normally enough to ensure there is effective competition. IIG and BT also referred respectively to State Aid<sup>233</sup> and EC Guidance which was more consistent with a threshold based on fewer competitors.<sup>234</sup>
- City Fibre noted that the proposed five plus BT criteria would not in any case be consistent with sustainable competition.<sup>235</sup>
- 4.346 CityFibre noted that the Boundary Test results in Ofcom reducing the size of the market to be de-regulated compared to the WECLA in the previous review. BT submitted that the WECLA area was a mature and highly competitive area and service shares provide no support for a change to the CLA and LP. BT also referred to our analysis in Annex 15 of the May 2015 Consultation (Tables A15.8 and A15.15). It noted that we presented data in Table A15.8 showing that there were around 46,000 businesses located in high network reach (HNR) postcode sectors (defined on the basis that the average business had two OCPs within 200m) in the UK outside the WECLA, but when discussing Table A15.15 we then switched, without justification in BT's view, to a discussion of the proportion of businesses in the CBDs with at least 4 OCPs within 200m. We noted that this proportion was approximately 50%. BT noted that Table A15.15 showed that 95% of businesses in CBDs were within 200 metres reach of 2 or more OCPs.<sup>236</sup>
- 4.347 BT had a number of detailed criticisms on our network reach analysis (discussed further in Annex 10); and on the use of postal sectors as the geographic unit to assess network reach and with respect to our other indicators (discussed in Annex 16). BT's main concern was that our assessment based on postal sectors lacked accuracy as they were often too large to assess competitive conditions within a sector. BT considered in any case that there was no consistency between postal

<sup>&</sup>lt;sup>232</sup> IIG referred to papers by Xiao and Orazem (2011)

http://www.econ.iastate.edu/sites/default/files/publications/papers/p12147-2010-11-27.pdf and Bresnahan and Reiss (1991) http://pages.stern.nyu.edu/~acollard/bresnahan-reiss.pdf.

 <sup>&</sup>lt;sup>233</sup> EU State Aid guidelines assume no market failure exists in areas where there are or will be in the near future at least two broadband networks present and services are provided under competitive conditions.
 <sup>234</sup> BT considered the standards were not compatible with EC Guidance which referred to effective

<sup>&</sup>lt;sup>234</sup> BT considered the standards were not compatible with EC Guidance which referred to effective competition as the absence of joint or single dominance whereas Ofcom was adopting a standard akin to 'super effective competition'. BT further noted that Ofcom explained that it was setting a requirement that minimised the risk of tacit collusion, but BT submitted that no such requirement was applied in the BCMR 2013. In fact the boundary test criteria primarily reflect the need for multiple networks within the buffer distance of a customer site in order to give reasonable confidence that the customer will benefit from effective competition, but without implying a firm view on the minimum number of offers each customer must receive. Nevertheless, it should be evident that, while a number of market factors influence the risk of tacit collusion, coordination is more difficult the larger the number of parties involved in a given market or segment. See page 12 of:

http://ec.europa.eu/competition/mergers/studies\_reports/the\_economics\_of\_tacit\_collusion\_en.pdf

<sup>&</sup>lt;sup>235</sup> In respect of the number of CPs within the CLA, CityFibre presented what it referred to as 'REO -Reasonably Efficient Operator' analysis. It calculated that if the market were split between 6 CPs (5 plus BT), the cost-based price for active circuits would have to be [3<]. CityFibre considered therefore that the criterion could not be considered either efficient or appropriate, especially in areas outside of the CLA where business density can be expected to be lower.

<sup>&</sup>lt;sup>236</sup> Table A15.8 of the May 2015 Consultation presented data on businesses located in HNR areas.

sectors included and excluded from the CLA, and therefore it rejected entirely the new breakdown in London.<sup>237</sup>

4.348 In respect of VHB segments in particular, BT noted its low share nationally. BT also contested the view that its higher share at lower bandwidth would put it in a position for it to 'reassert' itself (i.e. regain market share) across the entire CISBO range. In relation to pricing and profits analysis, it submitted that there was no evidence of customer complaints; BT stated that its profits in a single year provide no evidence that competition is ineffective and we had not investigated other providers' profits.

## Contiguity

4.349 Some stakeholders commented on contiguity and size and scale of geographic areas. BT disagreed with the view that geographic markets require physical contiguity.<sup>238</sup> By contrast, the PAG welcomed the inclusion of structural factors that affect competition in different geographic areas. Its view was that subnational geographic markets should be of reasonable size (in terms of demand) and consist of areas located close to each other. Virgin stated that the CLA consisted of three non-contiguous areas and could be gamed. For example, even though CISBO services might be de-regulated in the CLA, a CP could request a circuit out of the CLA to the LP (claiming it as an LP circuit) and then join up with a circuit going from the (regulated) LP to another part of the CLA. Virgin thought the issues resulting from the CLA definition served to demonstrate that our approach to geographic analysis is flawed.

# 4.3.4 Ofcom's overall approach to geographic markets

## 4.3.4.1 Summary of approach

Our approach to defining geographic markets is to identify areas with similar competitive conditions, based primarily on the presence and extent of rival infrastructure.

4.350 As set out in Annex 16, in specifying the services to be included within a market, the EC regulatory framework requires the geographic scope of the market to be

<sup>&</sup>lt;sup>237</sup> BT referred for example to Ofcom's views that Kensington and Docklands have strong economic and physical links to the main CLA sectors. BT argued that these areas probably have just as strong links to other sectors in the LP and it was not obvious why Docklands (dominated by financial services) had particularly strong links to Kensington (which it does not) rather than Croydon. BT also noted that a postal sector including Kensington Gardens was included in the LP, but businesses in the Kensington postal sector are clearly fully competitively served. BT stated that the existence of a park was not a good basis to exclude postcode sectors from the CLA.
<sup>238</sup> BT did not agree with the view that CPs were unlikely to invest just to serve a single postcode

<sup>&</sup>lt;sup>238</sup> BT did not agree with the view that CPs were unlikely to invest just to serve a single postcode sector but would need to serve the wider local area. BT argued that this view was underpinned by the assumption that economies of scale and scope are likely local to neighbouring postcode sectors. It considered this view was invalid as CPs' supply closely follows customer site demand and the 'spindles' of CPs network. BT argued that HNR areas follow CPs' core networks quite as much as its access network. BT submitted that Slough and Croydon are just as contiguous with the CLA as are Manchester, Birmingham and Bristol.

specified. Our geographic markets analysis follows the SMP Guidelines<sup>239</sup> and we have also had regard to the BEREC Common Position.<sup>240</sup>

- 4.351 As set out in that guidance, our approach to defining geographic markets is to identify areas with competitive conditions which are broadly homogeneous within the area and clearly distinct from surrounding areas. In doing so, we are particularly interested in identifying areas that are already effectively competitive or have the potential to become so within this review period. This is because the purpose of defining geographic markets in the context of a market review is to delineate those areas where an operator may have SMP and therefore regulation may be necessary to address competition problems. Having identified areas where competitive conditions are sufficiently similar we can then assess whether BT has SMP in those areas, and if appropriate, apply the same package of regulatory interventions to address any such finding of SMP.
- 4.352 Our assessment of variation in competitive conditions is based primarily on the extent of rival infrastructure. In our product market assessment in sub-section 4.2 above, we defined a single CISBO market on the basis of a chain of substitution between CISBO services at different bandwidths. Consistent with the definition of a single CISBO market, we consider that, where there is sufficient rival infrastructure in place at, or sufficiently close to, a site, all customers will benefit from effective competition: even if indicators such as service shares point to a stronger position or variation for particular CISBO segments.<sup>241</sup>
- 4.353 The existence of a chain of substitution on the demand side and the potential for rapid expansion into other segments on the supply side (where infrastructure already exists) means that once rival infrastructures are in place and sufficiently close to a customer site, the customer at that site will face similar competitive conditions regardless of the bandwidth it uses. For example, the presence of a CP providing a particular CISBO service (e.g. a lower bandwidth) at a customer site makes it well placed to supply that customer with alternative CISBO services (i.e. higher bandwidths). Equivalently, if a CP already has infrastructure in place to supply VHB services, it will also be able to supply lower bandwidths at relatively low additional cost.
- 4.354 As a CP can use the same infrastructure to supply the whole range of CISBO services once in place, it is the presence and extent of rival infrastructure that is likely to be the main determinant of underlying competitive conditions in a given area.
- 4.355 However, we have also considered other indicators of competition in identifying geographic variations in competitive intensity. These other indicators include:
  - The geographic distribution of service shares;
  - Geographic variations in pricing and profitability; and

<sup>239</sup> See paragraph 56 of the SMP Guidelines.

<sup>&</sup>lt;sup>240</sup> ERG Common Position on Geographic Aspects of Market Analysis (definition and remedies), October 2008.

http://berec.europa.eu/doc/publications/erg 08 20 final cp geog aspects 081016.pdf. Updated BEREC Common Position dated 5 June 2014:

http://berec.europa.eu/eng/document register/subject matter/berec/regulatory best practices/comm on approaches positions/4439-berec-common-position-on-geographic-aspects-of-market-analysisdefinition-and-remedies <sup>241</sup> However, we recognise that higher-value sites are more likely to attract competition from OCPs.

- Geographic variations in other structural indicators (e.g. business density).
- 4.356 Assessing whether competitive conditions are sufficiently similar to define a single geographic market, and drawing the precise boundaries of that market are matters of judgement. Moreover, taking a proportionate approach to this exercise necessitates delineating distinct geographic areas even though the underlying reality may be that competitive conditions can vary to a degree both within and outside those areas.
- 4.357 This is a point recognised in the BEREC Guidelines on geographic market definition, and the SMP Guidelines: "The definition of the geographical market does not require the conditions of competition to be perfectly homogeneous. It is sufficient that they be similar or sufficiently homogeneous, and accordingly, only those areas in which the conditions of competition are "heterogeneous" may not be considered to constitute a uniform market."<sup>242</sup>
- 4.358 We therefore use a variety of indicators of competitive conditions and conduct sensitivity analysis around our assessment to ensure that our judgement is robust.

Most customers need to have a choice of provider for there to be effective competition in a particular area

- 4.359 In markets where prices are uniform and would be even in the absence of regulation, it may only be necessary for a sub-set of users to be willing and able to exercise choice between providers for there to be effective competition in the market as a whole. However, in markets where firms can tailor their prices to different customers in specific locations (and would do so in the absence of regulation), all customers need to be able to exercise such choice when negotiating with suppliers in order to secure competitive terms.
- 4.360 The features of business connectivity markets further increase the scope for price variations by contract. Demand for CISBO services is differentiated, e.g. end-users' demand varies in terms of the number and location of sites they need to connect; and in terms of the end-user applications and hence the service characteristics they require for their underlying connectivity. CISBO services are also often sold as part of a bundle of other services, such as management and IT services. End-users often use competitive tender to select a supplier for a new contract.<sup>243</sup> Other methods may also be used, more typically among end-users with fewer employees, such as going directly to a supplier website.<sup>244</sup>
- 4.361 The use of tendering and bundling of services mean that it is highly likely that prices for all CISBO services would be on a bespoke basis in the absence of any regulation.<sup>245</sup> We therefore consider that effective competition in the context of

<sup>&</sup>lt;sup>242</sup> See BEREC common position, page 8.

<sup>&</sup>lt;sup>243</sup> According to the May 2015 BDRC consumer survey (Figure 7.11), 22% of small users, 34% of medium and 42% of large business users used a competitive tender process when they last reviewed or changed service or supplier. Competitive tender was the most common method used to select supplier among these medium and large respondents.

<sup>&</sup>lt;sup>244</sup> In the May 2015 BDRC consumer survey we found that 29% of small users went directly to the website of the supplier they wanted, which was the most common method among these users. For medium and large users this method was mentioned by 26% and 16% respectively.

<sup>&</sup>lt;sup>245</sup> Even where end-users go directly to a single supplier, at the retail level, most suppliers rarely publish prices. Instead, they invite end-users to apply for a quotation ('terms on application'). We note that some CPs have online pricing tools that allow wholesale customers to generate automated

CISBO services requires that most users in a particular area have a sufficient number of OCPs with network close enough by that there will be competition for supply of services to these sites.

In the absence of direct evidence on individual customer choice, we are looking for a reliable proxy for identifying areas where the majority of customers are likely to have this degree of choice

- 4.362 In the BCMR, geographic market definition concerns the aggregation of areas which are not linked by demand- or supply-side substitution, but where competitive conditions are sufficiently homogeneous (and sufficiently distinct from the surrounding area) for them to be regarded as a single geographic market. We also recognise that we cannot prejudge the SMP finding at this stage. It is therefore useful to differentiate between, firstly: areas where competition is strongest and appears likely, even at this stage, to be effective; secondly, other areas where there is somewhat more competition than in the rest of the UK to an extent that merits further analysis, possibly leading to the definition of a separate market and/or variation in remedies; and, finally, the rest of the UK. We explain our approach and the criteria we use in this section.
- 4.363 Although we consider most customers need choice for an area to be effectively competitive, we do not look at available choice on a site-by-site (or customer-by-customer) basis. This is partly driven by the fact that it is not possible to obtain direct evidence on the choice each customer would have in the absence of regulation. In many CISBO services, BT has been subject to regulation that is likely to have reduced the potential for variations in price in response to differences in competitive conditions. Even where BT has not been subject to such regulation, it would not be possible to ascertain the price paid by each end user for CISBO services, given that CISBO services are typically provided as part of bundle of services, which can vary considerably from one customer to the next. It is often not possible to identify the component of any charge which is due to the CISBO service.<sup>246</sup>
- 4.364 It would also not be practical to analyse such a dataset: our data alone suggests there are CISBO circuit sales to over 0.3m customer end points in the UK; and we do not consider it would be proportionate or even realistic to expect to be able to define geographic markets at this granular a level. In Annex 16 we explain why it not proportionate or practical to undertake a more granular analysis.<sup>247</sup> Indeed, as discussed in Annex 16, the BEREC Common Position recognises that a balance needs to be struck between more granular analyses and ensuring the burden on operators and NRAs with regard to data delivery and analysis is reasonable.<sup>248</sup>

quotations. However, as demand remains location specific, whether prices are generated via bids or these pricing tools, CPs would still be able to price discriminate by route or customer site. <sup>246</sup> See also the discussion in paragraphs 5.209 – 5.211 of the 2013 BCMR Statement at

http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity/statement/Section5.pdf <sup>247</sup> Paragraphs A16.48 to A16.69.

<sup>&</sup>lt;sup>248</sup> See the BEREC common position on geographic aspects of market analysis (definition and remedies), paragraph 86 at:

http://berec.europa.eu/eng/document\_register/subject\_matter/berec/regulatory\_best\_practices/comm on\_approaches\_positions/4439-berec-common-position-on-geographic-aspects-of-market-analysisdefinition-and-remedies

This states that "Generally, the choice of distinct geographical units should satisfy the following criteria:

a. They are mutually exclusive and less than national.

- 4.365 Instead, we look for a reasonable proxy to identify areas where most customers are likely to have sufficient choice of provider for that area to be effectively competitive. In doing so, we start by looking at the average number of CPs, other than BT, with network within 100m and within 200m of each business site in each postcode sector. We also look at the proportion of businesses that have more than a given number of rivals to BT within those distances.
- 4.366 This is a significant exercise in itself as, even without the additional sensitivities and checks, the metrics we use to assess network presence entails analysis of:
  - 2,912,978 data points on OCPs' network location;
  - 163,021 large business sites; and
  - 10,049 postcode sectors.
- 4.367 Our measures of OCPs' network within certain "buffer" distances of end-user sites provide a useful guide to the presence and extent of rival infrastructure. However, the longer the buffer distance specified, the more likely it becomes that measures of the number of OCPs within that distance overstate actual choice for most customers.
- 4.368 In the first instance, the average network reach statistics for a given area may mask differences in network reach at different individual sites, or for different customers, within that area. The larger the area, the more likely it is that the average degree of choice available to customers within it will not be representative of the actual choice available to customers in parts of that area where network coverage is less dense and there are more gaps in coverage.
- 4.369 Secondly, variability in dig distances suggests that not all CPs will be prepared to dig as far as 100m for every contract.<sup>249</sup> The buffer distances we have chosen reflect the evidence we have seen on average and median dig distances, and are consistent with the balance of the submissions we have received from infrastructure providers. However, the distance a CP is willing to dig in practice will vary considerably from site to site, reflecting factors such as contract value and length, the number of other potential users on the site and differences in dig costs (e.g. due to the presence of roads or other obstacles) and where in practice a CP is able to dig from its own network. The greater the number of CPs within the specified buffer distance, the more likely that some will be significantly closer to customers and hence more willing and able to compete to supply a customer.<sup>250</sup>

b. The network structure of all relevant operators and the services sold on the market can be mapped onto the geographical units.

c. They have clear and stable boundaries.

d. They are small enough for competitive conditions to be unlikely to vary significantly within the unit but at the same time large enough that the burden on operators and NRAs with regard to data delivery and analysis is reasonable."<sup>249</sup> As explained in Annex 13, the 100m buffer distance (between the site and the CP's flexibility point)

<sup>&</sup>lt;sup>249</sup> As explained in Annex 13, the 100m buffer distance (between the site and the CP's flexibility point) assumption is a proxy for the dig distance. However, it may not be necessary to dig the entire distance between the site and the flexibility point where existing duct can be used.

<sup>&</sup>lt;sup>250</sup> In Annex 10, Table A10.40, we show the average distances of current customer-end locations to the nearest CP flexibility point by geographic area. For the CLA, we show that on average, the nearest CP is less than 20 metres from a customer site, the 3<sup>rd</sup> nearest CP is less than 40 metres, and the 6<sup>th</sup> nearest CP is less than 80 metres. This contrasts for example with the RoUK, where on

- 4.370 Thirdly, CPs have different business models and customers have different needs. As a result, not all CPs, other than BT, will be well-placed to supply all customers and may not bid for a given contract as a result.
- 4.371 Finally, customers may want multiple providers for resilience reasons (e.g. our survey of enterprise users found 25% of businesses surveyed use more than one supplier, and that resilience was the second most important feature when choosing a service provider (after availability)). These users will require a greater number of bidders in addition to BT to be able to exercise choice between providers effectively. And, in this context, a user may need significantly more providers with network within 100m in order to receive this minimum number of bids. This is because of the variability in dig distances and business models mentioned above.
- 4.372 We consider that areas where the average business had two or more OCPs' networks within 200m have greater potential for competition than other areas in the RoUK. We therefore use this metric as a way of identifying areas where competitive conditions appear to differ from the RoUK to an extent that merits further analysis. We use the following conditions (which we refer to as the Boundary Test) as a proxy for identifying areas where rival infrastructure is sufficiently dense and extensive for it to be possible to conclude at this stage that competition is likely to be effective across the CISBO market:
  - Businesses have on average five or more OCPs within 100m; and/or
  - Businesses have on average four or more OCPs within 100m and 90% of businesses are within 100m of at least two OCPs.
- 4.373 In our judgement, the Boundary Test criteria give reasonable confidence that a customer tendering for services within the boundary will benefit from effective competition. The criteria do not imply a firm view on the minimum number of offers each customer must receive. In addition to operator presence based on our network reach assessment, we also take into account the presence of EFM operators as discussed in paragraphs 4.390 to 4.393 below.
- 4.374 We recognise that we have to apply a degree of judgement as to the criteria to identify an area as effectively competitive. It may mean that when we draw the line, some customers who have an effective choice of provider may fall outside it. This is reflected in the BEREC Common Position, as discussed in paragraph 4.357 above. See paragraphs 4.399 to 4.403 below for a further discussion of the number of competitors used in our geographic analysis.<sup>251</sup>

#### 4.3.4.2 Stakeholder comments on our approach to geographic analysis

4.375 In reaching our conclusions on our approach to geographic market definition, we have had regard to stakeholder comments. In this sub-section, we set out our

average the closest CP is around 150 metres from a customer site and the next closest over 800 metres.

<sup>&</sup>lt;sup>251</sup> This approach is consistent with the BEREC common position. This states "NRAs have to strike a balance between two types of errors: "Type 1 errors", in which there is deregulation (or lighter regulation) where in fact regulation (or stronger regulation) would still be justified; and "type 2 errors", in which there is regulation (or stronger regulation) where no (or lighter) regulation would be justified" paragraph 169, *op. cit.* 

response to more detailed stakeholders comments.<sup>252</sup> Stakeholders' views are grouped by issue, focusing on (a) Network reach analysis; (b) the number and type of competitors used in our assessment of geographic areas;<sup>253</sup> and (c) contiguity.

#### (a) Network reach analysis

- 4.376 Stakeholders raised a number of points with respect to our network reach analysis, which are discussed in turn below under the following sub-headings:
  - i) Buffer distances and flexibility points
  - ii) Alternative site data
  - iii) Inclusion of EFM
  - iv) Use of postcode sectors
  - *(i)* Buffer distances and flexibility points
- 4.377 IIG and BT argued for a longer buffer distance. PAG members argued for a shorter buffer distance in the CLA with arguments for different distances, ranging from 40 to 75 metres.
- 4.378 Overall, we consider that our buffer distance assumptions are appropriate. We consider the use of a range up to 100 metres as appropriate for assessing competitive intensity. We also consider that analysis of network reach with a 200m buffer remains useful as a means of distinguishing areas where competition is likely to be more intense than the rest of the UK.
- 4.379 In Annex 13, we explain why we should use a buffer distance in the range 50m 100m to identify areas where competition in the CISBO market is most effective. In summary, we consider that using a buffer distance in this range:
  - is consistent with the data on actual dig distances which CPs have provided. We
    note that we need to exercise judgement however as operator's past build
    decisions are influenced by prevailing BT prices and any regulation in place.
    Hence, we consider, it is reasonable for the buffer distance to be longer than the
    distances actually dug in many cases; and
  - is consistent with the balance of what CPs have told us. For example the submission by Colt suggests a buffer distance of 75m.<sup>254</sup>
- 4.380 PAG referred to shorter build distances in the CLA. As set out in Annex 13, we find that the incidence of very long digs seems to be lower in the CLA than in the LP and the RoUK. However, the dig distances for all the areas are close together, and typical (median) dig distances in the CLA are not notably lower than in other areas. In the light of this, we do not consider that there is a strong case for a shorter (or longer) buffer distance in the CLA than in the other geographic areas.

<sup>&</sup>lt;sup>252</sup> In a number of cases these detailed stakeholder comments are discussed in more detail in the Annexes to this Statement. We refer to relevant Annexes in our discussion below.

<sup>&</sup>lt;sup>253</sup> We discuss the use of service share evidence and pricing and profitability and stakeholder views below, as these comments tended to be specific to particular geographic areas analysed.

<sup>&</sup>lt;sup>254</sup> See Annex 13 for more detail and our response to CP submissions on dig distances.

- 4.381 In Annex 10, we show that doubling or halving the buffer distance results in relatively small changes to the CLA boundary. As a result, we consider that the CLA boundary is robust. One reason is that in the CLA the proximity of network means that most postcode sectors easily pass our Boundary Test, whereas outside the CLA the average number of operators with network proximity falls away quite quickly. Hence, a relaxation of the criterion applied to identify the CLA does not result in the inclusion of a large number of additional postcode sectors.
- 4.382 BT argued that it has connections to many sites beyond our assumed 100 metres buffer distance. This may be the case but, for reasons set out in Annex 13, we do not consider it appropriate for the buffer distance to be determined by the longest distances dug. BT's actual recent digs are typically relatively short, both when compared to the assumed buffer distance and when compared to the distances dug by other CPs. In any case, it is unclear under what conditions BT made the connections in question. Some of BT's digs may have been carried out a long time ago under quite different market circumstances or may be in remote areas where BT is still the closest CP to a site.
- 4.383 BT and IIG emphasised that longer buffer distances were likely for sites consuming higher bandwidths where higher margins are available.
- 4.384 However, our analysis of actual build presented in Annex 13 does not suggest there is in general a strong positive correlation between actual build distances and CISBO bandwidth for services up to and including 1Gbit/s, although at higher bandwidths longer builds have been observed.<sup>255</sup> The correlation between the available margin at a site and circuit bandwidth may be highly imperfect, where contracts cover multiple services and sites.<sup>256, 257</sup> In addition, a given dig may be used to connect several end-user contracts at the same site, with each end-user consuming a lower bandwidth. So higher bandwidth customers may not always be associated with longer build distances than is the case for lower bandwidth customers.
- 4.385 BT argued that CPs could use points on their network other than flexibility points, whereas PAG members noted that not all flexibility points could be used. The PAG further noted that actual digs were often longer than the most direct radial distance we assumed in our NR analysis.
- 4.386 For our detailed response to the above comments on flexibility points, see Annex 10, paragraphs A10.47 A10.52.
  - (ii) Network reach: alternative site data
- 4.387 BT considered the use of large business sites skewed our analysis as it would include high street retailers, which might not require leased lines to connect to their high street stores. It suggested we analyse NR based on actual business sites

<sup>&</sup>lt;sup>255</sup> The evidence and discussion of past dig distances by operator and by leased lines segment is set out in Tables A13.4 and A13.5 in Annex 13.
<sup>256</sup> For example, an end-user might have a high willingness to pay for a low latency connection to

<sup>&</sup>lt;sup>256</sup> For example, an end-user might have a high willingness to pay for a low latency connection to support high-frequency trades or cloud services and connectivity to a data centre but the underlying speed of that connection might only be 1Gbit/s.
<sup>257</sup> If an end-user has the potential to win a high value contract for connectivity across a number of

<sup>&</sup>lt;sup>257</sup> If an end-user has the potential to win a high value contract for connectivity across a number of sites, a CP might be willing to dig to sites even if it would view the connection to a particular site as 'low value' (if it were sold as a circuit on a standalone basis). In this context, the willingness of a CP to build out to the end-user will be driven by the overall value of the contract, not the bandwidth at an individual site.

currently using leased lines. The PAG and some other stakeholders thought that our NR analysis should assess BT's significant advantage due to the number of existing connected buildings it had relative to competitors in the CLA. It also suggested we look at NR at LLU and mobile sites.

- 4.388 We address BT's comments on the use of large business sites in Annex 16, paragraphs A16.57 A16.58 and A16.64. We also addressed this issue in the 2013 BCMR Statement (paragraphs 5.124 to 5.134). We note that the inclusion of smaller businesses would be unlikely to materially affect our results.<sup>258</sup> In addition, we consider that NR analysis based on large business sites better captures the degree to which new demand in a postcode sector (which is likely to be associated with larger business sites) is potentially competitively served.
- 4.389 Finally, the results of our analysis in Annex 10 confirm that the CLA boundary and our geographic analysis more generally are robust to the different factors analysed such as use of smaller business sites. Our analysis also confirms high levels of NR at LLU exchanges and mobile sites.
  - (iii) Network reach: inclusion of EFM
- 4.390 BT also argued that we should expand our NR analysis to include areas where operators had the capability to supply EFM-based services.
- 4.391 We agree that EFM competitors should be taken into account in our overall market assessment as we have included EFM in the CISBO market (as discussed in subsection 4.2) and they will have a degree of competitive impact at least at lower bandwidths. However, we discuss in Annex 9 why have not included EFM operators in the network reach analysis:
  - Network reach analysis is not used to 'reveal' the location of EFM operators: EFM operators do not need their own networks near to customer sites. Instead they typically rely on upstream regulated inputs (LLU) to deliver Ethernet services over copper.<sup>259</sup> On this basis, an assessment of network reach, which looks at competing networks within the buffer distance of sites, is not needed to identify areas where they are able to supply customers;
  - *EFM 'presence' is unlikely to inform analysis of competitive variations across areas:* The primary purpose of the network reach test is to identify variations in competitive conditions for the purposes of geographic market definition. Those geographic variations in competitive conditions in leased line markets primarily reflect differences in the number of competing infrastructures. Hence, it is

<sup>&</sup>lt;sup>258</sup> We show in Annex 10 (Figure A10.46) that only relying on actual business sites results in 'patchy' geographic areas as a number of postcodes currently have no recorded sales of leased lines. Nevertheless, we found that the HNR areas we identified using the large business database had a good correlation with the areas of HNR based on actual sales.

<sup>&</sup>lt;sup>259</sup> In Annex 6 we note that as with other DSL services, EFM bandwidth is dependent on the distance of the customer premise from the BT exchange. Most CPs quote a practical limit for EFM of 4km, and at reduced bandwidth. However, we calculate that some 98% of businesses are within 4km of a BT exchange. Some construction work may be needed where multiple bonded copper lines are used to provide the bandwidth required.

unnecessary to include EFM operators in the network reach analysis in order to identify variations in competitive conditions; <sup>260</sup> and

- *EFM 'presence' is not equivalent to infrastructure presence:* as discussed in Annex 6, EFM can only be used to supply bandwidths of up to about 40Mbit/s, and the competitive constraint provided by an EFM operator is not equivalent to that of an operator with its own fibre infrastructure able to supply all bandwidths. Only a small proportion of leased lines are supplied using EFM, and the biggest user is in fact BT itself.
- 4.392 Notwithstanding these comments, we have assessed in Annex 10 the areas potentially served by CPs currently supplying 'on-net' EFM circuits based on presence at BT exchanges. The picture that emerges in relation to operator presence by geographic area is actually quite similar to our assessment using network reach for other CISBO services. There are a greater number of EFM operators present at BT exchanges within the CLA than in other areas. In the LP and other areas, the primary source of competition (alternative fibre infrastructure) is weaker or absent across all the CISBO bandwidths, including the higher bandwidths where EFM is not viable.<sup>261</sup> Moreover, even at the lower bandwidths, Virgin rather than EFM accounts for a greater proportion of CISBO segment activity in these areas.
- 4.393 In light of the above, we consider that competition from EFM and other sources is better taken into account in the service share and subsequent SMP analysis, in a way that is complementary to the network reach analysis.
  - (iv) Network reach: use of postcode sectors
- 4.394 BT expressed concern about use of postcode sectors as the choice of geographic unit as it thought they could result in the classification of sectors as low network reach (LNR) because of averaging across relatively large geographic units.<sup>262</sup>
- 4.395 We address these points in Annex 16, paragraphs A16.53 to A16.66. We refer to the BEREC guidelines on geographic market analysis, which highlight that the granularity of any analysis needs to be balanced against practicality considerations and the need to ensure clear and stable boundaries. Our analysis suggests that the resulting boundaries that would emerge from more granular geographic units would be broadly similar to those using postcode sectors, as confirmed by our sensitivity analysis in Annex 10. Hence, we continue to consider the use of postcode sectors is robust and remains appropriate.<sup>263</sup>
- (b) The number and 'type' of competitors used to identify geographic areas

<sup>&</sup>lt;sup>260</sup> As we noted above, EFM can in principle be used to supply customers throughout a very wide area and will account for little of the relevant geographic variation in competition to supply leased lines.

<sup>&</sup>lt;sup>261</sup> It is also interesting to note that the average number of EFM operators per exchange is highest in the CLA, somewhat lower in the LP and somewhat lower still in the CBDs.

<sup>&</sup>lt;sup>262</sup> That is to say some small and low spending businesses within a sector are not likely to be competitively served even if the businesses likely to purchase leased lines are (or would be) subject to competitive supply. It considered that we should view geographic markets in relation to 'spindles' of networks including access and core that are targeted towards clusters of customers. BT also stated that we had not considered that some larger businesses would seek to locate their sites where there was a range of competing fibre.

<sup>&</sup>lt;sup>263</sup> In the 2013 BCMR Statement, we discussed in detail the use of postcode sectors as our geographic unit for analysis, and similarly found them to be the most appropriate.

- 4.396 IIG and BT considered we had introduced without justification 'new' and tougher criteria for identifying competitive areas. They suggested that there was limited support for this approach within academic literature and other telecoms-related regulation. CityFibre submitted that the market could not support five CPs plus BT, especially outside of the CLA where business density can be expected to be lower.
- 4.397 CityFibre argued against the Boundary Test criteria on the basis that areas outside the CLA such as CBDs could never support BT plus five as the costs of entry would be too high for entry to be sustainable. CityFibre submitted a model that purported to support this view. CityFibre argued that we should apply a lower threshold.
- 4.398 PAG members suggested that we apply NR analysis only to 'Principal Operators' with significant regional/national footprints. On the other hand, BT and IIG considered that non-national providers could provide a competitive constraint and should be included in our network presence indicators.
  - (i) Number of competitors
- 4.399 We consider that BT and IIG members have mischaracterised the criteria used in our geographic analysis. In fact, we continue to use the two OCPs within 200m test as a means to identify areas where competitive conditions appear to differ from the RoUK, at least to an extent that merits further analysis. For example, in Annex 15 of the Consultation, we identified sectors with a network reach value of two or more OCPs within 200 metres as *"high network reach sectors"*.<sup>264</sup> Those HNR postcode sectors then formed the basis for our focus on London and surrounding areas (CLA and LP) and for our analysis of whether to define CBDs in the Rest of the UK as separate geographic markets.
- 4.400 IIG also seems to suggest that in the 2013 BCMR Statement we relied on two OCPs as a *sufficient* condition for identification of competitive geographic markets. In the 2013 Statement, we identified the WECLA as a geographic market, but not only on the basis of an average NR criterion of two OCPs within 200 metres. We discussed for example other network presence criteria such as the coverage of each CP in each geographic area.<sup>265</sup> Moreover, having identified the boundary of the WECLA based on geographic indicators, we found BT to have SMP for AISBO services up to and including 1Gbit/s and only found MISBO services to be competitive. Hence, our NR analysis (based on two or more OCPs) was not used to identify fully competitive geographic markets.
- 4.401 We have nevertheless placed significant weight on CP presence, and think that our Boundary Test is appropriate to identify the areas likely to be the most competitive. BT and IIG suggest that the number of competitors needed for effective competition is lower, with the implication that the Boundary Test is not needed to identify an area as effectively competitive. To support their views on the number of competitors needed for effective competition, BT and IIG referred to various studies. The main inference that BT and IIG draw from these studies is that three competitors (including BT) is enough.
- 4.402 We consider that our Boundary Test captures the reality of BCMR markets whereby the proximity of a rival CP with infrastructure to a particular business site does not always mean that the CP will compete for that user. As discussed in paragraphs

<sup>&</sup>lt;sup>264</sup> Paragraph A15.156 *et seq.* 

<sup>&</sup>lt;sup>265</sup> See for example Figures 5.7 to 5.9 of the 2013 BCMR Statement.

4.359 to 4.374 above, for leased lines markets, we think that a given number of OCPs with 'presence' will likely translate into a smaller number of competitive retail offers at the customer site. Our Boundary Test, therefore, provides a reasonable basis to capture these uncertainties. Therefore, we do not consider that direct comparisons can be made with other markets. In any event, as explained above, we examine competitive conditions in areas outside the CLA separately.

- 4.403 CityFibre argued that some geographic areas may not be able to sustain multiple competitors (i.e. the four or five competitors embodied in the Boundary Test). We do not consider that CityFibre's argument supports a change in the threshold for the Boundary Test. Even if correct, it would only tend to confirm that competition was unlikely to be effective in areas not meeting the Boundary Test. Consequently, we have not assessed in detail the reasonableness of CityFibre's detailed modelling assumptions.
  - (ii) Principal Operators
- 4.404 We do not propose, as the PAG suggested, to adopt a Principal Operator approach to assess leased lines terminating segments.
- 4.405 We have set out in Annex 16 the factors which can lead to competition being more homogenous between geographic areas and which might prevent or hinder the development of local competition, taking into account relevant stakeholder comments.<sup>266</sup>
- 4.406 In our Annex, we note that the majority of OCPs do not have a national footprint, but there are:
  - a small number of CPs such as Virgin, Vodafone with more significant national footprints; and
  - some players with very significant infrastructure presence in a particular area (such as Colt in London).
- 4.407 We note that absent regulation or a vibrant competitive merchant market, those CPs with regional footprints only are unlikely to be able to compete for national contracts that link sites in other parts of the UK. As we explain in Annex 16, the ability to source terminating segments from another CP, either at regulated terms in markets where there is SMP, or on commercial terms, is a prerequisite for national competition in these circumstances. Even then, a CP that relied to a large extent on 'off-net' provision would be likely to face higher forward-looking costs than a CP with sufficient network to self-supply the majority of links.
- 4.408 PAG members proposed we count only Principal Operators (POs) with significant national presence. The POs approach is based on a similar concept applied to geographic markets in our WBA market review. However, we consider that the

<sup>&</sup>lt;sup>266</sup> One of the main reasons given was that limited network size may hinder or prevent the CP being able to compete for connectivity across multiple-sites, certainly in the absence of regulation, but also where regulated inputs are available. This is because the use of third party (off-net) supply is usually significantly more expensive for a CP than using its own existing capacity.

inclusion of competitors with significant national coverage in the WBA review reflected the nature of competition in the downstream retail broadband markets.<sup>267</sup>

- 4.409 The 'Principal Operators' approach is not as useful in the leased line context as in WBA markets. For example, operators without national coverage are still key to competition in the CISBO market even if the competition is more localised. We would not disregard operators that can and do provide competitive pressure, particularly in the CLA, simply on the basis that they do not have a national network. Operators such as Colt, for example, have significant presence in the CLA, so should be relatively well positioned to deliver a multi-site deal within this area.
- 4.410 We also recognise that operators with network presence in an area may not compete at every site for every customer type even in the area where they have network. It may not be easy to identify which operators are competing for any particular site or service, and it may not be the same ones in all cases. As noted above, this is one of the key reasons for the assumptions we have made in our Boundary Test about the number of competitors necessary for effective competition. In addition, the CISBO market is changing as customers demand increasing amounts of bandwidth. As customers migrate to higher bandwidths, services which once were only used by a small number of "high-end" customers with specialised demands are increasingly being used by a much wider group of customers who are more typical of leased line users in general.<sup>268</sup> Some smaller CPs with existing infrastructure may choose to expand outside their existing customer base in response to these changes in the market whilst others may retrench or exit. In these circumstances, a CP's status as a niche player or potential "Principal Operator" may change over time.
- 4.411 IIG also referred to Ofcom's last WBA review where we identified competitive exchanges based on the presence of two or more Principal Operators. In relation to the number of competitors in broadband markets, we consider there is limited read-across to leased lines. The broadband market is clearly different as rivals in that market invest in co-location at BT exchanges to compete. Once present at an exchange, they can then rely on regulated LLU/VULA inputs to serve customers within that exchange area. This is relevant because, once a CP has unbundled an exchange, it can address all the customers connected to that exchange without needing to incur significant additional costs, unlike wholesale leased line markets where additional costs must be sunk to make the connection to each new customer site. As explained above (paragraphs 4.367 to 4.374), this is is reflected in our boundary test criteria.
- 4.412 We also note that counting only designated Principal Operators<sup>269</sup> as a relevant source of competition in the WBA review meant that a tail of smaller LLU operators was excluded. In practice, many exchanges had more than the minimum two

<sup>&</sup>lt;sup>267</sup> In those markets operators tend to provide a single national retail offer for services within 'unbundled' exchanges.

<sup>&</sup>lt;sup>268</sup> This is set out above in our product market definition. We discuss the implications of these market developments, which we refer to as "standardisation", in Annex 5 <sup>269</sup> In the WBA review, we defined Principal Operators (POs) as the providers that are likely to exert a

<sup>&</sup>lt;sup>269</sup> In the WBA review, we defined Principal Operators (POs) as the providers that are likely to exert a substantial competitive constraint on the other operators, across the UK. In order to assess which CPs to categorise as POs, we calculated the network coverage (in terms of UK premises) for each of the largest operators. The list of POs in the last market review was: BT, Sky, TalkTalk, Vodafone and Virgin. <u>http://stakeholders.ofcom.org.uk/binaries/consultations/review-wba-markets/statement/WBA-Statement.pdf</u>

Principal Operators present, and the presence of the latter may have been a signal that additional entry would follow.<sup>270</sup>

- (c) Contiguity
- 4.413 BT disagreed with requirements for contiguity. BT's view was that geographic areas could be 'logically' contiguous in the sense that areas isolated from each other could be treated as an 'aggregated group' for regulatory purposes. It considered Slough and Croydon are just as contiguous with London as are Birmingham and Manchester.
- 4.414 In Annex 16, we set out our view that geographic market areas of the UK do not necessarily always have to be strictly contiguous. However, we also note that local networks will tend to be contiguous and this is also likely to be true of local market areas because of the way leased line networks are created by incremental investment. An area which is adjacent to a competitive area will itself tend to be more competitive as a result. This is supported by our geographic analysis that results in (near) contiguous areas such as the CLA without a strict application of the contiguity criterion.
- 4.415 Our analysis, in any case, suggests that none of the areas BT identifies have competitive conditions sufficiently similar to the CLA.<sup>271</sup>

#### 4.3.5 Geographic market assessment

- 4.416 In sub-section 4.3.4 above, we explained our approach to geographic market analysis, in particular the geographic indicators we think are most relevant to our geographic market assessment and the weight we attach to them. Below we present our geographic market assessment based on our interpretation of these main geographic indicators in Table 4.4.
- 4.417 The network presence metrics in Table 4.4, based on average (NR) analysis and depth of network reach, confirm that the CLA, the LP and the RoUK including Central Business Districts (CBDs) are geographic areas that show differences from each other in terms of the presence and density of rival infrastructure. We note that on average at least two CPs are within reach both at 200 and 100 metres in the CLA, LP and CBDs. Hence, there is likely to be sufficient differences in network presence to warrant further analysis.
- 4.418 We discuss these four areas in turn.

<sup>&</sup>lt;sup>270</sup> In the WBA review, we identified competitive exchanges based on where at least two Principal Operators (in addition to BT) had entered or had firm plans to enter. However, a large number of the most competitive exchanges often had additional competitors present. For example, at a number of exchanges often TalkTalk, Sky, Virgin Media and Vodafone were present. Hence, many deregulated exchange areas often had depth in terms of the number of competitors to BT. In this context, we could be confident about deregulation of exchanges with two rivals to BT, as in many cases additional entry could be anticipated in those areas.

<sup>&</sup>lt;sup>271</sup> We discuss CBDs including Birmingham and Manchester and Slough in the LP. These areas are clearly not the same as the CLA. The average NR (at 100 metres) in Croydon is 1.28 and no Postcode Sectors in Croydon would pass the Boundary Test.
Competitive indicators	Metrics		CLA	LP	CBDs in other cities****	Rest of UK (exc. Hull)
Rival infrastructure	Average network reach* (100 metres)		6.2	2.5	2.8	0.8
	Average network reach (200 metres)		8.0	4.1	4.3	1.1
	Average network reach (500 metres)		9.5	6.5	6.9	1.9
		1+	100% (100%)	96% (99%)	97% (99%)	61% (71%)
	Depth of network reach – 100 metres (200 metres)**	2+	99% (100%)	68% (91%)	79% (95%)	15% (30%)
		3+	98%(100%)	40% (78%)	55% (84%)	5% (12%)
		4+	93%(100%)	22% (59%)	30% (65%)	2% (5%)
		5+	83% (98%)	11% (37%)	15% (46%)	1% (2%)
Distribution of service shares	BT share***	Low bandwidth TISBO	63%	69%	88%	94%
		CISBO up to and including	47%	50%	47%	58%
		- Low CISBO	41%	44%	40%	46%
		- Medium CISBO	55%	57%	54%	69%
		- High CISBO	35%	45%	48%	69%
		Very high CISBO	12%	16%	21%	32%
		CISBO Total (by revenue)	38%	42%	45%	55%
		CISBO Total (by volumes)	45%	48%	46%	57%
	Virgin Media share	CISBO up to and including 1Gbit/s	9%	25%	33%	30%
		Very high CISBO	11%	36%	58%	53%
		CISBO Total	9%	25%	34%	31%
	Combined BT and Virgin Media share	CISBO up to and including 1Gbit/s	56%	75%	80%	88%
		Very high CISBO	24%	52%	80%	85%
		CISBO Total	54%	73%	80%	88%
	Concentration (HHI)	CISBO Total	2,807	3,112	3,395	4,259
Pricing and profitability*****	BT pricing	AISBO	Free connections on EAD 1Gbit/s products between March 2013 and May 2014; uniform list prices otherwise		Uniform list prices	
		MISBO	[×]		Uniform list prices	
	BT profitability in 2014/15 (2013/14)	AISBO	48% (50%)		22% (25%)	
		MISBO	-		15% (45%)	
Other structural Indicators	Number of circuits	CISBO up to and including 1Gbit/s	30,597	11,705	13,783	256,165
		Very high CISBO (incl. MNO backhaul)	1966	762	250	8,578
	Number of businesses		4,239	3,378	4,428	149,816
	Square kilometres		33	232	132	246,756
	Business density (number of businesses per square kilometre)		128	15	34	1
	Linkages to the centre of London		-	Strong	Weak	Weak

### Table 4.4 Overview of relevant metrics in the four key geographic areas

\* Average network reach concerns the average number of OCPs with a flexibility point within the buffer distance (100m, 200m, and 500m) of businesses. NR is determined at postcode sector level. \*\* Depth of rival infrastructure reflects the proportion of businesses in an area that are located within the buffer

distance (100m, 200m) of X+ OCPs, within X varying from 1 to 5.

\*\*\* Low CISBO includes all Ethernet circuits up to and including 10Mbit/s. Medium CISBO corresponds to Ethernet services at bandwidths of more than 10Mbit/s and up to and including 100Mbit/s. High CISBO corresponds to Ethernet services of more than 100Mbit/s up to and including 1Gbit/s. CISBO up to 1Gbit/s includes Ethernet services up to and including 1Gbit/s (and thus covers low, medium and high CISBO). Very High CISBO concerns services capable of supplying bandwidth exceeding 1Gbit/s. CISBO Total covers CISBO of all bandwidths. Shares in CISBO segments include MNO and LLU backhaul.

\*\*\*\* In this table, data for the CBDs are shown in aggregate for reasons of space but they should not be thought of as a homogeneous area of comparable scale to the LP. Disaggregated data for individual CBDs are shown in Annex 10 of this Statement (Table A10.13 and see also Tables A15.15 and A15.17 of the May 2015 Consultation). All reported figures in the table for RoUK are inclusive of CBDs. \*\*\*\*\* Profitability based on return on capital employed presented in Annex 17 (Table A17.1).

Our assessment of infrastructure competition suggests only the Central London Area

(CLA) meets our Boundary Test Criteria

- 4.419 The CLA is one of several areas where competitive conditions appear to have some potential to differ, to a greater or lesser degree, from the RoUK. The CLA comprises all postcode sectors in the area previously defined as the WECLA that meet our criteria for an area likely to be effectively competitive based on our Boundary Test discussed in paragraph 4.372.<sup>272</sup>
- 4.420 In the CLA, there are many rival networks in close proximity to the majority of business sites, reflecting the rollout of infrastructure by CPs seeking to serve the high density of demand for leased lines services in the area.
- 4.421 The nature and density of business makes network deployment and extension far more attractive to CPs, as reflected in our network reach estimates. As shown in Table 4.4 above, on average, businesses in the CLA have 8 OCPs within 200m and 6.2 within 100m. Almost all businesses (98%) are located within 200m of at least five OCPs, and 93% of businesses are located within 100m of at least four OCPs.

This density of rival infrastructure sets the CLA apart from other areas of the UK.

- 4.422 Evidence on presence and density of rival infrastructure points to clear differences between the CLA and other areas in the UK, as well as some variation in competitive conditions between these other areas.
- 4.423 Having identified the areas likely to have the potential for effective competition, we are interested in assessing whether there are material variations in competitive conditions between those areas where BT is more likely to have SMP.
- 4.424 A high level assessment of rival infrastructure suggests, for the purposes of further analysis, the areas outside of the CLA can be grouped into three broad areas:<sup>273</sup>
  - The London Periphery (LP), which comprises all postcode sectors in the area previously defined as the WECLA that do not meet the Boundary Test criteria for effective competition.<sup>274</sup>
  - Central Business Districts (CBDs) of other urban centres, which tend to have similar numbers of rival networks as the LP, but each individual district tends to

<sup>&</sup>lt;sup>272</sup> We also included postcode sectors that came close to passing these criteria and were within the boundary of the CLA.

<sup>&</sup>lt;sup>273</sup> BT referred to the fact that there are some 46,000 businesses located in HNR sectors outside of the CLA, but these HNR areas are geographically spread and may only be a single postcode sector surrounded by LNR areas. We have focused on three distinct areas for the purposes of further analysis.

<sup>&</sup>lt;sup>274</sup> The CLA also includes a small number of postcode sectors which came close to passing and were within the CLA boundary.

be much smaller in terms of number of businesses and volumes of CISBO services supplied, especially for VHB services.

- The Rest of the UK (RoUK), where in most places there is no competitor to BT or only one other CP, typically Virgin Media, present.
- 4.425 In the RoUK, rival infrastructure is very limited. Only 30% of businesses in the RoUK (including CBDs) have two or more OCPs within 200m and only 15% have two or more OCPs within 100m. On average, businesses have only 1.1 OCPs within 200m and 0.8 within 100m.
- 4.426 In the LP and the CBDs, the extent of rival infrastructure, whilst greater than in the RoUK, is significantly lower than in the CLA. Within the LP, on average, businesses have 4.1 OCPs within 200m and 2.5 within 100m. Only 37% of businesses have five or more OCPs located within 200m and only 22% have four OCPs within 100m. The situation in the CBDs is similar: 46% of businesses are located within 200m of at least five OCPs, 30% of businesses are located within 100m of at least four OCPs and the average network reach is 4.3 for a 200m distance and 2.8 for a 100m distance.<sup>275</sup>
- 4.427 BT suggested that we identify geographic markets associated with where Virgin has network footprint.<sup>276</sup> We accept that Virgin is clearly an important competitor to BT. However, in postcode sectors in the RoUK and outside of CBDs, we observe that average NR is less than one. We do not consider that the presence of only one competitor will be associated with competitive outcomes. Hence, we do not consider that geographic areas of BT plus Virgin would generate sufficient differences in competition relative to other parts of the UK. Most stakeholders' responses, including the IIG's, supported at least two CPs plus BT as the minimum for competition.
- 4.428 We note that the Scottish Futures Trust (SFT) requested we also review SME demand in rural Scottish areas. In most cases, SME demand is more likely to relate to current or next generation access broadband services, which is the subject of our next WLA and WBA market reviews.<sup>277</sup> However, to the extent that SMEs consume CISBO services they will be protected by regulation as they fall within the RoUK.<sup>278</sup>

<sup>&</sup>lt;sup>275</sup> In Annex 10, paragraphs A10.201 to A10.213 include additional analysis on the variations in operator presence by different geographic areas. For example, Table A10.29 shows the percentage of business sites within 200m for each individual OCP. We estimate that the CLA has 9 OCPs within 200 metres to greater than or equal to 40% of business sites. This compares to the LP which only has 6 such OCPs, the CBDs which have 4 such OCPs, and the RoUK which has 1 such OCP.
<sup>276</sup> BT also referred to EFM footprints as an alternative basis for geographic market analysis. We have

<sup>&</sup>lt;sup>276</sup> BT also referred to EFM footprints as an alternative basis for geographic market analysis. We have addressed those points in paragraphs 4.390 to 4.393 above and take into account EFM as part of our <u>SMP</u> assessment.

SMP assessment. <sup>277</sup> For our previous geographic assessments affecting broadband access, see: <u>http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf</u> and http://stakeholders.ofcom.org.uk/consultations/review-wbamarkets/statement/

<sup>&</sup>lt;sup>278</sup> We also conclude that we will continue to regulate the market for low bandwidth TISBO services in the UK outside of the Hull area, so Scottish TI consumers will also be protected.

Other indicators of competitive conditions are consistent with our assessment based on infrastructure

- 4.429 We place most weight on the presence and extent of rival infrastructure in identifying variations in competitive conditions between these geographic areas, but we also have regard to other indicators of competition including the: (i) geographic distribution of service shares; (ii) geographic variations in pricing and profitability; and (iii) other structural indicators.
  - (i) Service shares
- 4.430 Evidence on service shares is less clear cut than the evidence of presence of rival infrastructure. Indeed, a number of stakeholder responses referred to service share evidence. PAG did not consider service shares supported a finding that the CLA was competitive for lower bandwidth services. IIG and BT argued that BT's low service shares for VHB segments suggested a competitive national VHB market (or at the very least one in the LP and the CBDs).
- 4.431 We discuss BT's and other stakeholders' more detailed comments on our service share analysis in Annex 10. We summarise here our views on BT's concerns about its currently low service share for VHB segments, which it suggested supported a delineation of the VHB segment nationally (and at the very least in the LP and CBDs).
- 4.432 We consider that it is unsafe to rely on current service shares alone as an indicator of substantial competitive differences, particularly for the VHB CISBO segment relative to lower bandwidth services. We have concerns about the reliability of service shares given the overall size of the VHB segment, particularly in the LP and CBDs. As the VHB segment is made up of relatively few individual contracts for multiple circuits this has particular implications for our interpretation of service shares, as:
  - a change of VHB provider could have a big impact on service share in a particular area.
  - expected migration of customers from lower CISBO to VHB services could rapidly change service shares.
- 4.433 In relation to the latter point, we note that BT, with the majority of existing fibre connections, would be at an advantage when competing for those customers. If BT retained a large proportion of its lower bandwidth CISBO customers upgrading to VHB services, then even relatively modest rates of upgrade could rapidly change its service shares.
- 4.434 Nevertheless, the variations are broadly aligned with differences in rival infrastructure in the sense that the CLA appears more competitive, the RoUK least competitive and the LP and CBDs in between. In particular, BT's share of the total CISBO market in the CLA is 45% by volume (38% by revenue),<sup>279</sup> 48% and 46% in the LP and CBDs respectively (42% and 45% by revenue), and 57% in RoUK (55% by revenue).

<sup>&</sup>lt;sup>279</sup> In the absence of CP revenue data, we have estimated revenue shares. We did this by weighting volume shares for each CP by BT's list prices for each service. Hence, any references to shares by revenue in Section 4 are based on 'list-price' weighted shares.

- (ii) Price and profitability evidence
- 4.435 Evidence on pricing is also consistent with these findings, but we attach less weight to profitability. Although BT prices its lower bandwidth CISBO products uniformly, we consider this likely to be the result of how BT has chosen to respond to the regulation of these products to date. The qualitative evidence on pricing of very high CISBO services points to competitive conditions in the CLA and possibly the LP being different from those in the other geographic areas.
- 4.436 Since the May 2015 BCMR Consultation, we have requested data from Openreach on any geographic discounts applied for CISBO services.<sup>280</sup> The period in question included Openreach's 'Flexzone' offer which provided discounts on [3<] charges in the WECLA. BT also had a [3<] for VHB CISBO services, [3<].
- 4.437 Our analysis suggests that [%].<sup>281</sup> [%].<sup>282</sup> [%].<sup>283</sup>
- 4.438 We further note that Openreach has not applied specific geographic discounts to CBDs and RoUK, which is consistent with our treatment of them as a single market.
- 4.439 We have placed relatively limited weight on profitability evidence for the purpose of our geographic market assessment.
- 4.440 In relation to profitability, BT considered that evidence of high profitability in relation to VHB segments based on a single year snapshot did not provide evidence that competition is ineffective. It submitted that Ofcom had not investigated the profitability of other providers for equivalent services. It also noted that there was no evidence of customer complaints with respect to BT's prices. PAG members on the other hand referred to high profitability of CISBO services in the CLA.
- 4.441 If there are differences in the intensity of competition between areas or segments, these may be reflected in differences in prices and profitability. In contrast, geographically uniform prices may be an indicator of homogeneity of competitive conditions. However, we place relatively limited weight on profitability for a number of reasons. In particular, profitability information is only available at the level of the markets where BT was found to have SMP in the previous market review (i.e. for the WECLA and non-WECLA areas). Thus, the profitability data available limit the extent to which a comparison of profitability can support the assessment of competitive conditions between geographic areas not previously defined as separate geographic markets. We further discuss profitability in our SMP assessment and Annex 17.
  - (iii) Structural indicators
- 4.442 Finally, the evidence on other structural indicators also points to competitive conditions in the CLA and to a lesser degree the LP being different from other

<sup>&</sup>lt;sup>280</sup> Ofcom Section 135 request of 16 October 2015.

 $<sup>^{281}</sup>$  [3<] circuits with both ends within the WECLA were entirely within the CLA. The remaining [3<] circuits were between the LP and CLA. For the [3<] circuits with one end within the WECLA, again, the vast majority [3<] had one end within the CLA.

<sup>&</sup>lt;sup>282</sup> We cannot tell from BT's data whether all the discounts applied to Openreach circuits were 'geographic' in nature as some of the discounts it applied were associated with volume discounts. But according to the information provided by BT, [3<].

<sup>&</sup>lt;sup>283</sup> Given that the LP accounts for around 28% of CISBO circuit ends, if competitive conditions were similar between the CLA and LP then we might expect BT's price discounts to be distributed between these areas roughly in the proportion 28:72.

geographic areas. In particular, there is a significantly higher density of businesses in the CLA with nearly 128 businesses per square kilometre and a concentration of financial, media and other businesses. These sectors are significant purchasers of leased lines as reflected in the total number of circuits sold in the CLA relative to the number of businesses present. Indeed, on average, we estimate a ratio of nearly eight CISBO circuits sold for each large business present in the CLA. This is more than double the ratio in the LP or CBDs.<sup>284</sup>

- 4.443 The business density and demand for leased lines are likely to continue to have a positive effect on competition to supply CISBO in the CLA.
- 4.444 BT and IIG suggested we retain the WECLA definition as a single competitive area. BT also had more detailed proposals either to expand the WECLA or to include additional postcode sectors in the CLA.<sup>285</sup>
- 4.445 Virgin observed that the CLA was not a fully contiguous area. It considered the CLA that resulted from our analysis and based on a mechanistic application of the Boundary Test could be gamed as a result. It thought that this served to undermine our geographic market analysis.
- 4.446 As discussed above, we consider that the CLA is substantially different from other areas in terms of the number of competitors and their coverage. The boundary is robust to a range of sensitivities as set out in Annex 10, paragraphs A10.216 to A10.226. We further conclude that the additional Postcode Sectors BT proposed to include in the CLA do not exhibit sufficiently similar competitive conditions to include them within that area.
- 4.447 The LP does not meet the criteria for effective competition seen for the CLA based on the extent of rival infrastructure. We observe that network reach as a whole in the LP is high relative to the RoUK, but it is much lower than in the CLA. This, in our view, does not provide a strong evidential basis to combine the CLA and LP as a single geographic area.
- 4.448 We do not consider, as Virgin suggests, that we have adopted an overly mechanistic approach to identify the boundary of geographic areas such as the CLA. We have identified the CLA based on the results of detailed sensitivity analysis and criteria.<sup>286</sup> In addition, in Annex 10, we note that we have included postcode sectors that fall within the CLA and that did not 'strictly' pass our Boundary Tests.<sup>287</sup> The resulting CLA is the one that best reflects where competition is most intense compared to surrounding areas.
- 4.449 We also consider that the risks of gaming described by Virgin would not occur in practice. In Section 10 we explain that our SMP regulation for CISBO services does not apply to circuits that have one (or both) ends within the CLA. Therefore, BT would not be required by regulation to provide circuits from the CLA to outside. Hence, Virgin Media's concern that OCPs could 'game' deregulation of the CLA by linking together multiple circuits between regulated and unregulated areas is unfounded.

 <sup>&</sup>lt;sup>284</sup> We estimate a ratio of nearly 8:1 for CISBO sales: large business in the CLA. In the LP this is 3.7:1; 3.2:1 in CBDs and 1.8:1 in the RoUK.
 <sup>285</sup> For example, BT proposed that we include N1C 4 (Kings Cross and Camden). Table A10.19 sets

<sup>&</sup>lt;sup>285</sup> For example, BT proposed that we include N1C 4 (Kings Cross and Camden). Table A10.19 sets out our assessment of the Postcode Sectors BT suggested we analyse.

<sup>&</sup>lt;sup>286</sup> Our approach to contiguity is discussed in Annex 16.

<sup>&</sup>lt;sup>287</sup> These are typically areas of low business density which create 'white spaces' within the CLA, but are likely to be competitive due to their proximity to surrounding areas.

While we consider the LP as a separate geographic market, we do not consider it appropriate to define a separate geographic market for the CBDs

- 4.450 A comparison of the network reach metrics set out in Table 4.4 above suggests that competitive conditions in the LP and the CBDs are similar, and this is reflected in the fact that our SMP findings are the same in both areas (see below). However, there are some differences in current and prospective competitive conditions in the LP which mean we think it appropriate to define the LP as a separate geographic market but not the CBDs, although this does not affect our SMP findings.
- 4.451 Firstly, while the overall infrastructure presence is superficially similar, the depth of competition is greater in the LP at least for some segments than in the CBDs. In Annex 10 (Table A10.39), for example, our analysis shows that in the LP 55% (85%) of VHB customer ends are within 100 (200) metres of four or more OCPs compared to 28% (64%) of VHB customer ends within CBDs. Differences in competitive conditions are also reflected in other measures of competition (such as the number of operators with a material service share and the concentration of service shares). The CISBO market in CBDs is highly concentrated with BT and Virgin holding a combined 80% share (and also 80% in the VHB segment). These levels of concentration in the CBDs are close to those seen in the RoUK, where the combined BT and Virgin share is 88% for all CISBO segments and, in the VHB segment, 85%. The CBDs have only two CPs with a service share of over 10% in the very high bandwidth (VHB) segment (BT and Virgin Media), which is the same as the RoUK. In contrast, the LP has four CPs with a service share of over 10% in this segment. The HHI index for VHB services in the CBDs is correspondingly higher than the LP (3,937 compared with 2,240) and again more aligned with that of RoUK (3,860).
- 4.452 Secondly, as set out in Annex 16 (paragraphs A16.18 A16.19), the CBDs do not benefit from the close physical links of the LP to the central London area. CPs are likely to find it more attractive to invest in incremental network expansion in the LP than in the CBDs because the geographic proximity of the LP to the central London area (CLA) presents the potential for CPs with network in the CLA to benefit from further economies of scale and scope. Such economies apply to a much lesser extent in each of the CBDs, five small and geographically separated districts whose surrounding areas show little demand for leased lines and low network reach.<sup>288</sup> In addition, although average business density is higher in the CBDs, the number of businesses and the volume of circuits in each of the individual CBDs, especially at very high bandwidths, are much lower than in the LP.
- 4.453 Finally, leased lines services in the LP have not been subject to full charge control regulation as part of the WECLA, whereas services in the CBDs have been fully regulated.<sup>289</sup> We consider this may be a relevant distinction when we come to consider remedies as we explain in detail at Section 8, we consider it appropriate to differentiate the remedies in the LP relative to the RoUK, in particular not imposing price control regulation on VHB services in the LP.

 <sup>&</sup>lt;sup>288</sup> For a definition of economies of scale and scope and a discussion in the context of SMP analysis, see Annex 9, paragraphs A9.66 – A9.79.
 <sup>289</sup> As a result of the BCMR 2013, in the WECLA, we required BT to provide AISBO services on

<sup>&</sup>lt;sup>289</sup> As a result of the BCMR 2013, in the WECLA, we required BT to provide AISBO services on regulated terms, with prices for AISBO services subject to a safeguard cap. There was no regulation for MISBO services in the WECLA. Outside the WECLA (excluding Hull), we required BT to provide AISBO and MISBO services on regulated terms. Prices for Ethernet services (including MISBO singleservice Ethernet services) were subject to a full price control. Charges for WDM services were not subject to any controls or price caps.

- 4.454 For the CBDs, the available evidence points to fewer OCPs being successful in providing services in these areas. Service shares in these areas are more concentrated as a result, and the prospect for incremental infrastructure expansion (even in the absence of any remedies) is lower than in the LP. In CBDs, the low volume of VHB services makes it less likely that a VHB segment, on its own, could support entry of a competitor looking to supply that segment. The very low volume of sales in this segment also means that shares are vulnerable to rapid and significant change, as customers move up the bandwidth chain.
- 4.455 As CBDs would therefore have the same SMP finding and remedies as the RoUK, we do not define separate geographic markets for the CBDs in this market review.

Commission comments on CISBO geographic market definition and remedies

- 4.456 We notified our draft statement to the European Commission, BEREC and the national regulatory authorities of other member states in line with the consultation process set out in Article 7 and Article 7a of the Framework Directive. In the Commission's response to our notification, it made two comments, one of which concerned the identification of geographic areas which are suitable for lighter remedies. We summarise and respond to this comment below:
  - 4.456.1 In its comments on the draft Statement, the Commission said that it welcomed our decision to deregulate or impose lighter remedies in areas where infrastructure-based competition has developed in recent years. However, it commented that a more granular differentiation of remedies in areas where there was some actual infrastructure-based competition could reduce the likelihood that CPs would reduce investment or even exit the market.
  - 4.456.2 It considered that our approach could be developed further "in order to more accurately reflect the competitive conditions of a given area". In particular, it considered that we could develop a test, similar in concept to that used to define the boundary of the CLA, but with different parameters, which could then be used to identify other areas where the lighter remedies could be applied. It suggested that, if this were done, it might then show that areas such as the five CBDs were also suitable for lighter remedies.
  - 4.456.3 The Commission therefore asked us to "consider...a lighter set of remedies, not only in the LP area, but also other parts of the UK territory, including the five CBDs, based on a set of clear criteria reflecting all relevant parameters of the state of infrastructure-based competition therein."
  - 4.456.4 We have considered the Commission's comments and agree that it is important to consider how competitive conditions vary across geographic areas for both our SMP assessment and our consideration of remedies. We also agree that a range of parameters is relevant to this assessment. In light of the Commission's comments, we have looked again at our assessment of whether to define separate markets for the LP and CBDs (set out in paragraphs 4.450 - 4.455 above) as this reasoning is also applicable to our identification of areas where it may be appropriate to apply lighter touch remedies than in the RoUK.
  - 4.456.5 The factors we have looked at are:

- a) Network reach. Network reach provides a useful indication of the degree of rival infrastructure available in a particular geographic area, and hence is a good starting point for identifying areas with greater infrastructure based competition. We consider areas where there are on average at least two CPs within reach both at 200 and 100 metres are sufficiently different from the RoUK in terms of their network presence to warrant further analysis.
- b) Depth of competition. Network reach figures are a useful means of summarising the degree of rival infrastructure in a particular area but as they capture the average degree of choice facing individual customer sites, they do not give a complete picture of rival network coverage. As a result, a more detailed analysis of available infrastructure is important to understand the degree of infrastructure competition in a particular area.
- c) Degree of concentration. The degree of market concentration (as captured by measures such as the number of rival operators with a material market share and the HHI index) is also relevant to identifying areas of greater infrastructure-based competition.
- d) Scale of local market. For reasons explained in Annex 16, the overall scale of the local market will determine the number of suppliers which can operate economically, with competition more likely to be sustainable in markets which are large enough for more than one CP to operate at a reasonably efficient scale. A larger local market is also more likely to be able to support an active merchant market.
- e) Prospects for incremental infrastructure investment. Network expansion tends to occur on an incremental basis, with CPs preferring to build around existing network assets (all else equal) to benefit from available economies of scale and scope. As a result, a CP with a focus on a particular geographic area is more likely to expand incrementally into a contiguous area than to a distinct area in another part of the UK (where demand conditions and other factors are otherwise similar). We therefore look at prospects for incremental infrastructure investment by considering the size of the CISBO market in surrounding areas and the degree of existing rival infrastructure present in these areas.
- f) Historic regulation. One of the remedies applying in the RoUK which we consider may be appropriate to vary in areas with greater infrastructure-based competition is a safeguard cap on VHB services. To this end, we consider it relevant that some geographic areas are currently subject to a safeguard cap on these services and others are not.
- 4.456.6 For the purpose of this review, we have looked at these factors together to assess the state of infrastructure-based competition with a view to identifying areas suitable for lighter-touch remedies. We note that the only additional factor identified by stakeholders as being potentially relevant to competition in these areas was BT's share of VHB services. However, we do not put much weight on service shares for individual segments of the CISBO market for reasons set out in Annex 5 and so do not include them in our analysis here.
- 4.456.7 In light of the Commission's comments, we have also considered whether we could reformulate our assessment of these factors as a set of definitive criteria to produce a "bright-line" test. However, we consider the qualitative nature of some of the factors we have considered (e.g. the prospects for

incremental infrastructure investment) mean they are not amenable to being expressed in a similar manner to the Boundary Test criteria we have used to inform the boundaries of the CLA. Rather, we consider it appropriate to exercise our judgment based on an overall assessment of these factors in the round. We also note that the Boundary Test was not applied mechanistically to define the CLA. We considered a number of alternative ways of specifying the CLA boundary test but found that the area which emerged was very similar in each case, such that the precise criteria did not have a significant bearing on the boundary defined.

- 4.456.8 In applying our assessment of areas where lighter touch remedies may be appropriate, we continue to consider that it is not appropriate to include the CBDs. As we set out in paragraph 4.454, we find that for the CBDs, whilst network reach figures appear similar to the LP and at a level which warrants further analysis (see paragraph 4.417), the available evidence points to the depth of competition being considerably lower than in the LP. For example, in paragraph 4.451, we note that in the LP 55% (85%) of VHB customer ends are within 100 (200) metres of four or more OCPs compared to 28% (64%) of VHB customer ends within CBDs. Evidence on concentration measures also points towards fewer OCPs being successful in providing services in the CBDs. In paragraph 4.451, we set out evidence on the combined share of BT and Virgin, the number of OCPs with a material service share and the HHI index, all of which show that market structures in the CBDs are highly concentrated, and much more closely aligned with the RoUK than the LP.
- 4.456.9 In paragraph 4.452, we consider the potential for incremental infrastructure investment in the CBDs and conclude that five small and geographically separated districts whose surrounding areas show little demand for leased lines and low network reach are likely to have limited prospects for incremental infrastructure expansion (even in the absence of any remedies). In paragraph 4.452, we also note that, although average business density is higher in the CBDs, the number of businesses and the volume of circuits in each of the individual CBDs, especially at very high bandwidths, are relatively low. In paragraph 4.454, we note that the low volume of VHB services in these areas makes it less likely that a VHB segment, on its own, could support entry of a competitor looking to supply that segment.
- 4.456.10 In addition, we note that (in contrast to the LP) VHB services in the CBDs are currently subject to a safeguard cap. In the LP, where some current VHB CISBO users already have an effective choice of supplier, our concern is to protect the prospective users who we expect will migrate from lower bandwidth services. In the CBDs and other areas, where the VHB segment is much more highly concentrated than in the LP, we are also concerned to protect current customers of VHB CISBO services. This is an important difference because, in the absence of regulation, BT would be able to make bespoke unpublished offers in order to compete. However, in areas where competition is weak, BT could use this pricing freedom in the VHB segment to behave anti-competitively in order to discourage expansion of competing infrastructures.
- 4.456.11 We do not consider it necessary to go further than our assessment of the CBDs and explicitly consider other areas in the RoUK against these criteria. This is because when we identified the CBDs as areas for further analysis,

we selected them because they were the best candidates outside the CLA and the LP for there to be some degree of effective competition. As we explain above, the underlying reason for the success of competition in the CLA is the concentration in a small area of a large number of businesses, particularly those in the financial services sector which have a high demand for leased lines. In our judgement, the CBDs are the areas outside London where these conditions are most likely to be replicated, to a degree, as they are the five largest financial districts outside of the London area.

- 4.456.12 We have assessed, applying the factors set out above, whether infrastructure competition in the CBDs is sufficient to warrant defining separate markets and/or differentiating remedies in these areas from the RoUK, and we conclude it is not. As we find that competition in other areas outside the CBDs is less strong still, we do not consider there is scope for lighter touch remedies in any other areas in the RoUK.
- 4.456.13 We note that it may also be relevant that, in the internal BT pricing documents which we have obtained, [3<].
- 4.456.14 Nonetheless, in light of the Commission's comments, we have considered whether a more granular differentiation of remedies could reduce the risk of harm to rival infrastructure. We do not believe the imposition of a safeguard cap on VHB CISBO charges will dis-incentivise investment in the CBDs or elsewhere in the RoUK. One reason is that a safeguard cap is not usually expected to be the primary constraint on prices and will in many cases not be binding. Traditionally, safeguard caps have been used precisely because they have good incentives for investment since they do not force prices down to cost, and in situations where competition is expected to develop further in future, perhaps then leading to the removal of all controls. Indeed, as we noted in Section 8 (paragraph 8.218), the ability to earn margins above BT's costs on these services may help competitors who lack BT's economies of scale and scope but nevertheless bring dynamic benefits to end customers. The safeguard cap we are imposing on VHB CISBO prices in the CBDs will allow prices to remain constant in nominal terms, but margins are high and in practice we expect larger real reductions in costs and prices, with nominal price falls over time.
- 4.456.15 In addition, in the event of unexpected adverse effects in the CBDs, we could carry out an interim review of remedies during the life of the control.

#### 4.3.6 Our conclusions on geographic areas

4.457 Reflecting variations in the presence and extent of rival infrastructure, as well as evidence on other indicators of competitive conditions, we define geographic markets for CISBO services in the CLA, the LP and the RoUK.

# 4.4 Assessment of market power in relevant markets

# 4.4.1 Introduction

4.458 We now present our assessment of market power, including our SMP findings for the relevant geographic markets for CISBO services identified above.

- In sub-section 4.4.2 we summarise our proposed market power assessment and SMP findings as set out in the May 2015 Consultation;
- In sub-section 4.4.3 we summarise stakeholder comments on our proposals;
- In sub-section 4.4.4, we set out our SMP findings and supporting reasoning, including our response to those stakeholder comments; and
- In sub-section 4.4.5, we summarise our conclusions.

#### 4.4.2 Summary of consultation proposals on SMP

4.459 In our May 2015 Consultation, we presented our proposed market power determinations in the markets for CISBO services, finding no CP to have SMP in the CLA, and finding BT to have SMP in the LP and RoUK.

#### Market power assessment in the Central London Area

- 4.460 We explained that our proposed no SMP finding in the CLA was based primarily on the significant presence and density of rival infrastructure in this area. We considered that the extent of rival infrastructure showed that OCPs could use their existing infrastructure to compete effectively to supply CISBO services due to the close proximity of several OCP networks to most (potential) CISBO users in the CLA. In addition, the high density of businesses and demand for connectivity services meant that entry barriers were of much reduced significance in the CLA.
- 4.461 We recognised that BT's share of the CISBO market in the CLA is at a level consistent with single firm dominance. In addition, although BT's AISBO prices were below the maximum permitted by the safeguard cap which currently applies in the area, we considered that the overall evidence on pricing and profitability was also consistent with a finding of BT SMP.
- 4.462 Overall, we placed greater weight on the extent of rival infrastructure supporting competition for CISBO services at any bandwidth in proposing that BT does not have SMP.

#### Market power assessment in the London Periphery

4.463 We proposed that BT has SMP in the CISBO market in the LP. This was because:

- BT derived an advantage from its greater ability to exploit economies of scale and scope than OCPs;
- Our network reach analysis showed that the presence and density of rival infrastructure was much lower than in the CLA;
- BT's market share was consistent with SMP and the market was highly concentrated;
- As in the CLA, the overall evidence on prices and profitability was consistent with an SMP finding;
- Business density was much lower than in the CLA.

### Hypothetical market power assessment for the CBDs

- 4.464 While we did not propose to define the CBDs as a separate geographic market (instead we included CBDs in RoUK), we noted that we would have found BT to have SMP if the CBDs had been defined as a separate market. This was because:
  - BT had a significant competitive advantage over other CPs arising from its more extensive network and from greater economies of scale and scope;
  - There was insufficient competing infrastructure for competition to be effective;
  - BT's share of CISBO services was consistent with an SMP finding;
  - Prices appeared to be uniform throughout the RoUK including the CBDs and prices and profits were consistent with SMP.
  - In addition, we explained that the evidence suggested that competition in the CBDs was less strong than in the LP.

#### Market power assessment in the Rest of UK

- 4.465 We proposed to find BT to have SMP in the market for CISBO services in the RoUK. This was because:
  - BT derives a significant competitive advantage from its ubiquitous network and from economies of scale and scope;
  - There is a limited amount of rival infrastructure, which is insufficient for effective competition;
  - BT has a very high market share consistent with a presumption of SMP and the market is highly concentrated;
  - Pricing and profitability were also consistent with finding BT to have SMP in this market;
  - We did not expect BT's position to change materially over the period of the review.

We asked the following question:

Question 4.4: Do you agree with our approach to SMP assessment? In particular, do you agree with our proposals to find no CP to have SMP in the market for CISBO services in the Central London Area (CLA), and to find BT to have SMP in the markets for CISBO services in the London Periphery (LP) and the Rest of the UK (RoUK). If not, what alternative would you propose and why?

# 4.4.3 Stakeholders' responses

4.466 BT and IIG members argued for a no SMP finding for the LP and CBDs, in particular for higher bandwidth CISBO services. However, other respondents agreed with our

SMP findings for CISBO markets outside of the CLA.<sup>290</sup> Some of these respondents further considered that BT had SMP in the CLA.

### Stakeholders' views that BT has SMP in the CLA for CISBO services

- 4.467 The PAG, Vodafone, TalkTalk, Hyperoptic and Virtual1 expressed concern about our proposal that no CP has SMP for CISBO services within the CLA.
  - Vodafone considered that even though there were rivals with network, effective competition had not emerged. Vodafone noted that we relied too much on NR analysis that only indicated potential rather than actual competition. Vodafone considered that past decisions by CPs to build (over relatively long distances) were distorted, as they were based on the 'inefficiently' high BT prices at the time. It argued that the reduction in charge-controlled prices will have affected build-buy decisions, with a willingness to build now limited to much shorter distances.
  - Vodafone argued that we had not analysed how well network reach translates into an actual competitive constraint particularly for multi-site deals (i.e. how successful CPs are in customer bids when new network is required, relative to the 'network reach' for that customer).
  - Vodafone repeated its view that Ofcom's SMP assessment should look at the presence of "Principal Operators" (see Section 4.3 above).<sup>291</sup> TalkTalk noted that some of the operators<sup>292</sup> we had counted as present are too small/ focused on niches to act as a constraint except in small parts of the CLA.
  - Vodafone noted BT's high service share in the largest CISBO segment of 100Mbit/s (55%) which has remained relatively stable and above the SMP threshold within the CLA and in relation to mobile backhaul (89%). TalkTalk also noted that BT had returns (based on RoCE) of 48% (about four times its cost of capital).<sup>293</sup>
  - Vodafone considered that we should place much greater weight on evidence of BT's advantage in terms of existing fibre connected buildings. Vodafone considered that BT customers moving to alternative providers would face high barriers to switching due to entirely new fibre build costs. Therefore, switching activity in business connectivity markets is likely to await a major event such as a major IT refresh, which does not suggest that BT's market share would change very quickly.
  - Vodafone and TalkTalk also considered higher dig costs in London combined with relatively short contract periods make it less likely for CPs to build. TalkTalk and SixDegrees noted the difficulties in obtaining wayleaves and/or landlord

<sup>&</sup>lt;sup>290</sup> One end-user [<code>\$<</code>] cited its experience of very poor delivery times for a fibre-based connection outside of London as evidence of BT's monopoly position.

<sup>&</sup>lt;sup>291</sup> Vodafone noted that we had removed smaller operators for our CI Core analysis.

<sup>&</sup>lt;sup>292</sup> TalkTalk referred e.g. to EU networks, Fibrespeed, Interoute, Concept Solutions, Neos.

<sup>&</sup>lt;sup>293</sup> These figures relate to BT's reported returns for AISBO services in the WECLA for 2014/15.

permission to extend rivals' networks from existing break-out points along streets and into buildings;<sup>294</sup>

- Vodafone also referred to BT's advantages from its scale outside the CLA.
   Vodafone suggested that this was most apparent for MNO and LLU operators who have a preference for CPs who can offer connectivity across a wide area.
   Vodafone considered that we had not discussed the scope for geographic leverage as evidenced in the CLA by BT's share of mobile backhaul.
- TalkTalk noted that a lesser degree of rival infrastructure had been used to justify full deregulation of geographic markets in our WBA market review. However, TalkTalk considered that the market conditions in WBA were quite different.<sup>295</sup> TalkTalk explained, for example, that the preference for CPs to use a few suppliers nationally (even for single site requirements) means that smaller regionally focused providers tend to be overlooked when LLU operators purchase backhaul.
- 4.468 Smaller providers had mixed views about our proposal to find no SMP in the CLA. [3<] did not consider there were good substitutes for BT's EADLA as reflected in BT's 44% market share and the lack of other network providers with the depth of network comparable to BT. [3<] and [3<] were concerned that deregulation would lead to BT discriminating against Ethernet and accommodation services used to support broadband solutions to residential customers. [3<] agreed that no CP has SMP in the CLA CISBO market, but thought that BT has SMP in the provision of dark fibre in CLA. [3<] reiterated its concern about very poor broadband speeds in parts of London as a sign that competition in the CLA was not fully effective.</p>

### Views of effective competition in other geographic areas and VHB segments

- 4.469 IIG members and BT did not agree with our SMP proposals. Virgin considered (as set out in its response to Q4.1 to Q4.3) that the markets in the CLA, LP and CBDs, in particular for very high bandwidth services, have become more competitive since the BCMR 2013.
- 4.470 CityFibre considered that our conclusion that there is no prospect of effective upstream competition outside CLA was wrong.<sup>296</sup> CityFibre considered that our SMP analysis was not forward looking, as we focused on BT's current shares and presence of alternative providers. CityFibre argued that we overlooked current and prospective investments by OCPs in concluding that there was no likely prospect of effective upstream competition outside the CLA, and that we should present a view of likely developments in each relevant market, including future and past market share trends. It also criticised our use of data which related to the status of competition more than a year before the commencement of the review period.

<sup>&</sup>lt;sup>294</sup> [>] noted that competition for dark fibre had declined following consolidation in the segment. [>] explained that it had purchased dark fibre on some occasions the customer premise was too far from its network. In other cases the dark fibre provider's pricing for dark fibre was prohibitive and it had to order an active service instead. <sup>295</sup> TalkTalk noted that geographic de-regulation in WBA was based on the presence of upstream

<sup>&</sup>lt;sup>295</sup> TalkTalk noted that geographic de-regulation in WBA was based on the presence of upstream regulation (LLU) that created a relatively level playing field; with five nationwide rival operators (at that time); and evidence of BT responding to competition in competitive areas. TalkTalk considered those conditions were absent for CISBO markets.

<sup>&</sup>lt;sup>296</sup> CityFibre considered that the new (and arbitrary) criteria for defining separate geographic markets were in effect used to determine SMP.

- 4.471 BT agreed with the main criteria used for assessing SMP, but it had a number of significant concerns. BT's view was that our market analysis was clearly wrong. It submitted that very high CISBO services are subject to very high degrees of competition; BT had very low service shares (15% or below in some defined areas and below SMP thresholds in all areas); several competitor CPs had higher shares than BT; and there was evidence of multiple competing fibre and duct network infrastructure across all business areas across the UK.
- 4.472 BT considered that the evidence from the BDRC consumer survey did not support the conclusion that there are material costs to switching supplier, but instead suggested that barriers to switching are comparatively minor.<sup>297</sup> BT did not agree that technology incompatibility was a barrier to switching or that it gave BT dominance. Nevertheless, it thought that the costs of migrating between services of different bandwidths were material. It argued that as these costs are very significant, customers will tend to change their access service as part of a major upgrade to their network (at which point they will frequently review supplier).
- 4.473 BT also disagreed with our assessment that its more extensive network confers advantages on it.<sup>298</sup> BT also argued that we incorrectly assumed its network is ubiquitous<sup>299</sup> and that its costs are largely sunk, thus failing to recognise the significant extent to which BT builds out new fibre network for business connectivity. BT noted that around 60% of new Ethernet provides involve some form of new network build.
- 4.474 BT thought that our analysis failed to take account of the extent to which CPs can and do expand their networks, particularly for higher bandwidth services. BT considered that NR estimates should vary by bandwidth and should also recognise the clustering of both OCP core networks and of business sites (particularly large sites). BT also argued that CPs do not generally target all customers even if they have infrastructure nearby as other costs, such as customer sales and acquisition costs, may be specific to certain customer types but also feature economies of scale and scope. Instead CPs will have a strategic incentive to specialise in supplying certain customer types to recover customer sales and acquisition costs which are common (only) to those customers. It considered this had a strong impact on the incentive to serve sites of different downstream value, leading to variations in competitive conditions between customers.
- 4.475 BT noted that Ofcom had estimated that 30% of business sites were "HNR" (which BT believed to be an underestimate) and a number of other business sites have access to EFM services, which fall within the CISBO market. BT's view was that, in the absence of regulation, all CPs would have the incentive to build further than 200 metres, and Virgin Media in particular would be able to serve the vast majority of BT sites.

<sup>&</sup>lt;sup>297</sup> Regarding the BDRC survey, BT argued that barriers to switching were extremely minor among the reasons why customers did not switch, with price being most important. It noted that average contract lengths were 3 years, that CPs actively monitored value and service quality at least every 2-3 years and that nearly three in five go to tender in that time. There was a high incidence of business satisfaction with their service. Finally, relatively few (10%) ranked reliability or resilience as an important factor for using more than one supplier.

<sup>&</sup>lt;sup>298</sup> BT referred to factors mentioned as potential advantages from its more extensive network in paragraph A13.33 of the May 2015 Consultation and in the 2013 Statement, including speed of service delivery; reliance on third parties; network security; cost of sales and resilience.

<sup>&</sup>lt;sup>299</sup> BT referred to network reach analysis showing only 65% of business sites are within 200 metres of its flexibility points.

- 4.476 BT noted that the net effect was that regulation is applied to services and areas with high levels of competition, including from dark fibre.<sup>300</sup> BT submitted that, at the very least, we must consider whether the proposed remedies are actually justified across the whole of the markets where BT is designated as having SMP. BT also considered that the impact of dark fibre will have an immediate and profound impact on demand for active services. At the minimum, it believed we should consider the impact of dark fibre on market definition and SMP.
- 4.477 Finally, BT did not consider our evidence on profitability was valid. It argued that high returns highlighted in 2013/14 in the VHB segment were unrepresentative, for example as they reflected a high level of connections.<sup>301</sup>

# 4.4.4 Our conclusions on SMP

### 4.4.4.1 General approach to SMP

#### Our SMP assessment is forward-looking

- 4.478 Annex 9 presents our overall approach to SMP in more detail, outlining all of the criteria considered and summarising our general assessment of these criteria when applied to wholesale leased lines markets.<sup>302</sup> We also discuss in Annex 9 other SMP criteria that we place less weight on.
- 4.479 Our SMP assessment is concerned with identifying whether any firm, either individually or jointly with others, has the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers.<sup>303</sup> We conduct this assessment to see whether or not *ex ante* regulation is necessary over the timeframe of this review. Hence, our SMP assessment is forward-looking and considers whether markets could be prospectively competitive and thus whether any lack of competition is durable. We take into account expected or foreseeable market developments over the review period.<sup>304</sup> Our SMP assessment focuses on what we consider to be the most important determinants of competition in the relevant CISBO markets, in particular the presence and density of rival infrastructure.<sup>305</sup>

#### The presence and density of rival infrastructure is key to our assessment

- 4.480 We regard the presence and density of rival infrastructure as a key indicator of the likely strength of current and future competition.
- 4.481 In order to provide leased lines to an end-user's premises, a CP requires a physical connection to that site. Where a CP does not have duct and fibre to a site, it needs to extend its network to establish a physical connection to that site to provide leased

<sup>&</sup>lt;sup>300</sup> BT referred in particular to re-regulation of the LP for MISBO where BT's share was 15% and continuing to regulate outside London, even for MISBO services and for CBDs outside of London where BT service shares are low, and competing fibre network infrastructures abound. <sup>301</sup> BT also commented on our assessment of (a lack of) countervailing buyer power, see Annex 9,

 <sup>&</sup>lt;sup>301</sup> BT also commented on our assessment of (a lack of) countervailing buyer power, see Annex 9, paragraphs A9.80 to A9.94.
 <sup>302</sup> We also present our views on stakeholder comments on SMP criteria not presented in this Section.

<sup>&</sup>lt;sup>302</sup> We also present our views on stakeholder comments on SMP criteria not presented in this Section. <sup>303</sup> See section 78 of the Act and Article 14 of the Framework Directive.

<sup>&</sup>lt;sup>304</sup> See Recital 27 of the Framework Directive and paragraph 20 of the SMP Guidelines. The forwardlooking period of this review is three years.

<sup>&</sup>lt;sup>305</sup> This element is relevant to a number of SMP criteria in the Guidelines, including 'control of infrastructure not being easily duplicated; economies of scale and scope; and barriers to entry and expansion.

lines services. The costs of network extension represent a significant proportion of the total costs of providing leased lines, are largely sunk, are common to fixed telecommunications services, and increase with the distance of network extension required.

- 4.482 As discussed in our geographic market analysis, and consistent with our finding of a single CISBO market, the presence of a CP providing a particular CISBO segment at a customer site (or sufficiently close to that site) makes it well placed to supply that customer or other customers at that site with alternative CISBO services (i.e. either higher or lower bandwidths).
- 4.483 A CP that does not have infrastructure to a site or nearby will be at a disadvantage to a provider with existing network to a site. Furthermore, an end-user's existing supplier will be at a cost advantage when an end-user considers whether to upgrade or switch to a new service.
- 4.484 The potential for infrastructure to be used at all bandwidths will tend to mean (along with demand-side substitutability) that customers at a particular site will face similar competitive conditions regardless of the bandwidth they use.
- 4.485 Where there is sufficient rival infrastructure in place, our view is that all customers will benefit from effective competition, even if BT appears to have a relatively stronger position in some bandwidths. As a result, our focus is on identifying areas where the extent of rival infrastructure is sufficiently great that we can remove regulation in all bandwidths.
- 4.486 However, it is also the case that, in the context of CI services, the probability that a site will attract competing connections is partly a function of the bandwidth of the circuits demanded at the site, because this to a significant extent (but not wholly) determines the revenue, margin and profits available to CPs.

#### BT has a significant advantage due to its ubiquitous network

- 4.487 BT, as the former monopolist, has a very extensive trench and duct network extending to most (business) sites in the UK outside the Hull area. At a significant number of UK premises, BT either has fibre already in place or ducts that can be used to provide fibre-based services at relatively low incremental cost (particularly when compared with the costs of digging). Rival infrastructure is considerably more limited in amount and coverage. Commonly, OCPs will not have an existing connection to a site, in which case they will need to extend their networks to establish the connection. The greater the distance between a site and their infrastructure, the greater the costs of network extension.
- 4.488 BT considered that we overstated its advantage in the market as, in its view, it does not have a ubiquitous network and its costs of supply are not fully sunk. BT pointed to evidence on the number of new Ethernet connections it provides that require some form of new network build. BT also stated that if we applied network reach analysis to BT flexibility points, only 65% of business sites are within 200 metres.
- 4.489 We have looked in more detail at evidence BT cited for the amount of new Ethernet orders that require some form of infrastructure build. However, it seems that BT has categorised "network build" broadly to include situations where some work is required to connect a fibre-based service, but the duct to a site is in already in place. This activity might include blowing fibre within existing duct or repairs to the existing duct, which will have far lower costs than digging and installing entirely new ducts.

- 4.490 Hence, we consider BT's estimate of new connections that require network build will overstate the number of times BT will need to dig. Indeed, we estimate in Annex 13 that BT extended its network by digging for only [≫]% of the new leased lines it connected in 2013.
- 4.491 We also find in Annex 13, that when BT needs to make network extensions, the distance it needs to build is often far shorter than for its rivals.<sup>306</sup> Therefore, the evidence shows that relative to its rivals, BT's network presence means across the UK:
  - it will need to build less often to connect new circuits; and
  - when it does have to build, the distances it will have to build will be shorter on average.
- 4.492 BT questioned the premise that it had a significant advantage from its existing network. BT's view was that its network is not fully sunk or costless to maintain. It argued that CPs can secure retail contracts to compete to build infrastructure and referring to the May 2015 BDRC consumer evidence respondents considered that there were no particular barriers to switching suppliers.
- 4.493 We consider that sunk costs of network investments and costs associated with switching supplier are likely to give rise to barriers to entry and expansion in wholesale leased lines markets. BT may have ongoing costs of supply (as it suggests), but the majority of costs of extending network infrastructure to connect to sites are largely sunk as the physical network built cannot be transferred to another location if it is no longer required at the original site.
- 4.494 As discussed in Annex 13, a CP could have to charge around £4,000 per annum to recover the costs of digging 100 metres over a three year term.<sup>307</sup> CPs that already have connections (or proximity) to an existing customer will incur no additional (far smaller) costs extending their networks and will be at a clear advantage relative to CPs that do not already have a connection to the site in question. In the absence of regulation, this cost differential would create a barrier to expansion to serve new sites, and hence a barrier to switching suppliers where there are not multiple suppliers already present at the same site.
- 4.495 We have looked again at the evidence from the BDRC survey and consider that it is consistent with the view that, where switching might involve a change of supplier, costs could be "present to a material degree". For example, the BDRC survey suggests "price of services and hassle are the main barriers to switching (mentioned by 31% and 29% respectively)." It also found that "The potential for service disruption was mentioned by up to 15%", and that "existing relationships also play a role...with a fifth citing good contacts at their existing supplier (20%) or that their current supplier understands their business (19%) is a barrier to switching."
- 4.496 The 2016 BDRC CI Survey provides further evidence we consider consistent with our view. This survey found that 67% of respondents had not switched supplier in the

<sup>&</sup>lt;sup>306</sup> Annex 13 shows the varied range of dig distances by CPs in each of the geographic areas, with BT in general having shorter dig distances than other CPs, in particular [ $\gg$ ].

<sup>&</sup>lt;sup>307</sup> See Annex 13, Figure A13.1 and associated discussion. We note there that costs could be reduced by using alternative construction methods such as slot/micro trenching. With this method, very narrow trenches are dug in the ground into which thin plastic ducting is then placed. Fibre can then be blown along the duct. This reduces the costs of digging and repairing the carriageway.

last 5 years. The reasons given by those not switching suggest that the costs of switching supplier were a barrier for a material proportion. In particular, 14 - 18% of non-switchers said that they did not switch supplier because it would have been *"Too difficult/too much hassle"* and 11-15% said they did not switch because of the cost of breaking their existing contract.

- 4.497 Of those that did switch, almost three in five (58%) said that they found the switch to be (very or fairly) easy' whilst 14% found it "neither easy nor difficult" and 23% found it not very or not at all easy. Just under one third of those who had switched (31%) said that they had not incurred costs associated with switching supplier. However, among those that specified a figure, switching costs ranged from £1,000 to £25,000 with £3,500 the average.
- 4.498 The key point is that the presence of existing infrastructure at a site or being the CP with the closest network to an end-user will give that CP a cost advantage if the end-user were to consider a change or upgrade to its services.
- 4.499 We consider that there are a number of other reasons why BT benefits from its more extensive network:
  - BT is less reliant on third party supply: this reduces the possibility of interoperability issues occurring, contributes to a greater level of control over network equipment, can improve network security, and removes the need to negotiate wholesale supply arrangements with third party suppliers which may be complex and potentially influenced by whether the third party supplier is also a downstream competitor
  - Route diversity: Physically separate routes are required to provide a service which is resilient to faults in network infrastructure. Some users seeking high availability may value such routes. We consider BT's extensive network infrastructure may give it greater scope to connect a customer site to two separate access points. Hence, it would be easier for BT to offer and build diverse physical routes; and
  - Multi-site demand: BT may have advantages in serving multi-site contracts if customers place value on knowing that a single provider supplies the physical infrastructure for the whole contract or a large part of it.<sup>308</sup>
- 4.500 We therefore conclude that the available evidence shows that BT does have a significant advantage relative to its rivals in terms of its existing connectivity and the reach of its network. We assess below whether this advantage manifests itself in SMP in particular geographic locations.

#### Economies of scale and scope also strengthen BT's advantages

4.501 In addition to the above advantages in terms of existing connections and proximity, economies of scale and scope also strengthen BT's advantages.<sup>309</sup> We note that the

<sup>&</sup>lt;sup>308</sup> Purchasing from a single supplier does appear to be a widespread practice. The BDRC survey published in May found that 69% of respondents use a single supplier for all their business connectivity services. Of these, 80% said that having all their services with a single supplier was not a barrier to switching (at the retail level). However, OCPs' belief that they are not competitive for contracts which would require them to serve a large proportion of the customer's requirements off-net may mean that choice for some multi-site customers is limited.

scale and scope of BT's operations in the UK outside the Hull area are far greater even than those of its closest competitor Virgin Media. For example, BT supplies more than four times as many leased lines as Virgin Media. Therefore, it can spread the costs of its network infrastructure in any given area across a wider range and greater number of fixed telecommunication services than OCPs (in all areas where BT has a significant share).

- 4.502 At the network level, most NGA and EFM competitors (e.g. TalkTalk) are likely to use a BT service (LLU or VULA plus CISBO for backhaul) as in practice are MNOs (for backhaul). BT can therefore benefit from economies of scale/scope in its network (certainly relative to alternative full infrastructure CP like Virgin Media which currently accounts for a far smaller proportion of backhaul supply).
- 4.503 We note however that the scale of advantage BT derives will be smaller in areas with a greater amount of rival infrastructure (particularly where it has a lower share of demand in the area) but there is little such infrastructure in most areas outside Central London as discussed below.

### We consider service share data needs careful interpretation

- 4.504 BT and other stakeholders pointed to its low share in VHB CISBO segments (VHB) as evidence of effective competition.
- 4.505 In our product market analysis (Section 4.2), we have not identified the VHB segment as a separate market. While not a relevant market, we have nevertheless considered competition specifically in this product segment as part of our SMP assessment for CISBO markets, noting in particular BT's focus on its apparently low service shares in this segment.
- 4.506 Although BT's shares of the VHB segment are low, we have concerns about the reliability of these service shares given the overall size of the VHB segment, particularly in the LP and CBDs.<sup>310</sup> As the VHB segment is made up of relatively few individual contracts for multiple circuits this has particular implications for our interpretation of service shares, as:
  - a change of VHB provider in a small number of contracts could have a big impact on service share in a particular area.
  - expected migration of customers from lower CISBO to VHB services could rapidly change service shares.
- 4.507 The effect of migration combined with relatively small VHB volumes could have a significant impact on service shares. This is because the incumbent supplier will have an advantage in retaining customers as they migrate to higher bandwidths, because the incumbent has already sunk the costs needed to create site connections. When combined with BT's high share of circuits at up to and including 1Gbit/s, the effect of migration to higher bandwidths is likely to be to increase BT's share of the VHB segment.

<sup>&</sup>lt;sup>309</sup> Economies of scale arise where an operator's unit costs fall as they provide higher volumes of the same service. Economies of scope arise where unit costs fall as volumes of a different service increase. For a longer discussion of the sources of economies of scale and scope and their implications for SMP, see Annex 9 paragraphs A9.66 – A9.79.

<sup>&</sup>lt;sup>310</sup> These are discussed in detail in Annex 5.

- 4.508 The rates of migration do not have to be that large, as even relatively modest rates of upgrade could rapidly change BT's service shares in the VHB segment. We explain in Annex 5 (see Table A5.2 and associated paragraphs) that, under alternative plausible migration assumptions, significant increases in BT's service share in the VHB segment are possible. These rates of migration would push BT's share above traditional dominance thresholds particularly in the RoUK and in some scenarios in CBDs.
- 4.509 In addition to BT's incumbency advantages with respect to its lower bandwidth customers, there are other reasons to consider BT is likely to be well placed to compete for VHB customers going forward. As the requirements of VHB users become more like those of lower bandwidths because VHB customers will increasingly be users who have recently migrated from lower bandwidth services niche players are likely to be less well placed to serve them. We refer to this development as "standardisation" (as explained further in Annex 5, paragraphs A5.50 to A5.65). The advantage in providing standardised services and products lies with the large CPs which can exploit economies of scale and scope effectively.
- 4.510 Whilst Virgin Media currently has a relatively large share of the VHB segment, this is to some extent an artefact of the way the segment has been defined to include all WDM services but "single-service" Ethernet circuits only of >1Gbit/s capacity. Particularly for MNO backhaul, [%] whereas MNO backhaul solutions using Openreach products typically consume EAD 1Gbit/s links (included in the <=1Gbit/s Ethernet segment).</p>
- 4.511 Hence we place little weight on service shares in the VHB segment on a stand-alone basis.

#### Prospects for competition: new entry

- 4.512 CityFibre expressed "deep concern" at an alleged lack of forward-looking analysis as there was limited assessment of prospective competition. It was also concerned that the data we were using related to 2014 volumes.
- 4.513 We do not agree with CityFibre, as our analysis is forward-looking (as discussed in paragraphs 4.478 to 4.479 above) and takes into account the prospects of new entry. Nevertheless, we also attach weight to known investment and actual entry that has occurred to date in our SMP assessment. This is the starting point for our analysis from which prospective competition can then be judged.
- 4.514 We have assessed, in Annex 10, CityFibre's investment plans, but in many cases CityFibre's business strategy purposely targets 'second-tier' UK cities such as Peterborough, and not the LP, which is the next most competitive area after the CLA by reference to network infrastructure. In general, the areas targeted by CityFibre have relatively little competition at present, and the entry of CityFibre in those locations would not make them effectively competitive.<sup>311</sup> Further, we have not, to date, seen evidence of new entry or prospects for sales in other areas by CityFibre or

<sup>&</sup>lt;sup>311</sup> In Annex 10, we have analysed in detail a number of cities that CityFibre has announced publicly as locations for investment.

other CPs on a scale that has or would be likely lead to any area outside the CLA becoming effectively competitive.<sup>312</sup>

4.515 We have by necessity relied on 2014 volumes for our network reach and service share analysis presented in Annex 10, given the significant effort and resource required to collect and analyse circuit and network flexibility points. We have taken into account any likely changes in terms of new entry or additional investment.<sup>313</sup> But as noted above, we would need to see infrastructure investment on a large scale by several CPs, even in the LP, before the density of competing networks would be sufficient for the CISBO market to become effectively competitive. We have not seen any evidence to date to show that entry has occurred, or is likely to occur, on the scale necessary to alter our findings.

### Prospects for competition: dark fibre

- 4.516 BT submitted that dark fibre regulation could materially affect competition for active services, which we should take into account in our SMP assessment.
- 4.517 We explain in Annex 9 that dark fibre is a remedy for SMP in the CISBO market. Our market analysis is conducted on a modified Greenfield basis so does not take account of the effect of regulated provision of dark fibre. Nevertheless, we have taken into account the effect of various combinations of passive and active remedies in our impact assessment which informs our decision about which remedies to impose. We also consider the 'out of market' constraint of commercially available dark fibre circuits in our assessment below.

#### 4.4.4.2 Our assessment by geographic market

- 4.518 Below we present our assessment of each of the geographic markets we have identified based on our approach to SMP set out in Annex 9. We also respond to stakeholder comments related to our market power findings by each area. We refer extensively to measures of network presence and density, which we presented in Table 4.4 above.
  - (a) Market power assessment in CLA

The density of rival infrastructure in the CLA, along with structural features of the area, suggest that BT does not hold SMP in this area: despite its high share of lower bandwidth CISBO services

4.519 We find that no CP has SMP in the market for CISBO services in the CLA. What sets the CLA apart from other areas is the fact that sufficient infrastructure has been deployed so as to offer choice to customers for CISBO services of all bandwidths throughout the CLA.

<sup>&</sup>lt;sup>312</sup> We note that CityFibre has recently acquired KCOM's network outside of the Hull area. However, this represents a transfer of ownership of existing infrastructure rather than new entry.
<sup>313</sup> We have reviewed, for example, CPs' responses to our formal information requests which asked CPs to set out any planned extensions to their current networks. For those CPs that provided responses, we did not find any with plans for large scale strategic investments. Most said that any increase in their networks would be generated 'organically' by businesses willing to pay for new build and extensions from existing network locations. We discuss CPs' investment plans as part of our forward-look at prospects for competition in Annex 9, paragraphs A9.115 – A9.117. We also present in Annex 10 our assessment of further information we have received on Virgin and CityFibre's investment plans.

- 4.520 In the CLA, there is very extensive infrastructure present. This reflects the significant density of businesses with nearly 128 businesses per square kilometre and a significant concentration of financial, media and other businesses. These sectors are significant purchasers of leased lines as reflected in the total number of circuits sold in the CLA relative to the number of businesses present. Indeed, on average, we estimate a ratio of nearly eight CISBO circuits sold for each large business present in the CLA. This is more than double the ratio in the LP or CBDs. The nature and density of business makes network deployment and extension far more attractive to CPs. Table 4.4 (above) presents a range of metrics including average network reach and depth of rival infrastructure at differing buffer distances (100m, 200m). Jointly, these measures show the presence and density of rival infrastructure in the CLA, and its impact on competition for all CISBO services.
- 4.521 Across the CLA, the average number of CPs within 100m of a business site (network reach) is 6.2. Virtually all businesses have at least five OCPs within 200m (98%) and at least four OCPs within 100m (93%). Indeed, the four closest CPs to a business site are on average less than 50m away.
- 4.522 The presence of rival infrastructure to this degree, in our view, as explained in section 4.1 above ensures that the vast majority of (potential) users of CISBO in the CLA are likely to have competitive alternatives available to them in the event that BT raised its prices or otherwise offered poor terms of supply.
- 4.523 Our analysis shows that supplier choice in the CLA is significantly greater than supplier choice in any other part of the UK, including the LP.
- 4.524 In contrast to other geographic areas, we consider OCPs who have done relatively well in the VHB segment in the CLA would be likely to exert a constraint on the supply of lower bandwidth leased lines across the CLA as a whole. This is primarily because rival network is sufficiently dense in the CLA that OCPs currently focused on the VHB segment are likely to have network in sufficiently close proximity to lower bandwidth users so as to exert an effective constraint (in the sense they could quickly and without incurring significant cost begin supplying customers in the same area with lower bandwidth services).
- 4.525 Whilst entry in the CLA still requires significant costs to be sunk and economies of scale and scope in the provision of CISBO services exist as elsewhere, the number and density of businesses and users of CISBO services in the CLA means these are of much reduced significance for competition in this area, and in practice have not proved to be a barrier to entry. Accordingly, whether or not further entry is likely is not an important consideration for our proposal that BT does not have SMP. While OCPs with existing infrastructure would face some costs when extending their networks to connect with new customer sites, the close proximity of their infrastructure to most (potential) users of CISBO services suggests that these barriers are unlikely to be high as the distance they would need to extend their networks to a new customer site is, in general, likely to be significantly lower than elsewhere in the UK. In addition, the CLA also has a number of operators supplying other markets (NGA/LLU) and mobile operators that can help generate economies of scope in backhaul.<sup>314</sup>

<sup>&</sup>lt;sup>314</sup> For example, as mobile and LLU/NGA operators rely on Ethernet backhaul links, there is greater scope to offer dedicated backhaul capacity over shared infrastructure.

- 4.526 The PAG highlighted that, despite the presence of dense rival infrastructure supporting effective competition across the CISBO range, the cost of build in the CLA was far higher and issues such as obtaining wayleaves created additional barriers.
- 4.527 As noted above, the available evidence suggests that typical (median) dig distances in the CLA are not notably lower than in other areas. We consider the structural features of the CLA such as the nature of businesses (e.g. large financial institutions) and overall business density are likely to allow OCPs to overcome the barriers to build identified by PAG members in the CLA, whilst the boundary test, by being based on the presence of four or five OCPs, builds in some robustness to any obstacle which might affect an individual OCP.
- 4.528 We do not consider that for the purposes of our SMP assessment, as Vodafone suggested, we should take into account the fact that dig distances are likely to decline further in light of proposed reductions in regulated CISBO service prices. A regulatory requirement for BT to reduce its CISBO prices could affect an OCPs' choice between network build and buying from BT. However, the Modified Greenfield approach means we should assume the absence of regulation in the markets under consideration.

#### Service share and profitability

- 4.529 PAG noted that BT's share for CISBO services overall remains relatively high. Some stakeholders also referred to BT's profitability for CISBO segments.
- 4.530 We give relatively low weight to profitability evidence in the context of our SMP assessment in the CLA (as discussed in Annex 9, paragraph A9.106 in particular).
- 4.531 We note that BT's CISBO revenue share (using our estimates) is 38% in the CLA. But BT's share is an estimated 45% by volume, which exceeds the 40% level above which, according to the SMP Guidelines, single firm dominance concerns normally arise.<sup>315</sup>
- 4.532 To understand why BT has retained a share at this level, it is useful to consider how its share varies across CISBO segments. BT's pricing policy has encouraged entry at the higher bandwidth segments of 1Gbit/s and above and in very high CISBO in particular. Consequently, the distribution of service shares in the CLA differs across bandwidth segments:
  - In very high CISBO (i.e. services capable of providing bandwidth of more than 1Gbit/s), BT has a very low share of 12%, 4 OCPs have a share that exceeds 5% (two of which have a share greater than BT).
  - In high CISBO (standard Ethernet services of more than 100Mbit/s and up to and including 1Gbit/s), BT's share is higher at 35% but still below conventional SMP thresholds and lower than BT's share in CISBO overall. In addition, we observe that the shares of OCPs show that a number of OCPs have managed to gain a significant share of the supply of these services.
  - In low and medium CISBO (i.e. standard Ethernet services of up to and including 100Mbit/s), BT maintains higher shares, 41% for low CISBO and 55% for medium CISBO. If there were to be any concerns about lack of competition in

<sup>&</sup>lt;sup>315</sup> Page 15, paragraph 75 of the SMP Guidelines.

the CLA, they would therefore be most likely to arise in low and medium CISBO. Below, we consider the competitive constraints (in particular, those arising from the presence and density of rival infrastructure) which are likely to protect users of these services from any attempt by BT to exercise market power.

- 4.533 CPs other than BT noted in their submissions to the Market Questionnaire that in the centre of London they are able to use their own network infrastructure to a greater extent to provide services without relying on wholesale services purchased from other CPs compared to any other part of the UK.<sup>316</sup> Given the presence and density of rival infrastructure in the CLA, we consider that BT's continued relatively high share is not sufficient alone to conclude that BT has SMP.
- 4.534 In particular, consistent with our view that CISBO circuits of all bandwidths form a single market, any attempt to increase prices in the medium bandwidth CISBO segment is likely to trigger both demand and, given the density of competing infrastructure in the CLA, supply side reactions that would make such a move unprofitable. On the demand side, an increase in the price of medium bandwidth services would be likely to trigger some migration to other CISBO services which are currently better served by competitors (as reflected in BT's share of 35% in CISBO high segment). On the supply side, it would also be likely to encourage suppliers that have been more successful in higher bandwidth segments to date to compete for medium bandwidths.
- 4.535 In addition, at the lowest bandwidths (relevant for CISBO services of up to 30Mbit/s), some LLU operators are able to supply EFM services (with prices for EFM services currently significantly lower than prices of standard Ethernet services) to any site in the exchange area where they are co-located at a BT exchange. Most (but not all) of the exchange areas that serve the CLA were identified as competitive in the 2014 WBA Market Review Statement.<sup>317</sup> Hence, we can expect most businesses in the CLA to have access to EFM services on competitive terms.<sup>318</sup>
- 4.536 Further, asymmetric broadband (NGA) with bandwidths up to 100Mbit/s is increasingly becoming available throughout the UK. As explained in Annex 6, while we do not consider asymmetric broadband to be part of the market for CISBO services, we take account of the additional competitive constraints imposed by asymmetric broadband on supply of CISBO services of up to 100Mbit/s as an external constraint. Whilst we do not regard this constraint as strong by itself, when combined with constraints from within the market, it provides some additional support for our view that no CP has SMP in the CLA.

<sup>&</sup>lt;sup>316</sup> CPs' confidential submissions to the Market Questionnaire.

<sup>&</sup>lt;sup>317</sup> In Ofcom's, 'Review of wholesale broadband access markets', Final Statement, 2014 there were only two exchanges in the CLA found to have only one Principal Operator and BT present. In all other cases, the number of Principal Operators was two or greater, and we regarded this as sufficient for effective competition in the provision of WBA. Initial analysis of the data for the forthcoming WBA market review suggests that there are now at least two Principal Operators in addition to BT present at all CLA exchanges. Our analysis of coverage by EFM operator in Annex 10 confirms that there is much higher coverage across the CLA than in other areas.

<sup>&</sup>lt;sup>318</sup> We checked the coverage of BT exchanges that could serve premises within the CLA using EFM under different site-to-exchange distance assumptions (1km, 2km and 3km). Visual inspection of the outputs of this analysis suggests that 100% of customers would be within 2km of a BT exchange. This is important in the context of EFM as, over longer distances between the end-user site and the exchange, there is a significant drop-off in the bandwidths that can be supported by EFM (see Annex 6).

4.537 We note that another 'out of market' constraint might come from a minority of users that could substitute dark fibre for active CISBO services. Based on existing dark fibre sales, these services would represent around 5% of volumes in the CLA, if we were to combine sales of dark-fibre and CISBO circuits.<sup>319</sup> Infrastructure in the CLA is more extensive and could in principle be used to offer dark fibre. However, we consider the constraint from dark fibre to be relatively weak, as it is a niche product only used by a minority of customers. The evidence discussed in our product market assessment suggested that even for these customers, dark fibre often appears to be used for specific purposes or reasons rather than being a close substitute for active services at the margin. This is consistent with other evidence set out in paragraphs 4.293 – 4.298 which suggests that dark fibre and active services are not subject to a common pricing constraint. However, as dark-fibre volumes are higher, as a share of the combined total, in the CLA than in any other area, any price-constraining effect from dark fibre would be likely to be relatively strong in the CLA.

Stakeholders' concerns that BT has SMP for LLU and mobile backhaul

- 4.538 We discuss concerns about mobile and LLU backhaul in the CLA in Annexes 7 and 8. For LLU backhaul, our analysis suggests BT's share is much lower in the CLA than in other areas - [≫]% overall and [≫]. By contrast, BT's service shares for mobile backhaul are higher than other leased lines markets and show limited variation in the CLA relative to other geographic areas.<sup>320</sup>
- 4.539 We consider that the competitive presence in the CLA, combined with our conclusion that it is appropriate to regulate BT's CISBO services outside the CLA should prevent concerns over leverage.<sup>321</sup> For both LLU and mobile backhaul segments we place weight on the fact that our NR analysis shows competing infrastructure within reach both of LLU exchanges and of mobile cell sites. For mobile cell sites, we calculate average NR of 6.1 at 100 metres (8.0 at 200 metres), which is nearly identical to NR for large business sites. For LLU backhaul, all CLA exchanges have at least two operators with network within 100 metres. Furthermore, our CI Core analysis shows that 20 out of a total of 22 BT CLA exchanges have at least three CPs present and most sites have many more.<sup>322</sup>
- 4.540 In Annexes 7 and 8, we conclude that the combination of regulated services outside the CLA and significant presence of competing operators within should prevent any risks of leverage. Even if MNOs may prefer large national contracts, there is no technical need for reliance on a single supplier and MNOs can and do use alternative suppliers for some of their needs. The size of the CLA and the number of potential suppliers there, particularly at higher bandwidths, should mean MNOs have both the option of choosing an alternative supplier to BT and a strong incentive to do so if BT sought to raise prices for MNO backhaul.

 $<sup>^{319}</sup>$  See Table 4.3 above. As noted earlier, we assume that on average 2 – 3 wavelengths are lit per fibre.

<sup>&</sup>lt;sup>320</sup> We estimate BT's service share in the CLA at [%]% (excluding TI and microwave), [%] in the London Periphery and [%] in the Rest of the UK.

<sup>&</sup>lt;sup>321</sup> In Annex 7 (paragraph A7.94), we point out that BT may have lower costs than OCPs serving MNOs and so BT's prices might not be constrained to the level its BT's costs. However, they are still constrained to a significant extent by the ability of MNOs to switch to alternative suppliers.

<sup>&</sup>lt;sup>322</sup> We count an operator as present if it has interconnect at a BT exchange to self-supply with its own core network or it is supplying services to third parties there. At the remaining two BT exchanges within the CLA we analysed, there are two OCPs apparently with presence. At one of these sites one LLU provider, [\$<], already uses a third party provider.

#### Competition for 'access only' segments

- 4.541 We note that some smaller resellers use access products such as BT's EADLA to deliver high speed broadband residential services to multi-tenanted residential blocks. These operators do not consider the wholesale CISBO services they rely on to deliver these services would be provided competitively in the CLA. [%] also noted that very poor broadband speeds and service delivery times in parts of London were not consistent with BT operating in a competitive marketplace.
- 4.542 In the review of wholesale markets like CISBO, we necessarily focus on competition to provide CISBO services by CPs with their own infrastructure. In this context, the participation of smaller resellers is not a necessary condition for a competitive downstream services market. In other words, the presence of a number of vertically-integrated CPs with their own infrastructure could be sufficient to protect end-users.
- 4.543 The CISBO market includes access links to customer sites. However, specific products such as EADLA are not a market in their own right, but one of various products which BT and other CPs provide within the CISBO market in competition with each other.
- 4.544 It may be the case that in the absence of regulation, resellers would be able to get what they wanted on the merchant market. For example, in Central London, the number and density of businesses means that entry barriers are of much reduced significance. While existing suppliers would still face some costs of expansion in connecting customer sites, the number and coverage of rival networks in these areas indicates that there is scope for competition.<sup>323</sup> However, as noted above, we do not rely on this potential competition to supply particular CISBO services to resellers for our finding that no CP has SMP in the supply of CISBO services overall.
- 4.545 In relation to [۶<] comments on very poor broadband speeds / service delivery times in parts of London, we consider these issues more relevant to the Fixed Access Market Review. In the last review we found BT to have SMP and imposed remedies to address quality of service issues including service connection times. We do not consider any SMP-related issues for that market are informative for our assessment of market power for CISBO services.

Conclusion: No CP has SMP in the CLA

- 4.546 We recognise that the evidence on competitive conditions in the CLA is balanced and not all the evidence points towards a no SMP finding. In particular, BT has a relatively high service share across the CISBO market as a whole and in the low and medium CISBO segments below 1Gbit/s.
- 4.547 However, we place considerable weight on the presence of rival networks. In the CLA, our NR analysis based on large business sites and actual connections shows far greater depth of competition with BT's competitors far closer on average to

<sup>&</sup>lt;sup>323</sup> Hyperoptic also questioned the use of business locations (in the network reach test presumably) to define the CLA. It suggested we take into account residential locations amongst others, though it is hard to see the number of domestic CISBO connections becoming material. The sensitivity analyses that we have done, in particular those based on leased line customer end locations, suggest the CLA boundary is robust. In the last review we also looked at the implications of taking account of small business locations but again found that this did not make any material difference (see para 5.132, footnote 450 and Figure 5.14 of the BCMR 2013 Statement).

business sites than elsewhere in the country. For the reasons given, we consider that this is a more important indicator of competitive conditions than market share data.

- 4.548 We consider structural features of the CLA are likely to continue to support CPs' ability to compete for provision of CISBO services in this area. In particular, business density is very high, suggesting the potential for CPs to use the same network infrastructure to serve a greater number of customers. Demand for very high CISBO services is also very high in the CLA, and there is a high concentration of financial sector and media businesses, which are known to have significant demand for bandwidth. This suggests the size of the market is likely to remain such that it continues to sustain the presence of multiple competing operators.
  - (b) Market power assessment in RoUK

BT's network presence and the low density of rival infrastructure, BT's high service share and evidence on BT's pricing and profitability all suggest BT has SMP in the RoUK

- 4.549 We find BT to have SMP in the market for CISBO services in the Rest of the UK (RoUK), and we expect BT to maintain its strong position in this market over the course of the review period.
- 4.550 Annex 9 presents our approach to assessment of SMP criteria, and explains how we assess each of the SMP criteria considered in our market power assessments. It also emphasises that market power determinations are to be based on a cumulative assessment of SMP criteria, taking evidence in the round. If we apply these SMP criteria explicitly to the RoUK, we conclude that BT maintains a significant competitive advantage vis-à-vis OCPs.
- 4.551 In particular, its ubiquitous network allows it to supply new customer sites at lower incremental costs as its connections and proximity to these sites requires less material network extension. Its operations in a wide range of fixed telecoms markets and the greater scale of its leased lines operations means it has a greater ability to benefit from economies of scale and scope than other operators. OCPs, in contrast, have significantly more limited coverage and less dense infrastructure than BT outside of the CLA.
- 4.552 This is reflected in the network presence indicators across the RoUK, where the average number of OCPs with network within 100m of a business site is 0.8. Only 61% of businesses have access to one or more OCPs within 100 metres with a large drop off in the number of businesses with access to two or more OCPs within 100 metres (15%). Only 2% of businesses in the RoUK have access to four or more OCPs within 100 metres and only 1% of businesses have access to five or more OCPs. Indeed, the closest CP to a business site is on average more than 150 metres and the second closest on average more than 800 metres.
- 4.553 The high costs of network expansion combined with the fact that, in the RoUK, OCPs would typically have to build further than BT to provide CISBO services to new customer sites, means barriers to entry and expansion are high in the RoUK, and BT's strong position is protected.

### Service shares

- 4.554 In the RoUK, BT's share of CISBO services is very high (57%) and the market is very concentrated, with BT and Virgin holding a combined share of 88%, and no CP apart from Virgin Media gaining a share of more than 5%.
- 4.555 BT has pointed to its lower service shares in the VHB segment. However, we have significant concerns that low service shares do not accurately reflect the strength of competition and the prospects for competition going forward. BT and Virgin hold an 85% share combined currently making the segment highly concentrated. The average CP presence at existing sites is low. For example, our NR analysis for existing customer sites purchasing VHB leased lines suggests that they would not be well served by a large number of competitors. For example, we find average NR at existing VHB sites of 1.2 (1.7) for a 100 metres (200 metres) buffer distance assumption. For BT's VHB sites, NR is lower at 0.9 (1.5).
- 4.556 Furthermore, the VHB segment is very small and represents around 3% of all CISBO circuit volumes in the RoUK. Hence, VHB service shares would be sensitive to small changes. In an illustrative example in Annex 5, we show that relatively modest upgrades from lower bandwidth CISBO services to the VHB segment combined with the incumbency advantages BT is likely to enjoy with respect to its existing lower bandwidth customers could push BT's share above 50% in this area.
- 4.557 Virgin has also told us that its experience of competition for CISBO services does not seem to reflect its relatively high overall share in the VHB segment. We note that Virgin's relatively high share in VHB partly reflects our inclusion of mobile backhaul circuits in the VHB CISBO segment, which [3<]. [3<]. <sup>324</sup> In contrast, BT has been able to retain a high share of these services (32%) despite pricing its services at a high mark-up.
- 4.558 For all other segments, BT's share is far higher (46% for CISBO low; 69% for CISBO medium; and 69% for CISBO high). Unlike the CLA, rivals to BT are not well placed to significantly increase their shares due to the lack of rival infrastructure. We consider this reflects BT's current position of SMP in all CISBO services, including VHB, in the RoUK.

# Pricing and profitability

- 4.559 We also considered evidence on BT (and to some extent OCP) pricing and BT's profitability of providing CISBO services in the UK outside the LP and CLA (currently referred to as the WECLA):
  - BT's low, medium and high CISBO services in the UK outside the WECLA have been subject to successive charge controls;
  - BT has sold very high CISBO products in the UK outside the WECLA (which covers the same area as the CLA and the LP together) at list prices, it has not offered discounts as in the WECLA. As the discounted prices in the CLA in particular are evidence of targeted price reductions intended to meet local competition, we consider the fact that prices remain higher outside the CLA and LP is consistent with BT having SMP in the RoUK;

<sup>&</sup>lt;sup>324</sup> [⊁]

- Our profitability analysis, presented in Annex 17, shows that the return on capital employed (ROCE) of BT's provision of CISBO services in the UK outside the WECLA exceeded the cost of capital in the two financial years considered, 2014/15 and 2013/14. The high profitability observed is consistent with a market power finding.
- 4.560 Overall the evidence on pricing and profitability supports an SMP finding in the RoUK.

#### Conclusion: BT has SMP in the RoUK

4.561 In summary, we consider that the combination of BT deriving a competitive advantage from its network, BT's very high market share, the high degree of concentration, and the limited presence of rival infrastructure is consistent with a finding of SMP in this market. Given the weakness of competition to BT from within the market, we do not consider that 'out of market' constraints from NGA or dark-fibre would materially impact competition in the RoUK. As a result, we conclude that BT holds a position of SMP in the RoUK.

### (c) Market power assessment in LP

Density of rival infrastructure in the LP as a whole is not sufficient to remove BT's SMP in this area, but conditions are not homogenous throughout and customers at some sites do have a choice of supplier - we take this into account when designing remedies

- 4.562 We find that BT has SMP in the market for CISBO services in the LP as, in general, investment in infrastructure by rivals to BT in this area has been relatively limited compared to the CLA, and most customers in the LP do not have sufficient alternatives to BT to prevent it from exercising its market power.
- 4.563 However, in making this SMP finding, we recognise that conditions are not fully homogenous throughout the LP, and that at a small number of sites in this area BT does face effective competition from rivals. In particular, we are conscious that a number of OCPs have invested in infrastructure to target certain high value sites. At these sites, consistent with our single CISBO product market, we consider customers at all bandwidths are likely to have an effective choice of provider. However, these sites form a limited part of the LP as a whole, where the availability of rival infrastructure is much lower. Moreover, we do not consider it realistic or appropriate to define geographic markets on a site by site basis as this would be neither practical nor proportionate.<sup>325</sup>
- 4.564 While we determine BT to have SMP in the LP on a forward-looking basis, we consider it appropriate to take account of the heterogeneity of competitive conditions at a small number of sites in the area in our assessment of remedies.

#### Competition is limited for the majority of users across the LP

4.565 As above, Annex 9 outlines our approach to SMP assessment, and describes how we assess each of the SMP criteria identified as relevant to market power assessments in wholesale leased lines markets. When we apply the SMP criteria

<sup>&</sup>lt;sup>325</sup> Annex 16 (paragraphs A16.48 to A16.67) includes a detailed discussion of our approach to market analysis by geography.

identified in Annex 9 to the LP, we conclude that BT derives a competitive advantage from control of its ubiquitous network, and from its ability to exploit economies of scope and scale to a greater extent than OCPs. This competitive advantage – reflecting the fundamentals of BT's strong position on the basis of its much more extensive network – underpins our assessment that BT has SMP in this market.

- 4.566 Across most of the LP, the ability of OCPs to compete is constrained by the more limited coverage and density of infrastructure. Hence, we do not consider they will be able to overcome BT's advantage in the period covered by the review to the extent required for effective competition across the CISBO range to become sustainable. Our evidence in Table 4.4 shows:
  - In the LP, with average network reach of 2.5, the presence and density of rival infrastructure is higher than the RoUK but still considerably lower than in the CLA, with the result that businesses located in this area are significantly less likely to have sufficient alternatives to BT.
  - Only 22% of businesses are located within 100m of four or more OCPs and only 37% within 200m of five or more OCPs. A third of businesses will only have one OCP within 100m, compared to 1% in the CLA. As CPs may not be willing to dig 100m to connect a customer in all cases, we consider it likely that significant numbers of users in the area would not be adequately protected by competition.
- 4.567 BT's share of all CISBO services is relatively high in the LP (48% by volume; 42% by revenue), above the traditional dominance threshold. In addition, BT and Virgin combined account for the majority of CISBO sales (73% by volume).
- 4.568 We note that there is some presence of EFM operators in the LP. As discussed in Annex 10, there are on average two EFM operators present across BT exchanges capable of providing coverage to the LP. However, our analysis suggests that EFM accounts for limited activity in the CISBO market in the LP and, of course, only at low bandwidths.<sup>326</sup>
- 4.569 'Out of market' constraints from NGA and dark-fibre are also unlikely to affect BT's SMP. We expect only a minority of users to be able to substitute dark fibre for active CISBO services. Based on existing dark fibre sales, these services would represent around 3% of volumes in the LP, if we were to combine sales of dark-fibre and CISBO circuits.<sup>327</sup> Moreover, we consider the constraint from dark fibre to be relatively weak, as discussed in our product market definition. It is a niche product only used by a minority of customers. Dark fibre is used for specific purposes or reasons rather than being a close substitute for active services at the margin and prices do not suggest there is a common pricing constraint. Infrastructure in the LP which could be used to supply dark fibre is patchy.
- 4.570 We find BT to have SMP in the market for CISBO services in the LP, and we expect BT to maintain its strong position in this market over the course of the review period.
- 4.571 BT and IIG members argued there was effective competition in the LP (and CBDs). They noted that >90-95% of sites within the LP are covered by at least 2 OCPs within

<sup>&</sup>lt;sup>326</sup> Excluding sales of EFM would marginally increase BT's CISBO share in the LP by 0.5 percentage points.

 $<sup>^{327}</sup>$  See Table 4.3 above. As noted earlier, we assume that on average 2 – 3 wavelengths are lit per fibre.

200m and would therefore expect service shares to fall going forward. They also argued that we should not reintroduce regulation in the LP given that the market for VHB has become more competitive. BT stated that it has very low shares in VHB services in the LP (16% according to our latest estimates) and that some competitors have higher shares with multiple competing fibre and duct networks.

- 4.572 We acknowledge that the density of rival infrastructure is higher in the LP than in RoUK, but we consider that this is not enough to overcome BT's advantages and hence protect a sufficient proportion of customers. We have not seen any evidence to suggest that investment in infrastructure, even in the absence of regulation, would be significant enough to remove BT's market power within the period covered by this review. Most planned strategic investments that we are aware of do not focus on the LP.<sup>328</sup>
- 4.573 As with the CLA, OCPs have fared better in winning market share in VHB services than lower bandwidth CISBO services, with BT holding only a 16% share in the VHB segment of the market currently. At lower bandwidths BT continues to have a higher share in low, medium and high CISBO (44%, 57% and 45% respectively). However, in contrast to the CLA, these differences in share reflect a degree of heterogeneity in competitive conditions between different sites in the LP which we discuss in more detail below.

The LP as a whole is not effectively competitive: a small number of sites do have a choice of supplier, but this does not materially impact on BT's advantages across the LP

- 4.574 We recognise that OCPs have been successful in the (currently) small VHB segment. BT's share of the VHB segment is relatively low and the evidence shows that these existing VHB customer sites are well served by competition and are not likely to become less competitive over the timeframe of this review. For example, we estimate:
  - BT has a share of 16% and at least four other OCPs have greater than a 5% • share of the VHB segment;
  - average network reach to BT's existing VHB customer sites is 3.67; and
  - 80% (87%) of BT's VHB customer sites have four or more OCPs within 100m (200m).
- 4.575 Therefore, existing VHB sites in the LP appear on average to have a reasonable degree of choice of provider.
- 4.576 From our discussions with stakeholders, however, they explained that most competition in the LP is to a few 'honeypot' sites (i.e. sites of particularly high value). A particular example is the Slough Trading Estate which contains datacentres and around 400 businesses.<sup>329</sup> One OCP, [3<], supplies around 55 VHB circuits alone within a single postcode sector covering some of this area. These sales account for nearly 10% of all VHB circuits sold in the LP. More generally, we estimate that the

<sup>&</sup>lt;sup>328</sup> For example, [3<] provided data in relation to its roll-out plans in terms of number of additional premises by postcode sector [X]. According to this data, [X]. We discuss this further in Annex 10 (A10.175 to A10.179). <sup>329</sup> http://www.segro.com/slough/why-ste/join-business-community

VHB segment in the LP consists of around 115 unique postcodes out of a total of 23,000 in the LP and accounts for only 6% of all CISBO services by volume. Nearly a quarter of VHB sales are also to mobile backhaul providers.

- 4.577 This competition in the VHB segment in the LP is therefore very concentrated and, unlike the CLA, we do not consider there is scope for OCPs to expand to other CISBO segments to the same extent. This is because, across the LP more widely, OCP infrastructure is patchy, reflecting the much sparser distribution of other potential high value sites in the LP relative to the CLA. Our NR statistics show that outside the current key VHB sites there is less competing infrastructure:
  - Average network reach across the LP as a whole is 2.5 (4.1) for 100 metres (200 metres), compared to 3.7 (5.3) at BT's VHB sites; and
  - For lower bandwidth CISBO segments (i.e. excluding VHB), we see relatively low coverage at existing sites. Average network reach is 2.6 in the LP (100 metres) as a whole and only 39% of LB CISBO customer sites have four or more CPs within 100 metres.
  - If we look specifically at OCPs within 100 metres of BT customer sites in the LP, around 30% have only one or fewer OCPs and 35% have two or three CPs; and 35% have four or more CPs. By contrast, as noted in paragraph 4.574 above, we estimate that most of BT's existing VHB customers have network within 100 (200) metres of 4 or more CPs.
- 4.578 This is reflected in the fact that BT still holds close to a 50% share of CI services outside of the VHB segment.
- 4.579 The migration we expect to occur from 1Gbit/s to VHB means that a material proportion of customers in the less competitive parts of the LP are likely to upgrade to VHB during the course of this review period. These customers are not the current high value sites but the generic enterprise users of whom BT has a large share, and we consider that they are unlikely to attract new infrastructure build by rival CPs. As a result, these customers are likely to continue to have limited alternatives to BT, even when they upgrade to VHB.
- 4.580 A material proportion of users of lower bandwidth CISBO services in the LP, including potentially some of those upgrading to VHB services, may therefore have no effective alternative to BT. Because of the nature of competition in this market, prices may vary from customer to customer (many contracts may be awarded by competitive tender), and users in general will not benefit from the presence of a relatively low number of sites where there is effective choice.
- 4.581 We also considered evidence on BT pricing and profitability. As in the CLA, the evidence is mixed.
  - [×]
  - As regards BT's pricing of other CISBO (formerly AISBO) services in the LP, we note that:
    - BT's pricing of other CISBO (formerly AISBO) services in the WECLA is currently subject to a safeguard cap and, at present, BT does not price up to the maximum permitted by that cap. The fact that BT could have set higher

prices might give an indication that it faces competitive constraints that prevented BT from raising prices further.

- Apart from the discounts offered on very high bandwidth CISBO, BT has (generally) chosen not to vary its CISBO prices by geographic areas. More particularly, BT has set the same prices inside and outside the WECLA. While this could point to competitive conditions being rather homogeneous across geographic areas, we note that the presence of SMP regulation might have affected BT's incentives to give discounts.
- There is one exception to BT pricing uniformly. In the period May 2013 to end of March 2014, BT, only in the WECLA, reduced connection charges to zero for its EAD 1Gbit/s services. This could reflect competitive forces.
- Finally and again as in the CLA, Annex 17 presents our analysis of the profitability of BT's provision of AISBO services in the WECLA. We show in Annex 17 that in the financial years 2013/14 and 2014/15 BT's return on capital employed (ROCE) significantly exceeded BT's cost of capital for regulated AISBO services.
- 4.582 Overall the evidence on pricing and profitability is consistent with an SMP finding in the LP. Whilst we only have evidence on profitability for the CLA and LP combined (the WECLA), [3<]. However, other factors in the LP, especially the much more limited extent of competing infrastructure, also point to an SMP finding, whereas in the CLA these factors provide evidence that BT does not have SMP.
- 4.583 It seems likely that the particular factors which have led to so much infrastructure investment in the CLA are present to a much lower degree in the LP. We note that:
  - Business density (and leased lines density) in the LP is only slightly more than 10% of the density in the CLA: 15 businesses per square kilometre in the LP versus 128 in the CLA.
  - In addition, we note that the CLA contains London's core financial districts, with businesses in this sector known for their very high demand for connectivity services and bandwidths.

Competition at existing VHB sites in the LP warrants attention

- 4.584 Overall we conclude that BT derives a competitive advantage in this area from control of its ubiquitous network, and from its ability to exploit economies of scope and scale to a greater extent than OCPs. We do not consider that OCPs in the LP, constrained by their more limited coverage and density of infrastructure, will overcome BT's advantage in the period covered by the review to the extent required for effective competition to emerge across the CISBO range. On this basis, we conclude BT has SMP in the LP.
- 4.585 We recognise that there is a degree of heterogeneity of competitive conditions in the LP, with certain 'honeypot' sites in VHB segments facing a greater degree of competition. However, we do not consider it realistic or appropriate to define geographic markets on a site by site basis as this would be neither practical or proportionate, and so we assess the area as a whole.

- 4.586 We have clear evidence, supported by all stakeholders (including BT), that the VHB segment will evolve over the course of this review.<sup>330</sup> As set out in Annex 5, we expect service shares and competitive conditions in the VHB segment to converge towards those of the CISBO market as a whole, as VHB users become increasingly those who have recently migrated from lower bandwidths.
- 4.587 Our view is that, despite facing a greater degree of competition at some sites, overall BT has SMP in the provision of CISBO services in the LP. We recognise that the LP differs from the RoUK because of the degree of heterogeneity between so-called honeypot sites and the rest of the area. We take account of the degree of heterogeneity of competitive conditions in our assessment of remedies.

Conclusion: BT has SMP in the LP

- 4.588 We conclude BT has SMP in the LP based on BT's network advantages in this area and more limited coverage and density of OCPs' infrastructure. However, we recognise that rival infrastructure is greater in this area than in the RoUK, in particularly for existing VHB customers. We take this into account in considering our remedies design.
  - (d) Hypothetical SMP assessment for CBDs

Our main SMP assessment for CBDs is part of the RoUK as a whole, but even if we did assess CBDs separately, we would find BT to have SMP in those areas.

- 4.589 We have not defined a separate geographic market for CBDs. CBDs are part of the RoUK geographic market, in which we find BT to have SMP. Nevertheless, we consider that even if we had defined a separate geographic market for the CBDs, the available evidence is consistent with BT having SMP in such a market.
- 4.590 If we apply the SMP criteria, noted and explained in Annex 9, to competition for CISBO services in the CBDs, we find that BT has a significant competitive advantage in comparison to OCPs because of its more extensive network, scale and scope.
- 4.591 In the CBDs, the presence and density of rival infrastructure is relatively low:
  - We observe average network reach of 2.8 for 100m buffer distance.<sup>331</sup>
  - Within CBDs, only 30% of businesses are located within 100m of four or more OCPs and only 46% within 200m of five OCPs. One fifth of businesses will only have one OCP or no OCPs within 100m. As CPs may not be willing to dig 100m to connect a customer in all cases, we consider it likely that some users in the area would not be adequately protected by competition.
  - In CBDs, there is also more limited coverage at customer end sites. In Annex 10 (Tables A10.38 and A10.39) we looked at differences in competitive conditions between current VHB customer sites and the lower bandwidth CISBO sites which may be representative of the future VHB CISBO customer base:

<sup>&</sup>lt;sup>330</sup> We discuss above, in our product market definition section, evidence on migration from information provided in response to requests to BT and Virgin and from pricing meetings with some CPs. <sup>331</sup> See Table 4.4
- Average network reach at 100m was 3.1 for VHB CISBO customer sites and 2.7 for LB CISBO customers. Corresponding values for 200m network reach within the CBDs to existing VHB and LB CISBO customer sites are 4.4 and 4.2 respectively.
- The proportion of VHB CISBO and LB CISBO customer ends within a 100m buffer distance of four or more OCPs is relatively low (28% of VHB customers and 35% of LB CISBO customers are within reach of four of more OCPs). This contrasts with the LP where 55% of current VHB CISBO customers and 39% of LB CISBO customers are within 100m of four or more OCPs.
- 4.592 BT's share of all CISBO services is high in the CBDs (46% by volume; 45% by revenue), above the traditional dominance threshold. In addition, BT and Virgin combined account for the majority of CISBO sales (80% by volume) with a similar concentration across bandwidths. All OCPs, apart from BT and Virgin, have a service share below 10% in the CBDs. The HHI concentration indicator for very high bandwidth services is 3,937 in the CBDs.<sup>332</sup>
- 4.593 We note that there is some presence of EFM operators in CBDs. As discussed in Annex 10, there are on average 1.7 EFM operators present across BT exchanges capable of providing coverage to CBDs (marginally below the average presence seen in the LP). However, our analysis suggests that EFM accounts for limited activity in the CISBO market in the CBDs.<sup>333</sup> For similar reasons as in the LP, we do not consider that 'out of market' constraints from NGA or dark-fibre would materially impact competition in CBDs. The share of dark fibre in combined CISBO and dark fibre volumes is also lower in the CBDs than in the LP and is similar to the dark fibre share in the RoUK, suggesting that any constraining effect would be relatively weak in any case.
- 4.594 We further note that, in the CBDs, there is no evidence of price discounting. Business density is much lower in the CBDs than in the CLA whilst, unlike the LP, they do not benefit from proximity to the CLA. As a result, CPs are likely to find it less attractive to invest in incremental network expansion in the CBDs. Each CBD is a very small area with relative low business density within it and, in particular, in the surrounding areas, which show little demand for leased lines and low network reach.
- 4.595 We also reiterate that while there are some similarities between the CBDs and the LP in terms of presence of rival infrastructure, there are reasons to expect that competition is likely to be less strong in the CBDs than in the LP. We note in this regard (a) the LP's stronger economic and physical links with the CLA; and (b) the greater number of businesses located in, and CISBO services supplied to businesses in, the LP as compared to each of the individual CBDs.<sup>334</sup> The latter two features are likely to have contributed towards a greater depth of competition in the LP today and also suggest greater future potential for incremental infrastructure build in the LP.
- 4.596 Overall, fewer OCPs have been successful in providing services in these areas and the CISBO market in these areas is more concentrated as a result. The prospect for

<sup>&</sup>lt;sup>332</sup> These levels of concentration are closer to the RoUK (3,860) than the LP (2,240)

 <sup>&</sup>lt;sup>333</sup> Excluding sales of EFM would marginally increase BT's CISBO share in the CBDs by 0.5 percentage points.
 <sup>334</sup> For example, the total number of circuits in the LP is around 12,000 whilst in Bristol there are fewer

<sup>&</sup>lt;sup>334</sup> For example, the total number of circuits in the LP is around 12,000 whilst in Bristol there are fewer than 2000 circuits in total and less than 20 very high bandwidth circuits, corresponding to a small number of business sites.

incremental infrastructure expansion (in the absence of any remedies) is relatively weak in light of the structural features of CBDs.

### 4.4.5 Our SMP findings for CISBO services by geographic areas

- 4.597 Our conclusions are that:
  - No CP has SMP in the market for CISBO services in the CLA;
  - BT has SMP in the market for CISBO services in the LP;
  - BT has SMP in the market for CISBO services in the RoUK (including CBDs).
- 4.598 We recognise however that there are some competitive differences between the geographic markets in which we find SMP, particularly as between the RoUK and the LP. We have taken this into account in our assessment of remedies.

# 4.5 Mobile and LLU backhaul

### 4.5.1 Introduction

- 4.599 Leased lines are used to support other markets, in particular, mobile telephony and broadband markets and retail fixed broadband internet access markets. Leased lines are used to provide backhaul from mobile base stations and LLU ("local loop unbundling") backhaul<sup>335</sup> from unbundled BT exchanges.
- 4.600 MNO backhaul, in particular, is often purchased as part of a downstream managed service sold by BT Wholesale. We consider that prices at this 'downstream' managed service level are constrained by the MNO's ability to use upstream inputs purchased from Openreach, for reasons that we set out in Annex 7. Hence our primary focus here is on the upstream inputs that can be used to deliver these downstream services and, when we refer to MNO and LLU backhaul, we mean the 'upstream services' similar to TISBO or CISBO services.
- 4.601 In the following paragraphs, we summarise our consultation proposals to include mobile and LLU backhaul within the market(s) for technically equivalent wholesale leased lines (TISBO and CISBO), stakeholder comments and our decision to include MNO and LLU backhaul in relevant TISBO and CISBO markets. Our full analysis is set out in Annexes 7 (mobile backhaul) and 8 (LLU backhaul), respectively.

### 4.5.2 Summary of consultation

- 4.602 We proposed to include mobile backhaul services within the relevant low bandwidth TISBO and CISBO markets depending on the interface used. This was because:
  - RBS backhaul is technically equivalent to a TISBO service while Ethernet mobile backhaul is technically equivalent to an Ethernet service that supports synchronisation;

<sup>&</sup>lt;sup>335</sup> Our terminology refers to LLU backhaul, as LLUOs purchased backhaul for CGA broadband, based on unbundled copper loops, but increasingly backhaul is for NGA typically delivered using VULA.

- There is potential for demand-side and supply-side substitution, in the absence of discrimination on the basis of use;
- Competitive conditions were sufficiently homogeneous.
- 4.603 Our SMP proposals for the TISBO and CISBO markets therefore covered the provision of mobile backhaul services. We also noted that the evidence strongly supported the inclusion in a single market of MNO backhaul supplied using Ethernet and WDM technologies.
- 4.604 Similarly, we proposed to include LLU backhaul within the relevant CISBO market, and explained that this ensured that our SMP proposals covered the provision of LLU backhaul services.

### 4.5.3 Stakeholders' responses

- 4.605 In general, independent MNOs expressed the view that mobile backhaul was not competitive.
  - [3<] considered BT wholesale has SMP in the mobile backhaul market and makes extensive use of BT Wholesale MEAS products, and there are no alternative providers to go to if BT increases these prices due to the scale of BT's coverage.
  - Vodafone defined mobile backhaul as a distinct sector in the wider CI market. Vodafone considered that BT has little if any competition in mobile backhaul, including in the CLA, despite evidence of greater alternative network providers in the CLA.<sup>336</sup> It submitted that this was because of MNO's UK-wide requirement for backhaul and the structure of BT's UK-wide discount options.
- 4.606 EE noted that since its last representation to the BCMR in January [%].
- 4.607 BT agreed that BT Wholesale does not have SMP at the level of managed services for mobile backhaul. It further considered that MNOs purchase their requirements as large turn-key contracts for a managed service and have a number of strategic options for obtaining such a service, as follows:
  - Self-supply using microwave radio links, complemented by their own fibre in more aggregated parts of their network
  - Competitive supply, for example from Virgin Media, complemented by self-supply in rural areas;
  - Supply based on active services from BT;
  - A strategic mix of the above solutions based on geography and/or time of ordering in order to ensure the MNO is not tied to any one option.
- 4.608 BT argued that the first two of the above options provided effective competitive constraints on BT's prices for active services at the upstream (TISBO and CISBO) level (the third of the above options).

<sup>&</sup>lt;sup>336</sup> Vodafone referred to BT's market share of 89% for mobile backhaul.

4.609 BT argued that LLU backhaul was also subject to tendering, not on a site by site basis, but as part of network solutions. BT argued that the purchasing CPs have strong network knowledge which gives them countervailing buyer power. BT did not agree with Ofcom's market power finding which it said fails to address the strategic choices open to CPs and the nature of backhaul as a bid market.

### 4.5.4 Ofcom's conclusions

### MNO backhaul

- 4.610 We provide a more detailed summary of stakeholder comments and our response in Annex 7. We have decided to include mobile backhaul in the TISBO and CISBO markets as appropriate based on the following:
  - **Technical assessment:** MNO backhaul is technically equivalent to standard leased lines. Whilst mobile operators have a need to synchronise timing at cell sites, this technical requirement can be supported natively by TI services, and Ethernet now includes synchronisation as a service feature (the main standard is referred to as SyncE). We find that SyncE is now a standard feature of available Ethernet equipment and operators such as Virgin Media have successfully deployed Ethernet equipment using SyncE for mobile backhaul applications in the UK.
  - Demand and supply-side substitution: in the light of specific technical requirements for MNO backhaul, we consider whether any demand or supplyside substitution opportunities exist between, on the one hand CISBO and TISBO services, and on the other, mobile backhaul services. In our view RBS backhaul services are identical to standard TI services and synchronisation is increasingly a standard feature of Ethernet and so in principle MNO backhaul and standard services are substitutable. The key question therefore is whether opportunities for demand-side or supply-side substitution actually exist, and this depends on the extent of competition in the provision of mobile backhaul; and
  - **Competitive conditions:** It might be appropriate to define mobile backhaul as a separate market if the competitive conditions differ significantly from other leased lines services. However, we have concluded that our SMP findings would be the same even if we defined a separate market for mobile backhaul. Respondents to the May 2015 Consultation who commented on MNO backhaul focused on competitive conditions. We summarise the different viewpoints as follows:
    - BT says MNO backhaul is competitive everywhere due to a combination of competition from OCPs in a bidding market and self-supply using microwave;
    - MNOs say MNO backhaul is not competitive anywhere due to the ubiquity of BT's network, the MNOs' need for national coverage and their more-or-less necessary reliance on a single supplier;
    - We believe competitive conditions in MNO backhaul are in fact sufficiently homogeneous with other leased lines for them to be included in the same markets as the corresponding CISBO or TISBO services. Outside the CLA, in areas where there is insufficient OCP infrastructure, MNOs are largely reliant on BT for backhaul. However, there is no technical need for reliance on a single supplier and MNOs can and do use alternative suppliers for some of their needs. The size of the CLA and the number of potential suppliers there, particularly at higher bandwidths, should mean MNOs have both the option of

choosing an alternative supplier to BT and a strong incentive to do so if BT sought to raise prices for MNO backhaul.

- 4.611 We note that a significant proportion of purchases of MNO backhaul from BT make use of 'downstream' MEAS solutions. However, this does not suggest a fundamental difference in competitive conditions at the upstream level or a need to define a separate MNO backhaul market.
- 4.612 Therefore, we do not identify a separate mobile backhaul market and we have considered competition in the provision of MNO backhaul as part of our wider assessment of SMP in leased lines.

### LLU backhaul

- 4.613 In Annex 8, we conclude that it is appropriate to include LLU backhaul as part of the CISBO product market. We find that:
  - LLU backhaul and the technically equivalent CISBO backhaul services are in principle substitutable;
- 4.614 The main issue for respondents to the May 2015 Consultation concerns competitive conditions in the provision of LLU backhaul:
  - BT says LLU backhaul is competitive everywhere due to competition from OCPs in a bidding market;
  - LLUOs say LLU backhaul is not competitive anywhere due to the ubiquity of BT's network, the LLUOs' need for national coverage and their preference for a single national supplier;
  - We believe competitive conditions in LLU backhaul are in fact sufficiently homogeneous with other CISBO services for them to be included in a single market. Outside the CLA, (where both access and backhaul are competitive) and apart from at those exchanges designated as "New Competitive Exchanges" (where backhaul is treated as part of competitive core conveyance), BT has SMP in LLU backhaul. However, there is no technical need for reliance on a single supplier and LLUOs can and do use alternative suppliers for some of their needs. In the CLA, there is evidence of both actual competition (BT's share of LLU backhaul is lower here than in other areas) and potential competition. At the NCEs, as described in Annex 15, a sufficient number of OCPs are present for the supply of conveyance from these exchanges to be competitive.
- 4.615 Therefore, we do not identify a separate LLU backhaul market and we have considered competition in the provision of LLU backhaul as part of our wider assessment of SMP in the CISBO market.

# 4.6 CI core

### 4.6.1 Introduction

4.616 Most infrastructure providers in the UK have high capacity core infrastructure allowing them to provide connectivity between major urban locations and network hubs. We refer to these high capacity connections as "core conveyance" for Contemporary Interface services (CI core). These core network links are

distinguished from terminating segments, which are the links from customer sites to the core networks.<sup>337</sup>

- 4.617 Since several CPs have their own core network infrastructure, this suggests that in the "core" network BT does not have market power. In this section we provide a summary of our assessment of the boundary between core networks (which are competitive) and terminating segments (where we find BT to have SMP outside the CLA).
- 4.618 In this Section, we summarise our consultation proposals, stakeholders' responses and our final conclusions. Our full analysis is set out in Annex 15.

### 4.6.2 Summary of consultation

- 4.619 In the May 2015 BCMR Consultation, we proposed to define a market for core conveyance (CI core) and to find that this market is effectively competitive, as in the BCMR 2013.
- 4.620 We explained that in the previous BCMR reviews in 2008 and 2013, in order to identify the boundary between core and terminating segment markets, our starting point was to use BT's network nodes known as Openreach Handover Points (OHPs). OHPs are where the Openreach 'owned' fibre access network was separated from BT's core nodes. There were 106 OHPs across the UK and often at multiple points within urban areas. However, we did not treat OHPs as core nodes. Recognising that other larger CPs also have a core of trunk routes between major urban centres (but to a lesser extent than BT), we identified and grouped some (but not all) of BT's 106 OHPs into 56 Trunk Aggregation Nodes (TANs).
- 4.621 The definition of TANs enabled us to identify (for regulatory purposes) a non-CPspecific competitive 'core'. Circuits sold between OHPs that belonged to different TANs were classified as part of the competitive core. Any other circuits, including those between OHPs within the same TAN, were classified as terminating segments.
- 4.622 We proposed to expand the CI core conveyance market compared to the BCMR 2013, by including a further 96 BT exchanges (in addition to existing TAN exchanges) and 60 large data-centres in the list of core nodes. This is because our analysis suggested that there was a sufficient number of competing operators with connections to, and network near to, certain BT exchanges and data-centres for core conveyance services between these locations to be effectively competitive.
- 4.623 We explained that, shortly after publication of the May 2015 BCMR Consultation, we planned to ask each CP to review the information on their presence at BT exchanges and data-centres which had informed our proposals.
- 4.624 We also proposed to apply our existing methodology for grouping BT exchanges which are in close proximity to each other into TANs. Circuits between exchanges within a single TAN are not regarded as part of the core conveyance market. Applying this method we proposed to define 18 new TANs, taking the total number of TANs to 74. We proposed to treat all 60 candidate data-centres as new TANs.
- 4.625 We asked the following questions.

<sup>&</sup>lt;sup>337</sup> Terminating segments may comprise the direct links from the customer premises to an aggregation point and also the backhaul from the aggregation point to a CP's core network.

Question 4.5: Do you agree with our approach to product and geographic market definition for wholesale CI core conveyance services and do you agree with our proposed market definitions for wholesale CI core? If not, what alternative would you propose and why?

Question 4.6: Do you consider that our list of candidate competitive exchange and data centre locations is correct?

Question 4.7: Do you agree with our assessment that connectivity between additional candidate nodes and data centres are competitive?

### 4.6.3 Stakeholders' responses

- 4.626 Most stakeholders agreed with our general approach to identifying candidate competitive exchange and data centre locations. There were concerns about our analysis of competition at BT exchanges and datacentres.
- 4.627 In relation to our analysis of competition at BT exchanges:
  - Two stakeholders (Vodafone, Six Degrees) considered that we should confirm that CPs actually have competing core network at BT exchanges and data centres.
  - Six Degrees noted that, in its experience, CPs may interconnect solely for internal backhaul purposes and are not able to provide backhaul for other CPs.
  - Vodafone submitted that we should check that BT has the capacity to deliver external Cablelink at the identified exchanges;
  - BT considered that we had understated competitive presence at BT exchanges, as we had excluded purchasers such as Sky and TalkTalk who do not have their own infrastructure but rely on third party infrastructure providers such as Virgin Media.
- 4.628 In relation to our analysis of competition at data centres:
  - BT and Virgin Media questioned whether 'non-carrier neutral' DCs should be excluded.
  - Virgin Media also questioned the criteria that required interconnection between the identified competitive DCs. Six Degrees was concerned however that we check that connectivity between additional candidate nodes and data centres is competitive.
  - BT suggested that we should add further DCs to the list of competitive nodes.
- 4.629 Finally, BT argued that we should not group any of the BT exchanges into TANs and should therefore not regulate "intra-TAN" routes. BT submitted that a number of OCPs were present at the exchanges identified. BT considered that there was no logical reason for circuits between competitive exchanges in the same TAN to be regulated if they meet the same threshold for deregulation as between different TANs. BT argued that current proposed groups are significantly more extensive than the applied to the existing TAN grouping. BT noted that 'intra-TAN' circuit sales were not significant. It was concerned that the TAN groupings would lead to artificial

incentives for investment in competitive infrastructure; and will distort the efficient design and evolution of competitive core infrastructure.

### 4.6.4 Ofcom's conclusions

- 4.630 We provide a more detailed summary of stakeholders' comments and our response in Annex 15. In summary, our decision is as follows:
  - Core conveyance between the 56 Trunk Aggregation Nodes (TANs) as defined in the 2013 BCMR Statement remains outside the market for terminating segments.<sup>338</sup>
  - We identify an additional 34 BT exchanges (listed at the end of Annex 15) as CI core nodes. We refer to these additional nodes as 'New Competitive Exchanges' (NCEs).
  - Our identification of the NCEs is based primarily on an assessment of CP
    presence at BT exchanges, but we have considered other competitive indicators.
    We have also considered evidence about the ability of the main infrastructure
    providers to supply competitive core at these exchanges.
  - We have considered in our analysis whether the NCEs should be grouped together into TANs.<sup>339</sup> We conclude that there is not a strong case for grouping the additional 34 NCEs, as there is likely to be sufficient competitive conveyance between the NCEs or between the NCEs and the 56 TANs. Such conveyance is therefore outside the market for terminating segments.
  - We have also identified 64 data centres (DCs) (listed at the end of Annex 15) that appear to be used as core network nodes by multiple CPs. We define these DCs as core nodes which means that connectivity between such DCs will not be subject to regulation.
  - As with NCEs, links between DCs, between DCs and NCEs and between DCs and TANs are outside the market for terminating segments.
- 4.631 The identification of 34 NCEs is a change in the number of competitive exchanges relative to the May 2015 Consultation. This reflects information we gathered from CPs about their presence at BT exchanges.<sup>340</sup> One outcome of our further analysis was that we found Virgin Media (and others) apparently had additional network presence based on its supply to TalkTalk and Sky that we had not taken into account in the May 2015 BCMR Consultation.<sup>341</sup> Our updated analysis also suggests that at some exchanges we have 'overstated' OCPs' presence. We have therefore updated our analysis to take into account of this new data. However, we have also updated

<sup>&</sup>lt;sup>338</sup> We identified TANs in past BCMRs. They represent groups of one or more of BT's main exchanges known as OHPs and are located in urban centres (see Annex 15 for a further explanation). <sup>339</sup> This affects regulation as BT would not be required to provide core conveyance between exchanges in different TANs, but would still be required to provide circuits between exchanges within

exchanges in different TANs, but would still be required to provide circuits between exchanges within the same TAN. <sup>340</sup> Information request to CPs using our formal Section 125 information actioning newsra dated 26

 <sup>&</sup>lt;sup>340</sup> Information request to CPs using our formal Section 135 information gathering powers dated 26 June 2015.
 <sup>341</sup> In the May 2015 BCMR Consultation, we excluded Sky and TalkTalk from our assessment, as we

<sup>&</sup>lt;sup>341</sup> In the May 2015 BCMR Consultation, we excluded Sky and TalkTalk from our assessment, as we considered that these operators did not own infrastructure. We expected that if an OCP such as Virgin Media were supplying Sky and TalkTalk at a BT exchange, we would already count it as present based on Virgin Media's own interconnection with BT.

the criteria we use<sup>342</sup> to determine NCEs, in light of uncertainties over the strength of the competitive constraint which OCPs' presence may provide.

<sup>&</sup>lt;sup>342</sup> We only identify an exchange as an NCE if there are at least three Principal Core Operators present (PCOs are national infrastructure providers). However, in light of updated analysis we now include PCOs based on sales to major purchasers of backhaul/core capacity such as TalkTalk and Sky, even if the PCO itself is not directly connected to the BT exchange.

### **Section 5**

# Market assessment for legacy wholesale services

# Introduction

- 5.1 This section sets out our product market definition findings for legacy wholesale markets, and our market power determinations in the defined relevant market.
- 5.2 Our product market and SMP findings are as follows:
  - we identify a product market for wholesale low bandwidth Traditional Interface Symmetric Broadband Origination (TISBO) services at bandwidths up to and including 8Mbit/s in the UK outside the Hull area, in which BT has SMP;
  - we do not define product markets for higher bandwidth TISBO services as we consider that they are markets not susceptible to *ex ante* regulation, on the basis that the three-criteria set out in the EC Recommendation are not met;
  - we find that no operator has SMP in the provision of wholesale national TI trunk segments at all bandwidths in the UK; and
  - we find that circuits classified as regional trunk circuits following the BCMR 2013 should be included in the market for low bandwidth TISBO services.<sup>343</sup> Our analysis of regional trunk is set out in more detail in Annex 14.
- 5.3 This section is structured as follows. First, we summarise our approach to market definition. Then, following this approach, we assess the appropriate market definition for legacy wholesale services, by considering the following:
  - The substitutability between TI services with bandwidths of 8Mbit/s and below with services of different types of interface;
  - Whether we should identify separate markets for TI leased lines services of bandwidths above 8Mbit/s;
  - The market boundary between (competitive) wholesale national trunk services and less competitive wholesale TISBO (terminating segments) markets. We consider whether to define separate markets for longer-distance "national" trunk services and for shorter-distance "regional" trunk services as in the BCMR 2013. In this review, we have decided to include the latter services in the market for terminating segments.
  - Whether the market for low bandwidth TISBO is national in scope (in the UK outside the Hull area) or whether it is appropriate to identify separate geographic markets.

<sup>&</sup>lt;sup>343</sup> The regional trunk market included circuits at all bandwidths. As we explain in this section, we no longer propose to define markets for TISBO above 8Mbit/s and so only regional trunk circuits at 8Mbit/s and below will be treated as terminating segments.

5.4 Finally, we present our SMP assessment and findings in light of our product and geographic market definitions. We summarise and address relevant stakeholders' comments in each sub-section.

## Approach to market assessment for legacy services

### BCMR 2013 and May 2015 BCMR Consultation

- In the BCMR 2013 we identified the following relevant wholesale legacy service 5.5 markets in which we found BT to have SMP<sup>344</sup> and in which we imposed SMP conditions:
  - Low bandwidth TISBO (up to and including 8Mbit/s); •
  - Medium bandwidth TISBO (above 8Mbit/s up to and including 45Mbit/s):
  - High bandwidth TISBO (above 45Mbit/s up to and including 155Mbit/s); and
  - TI regional trunk segments at all bandwidths.

We found the market for very high bandwidth TISBO at 622Mbit/s to be effectively competitive in the UK (as a whole).

- 5.6 We explained in the May 2015 BCMR Consultation that our market definition is set against the context of a traditional interface (TI) market which is now in decline, and almost all new demand for leased lines services is met by more modern alternatives (e.g. asymmetric broadband, Ethernet and WDM). We did not expect significant new demand or competition within the TI segment, so we focused on existing supply and any competitive constraints from potential substitution and migration to more modern alternatives.
- 5.7 We explained that, consistent with the approach in Annex 8 of the May 2015 BCMR Consultation (Annex 4 in this Statement), we first consider substitution at the retail level. This then informs our wholesale market definition, since demand for wholesale legacy services is derived from downstream demand.<sup>345</sup> We noted that the product market definition is conducted in the absence of any other wholesale SMP regulation in leased lines markets<sup>346</sup> and on a forward looking basis.<sup>347</sup>
- 5.8 Separately to the wholesale assessment below, we have decided to lift retail regulation for very low bandwidth retail services (sub-2Mbit/s).<sup>348</sup> However, we note

<sup>348</sup> We consulted separately because BT's plans to switch off the platform may impact providers of critical national infrastructure (such as electricity grid operators).

http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/

<sup>&</sup>lt;sup>344</sup> We did not find BT to have SMP in medium and high TISBO markets in the WECLA in the BCMR

<sup>2013.</sup> <sup>345</sup> We noted that where we find that retail services are in separate product markets, we consider that demand would be similarly weak. <sup>346</sup> This approach is referred to as the modified Greenfield approach. However, we take into account

any ex ante wholesale regulation upstream that exists independently of a finding of SMP in business connectivity markets (e.g. LLU).

<sup>&</sup>lt;sup>347</sup> Rather than just looking at the current position, our market review looks ahead to how competitive conditions may change in future. Therefore, our market definition needs to be sufficiently forwardlooking to cover the three year timeframe of the market review.

that in the BCMR we still need to define wholesale markets, and this definition is informed by an assessment of all retail markets including TI services at very low bandwidths (albeit in the absence of regulation).

### Stakeholder comments

5.9 We summarise stakeholders' responses to our approach to market definition in Annex 4 of this Statement. For the reasons set out in Annex 4, we have broadly maintained the approach proposed in Annex 8 of the May 2015 BCMR Consultation.

# Substitutability between leased lines with different types of interface

### May 2015 BCMR Consultation

- 5.10 In the May 2015 BCMR Consultation we considered substitution between leased lines with different types of interface.
- 5.11 Our assessment started by considering low bandwidth services. We proposed that analogue and low bandwidth SDH/PDH leased lines (including 2Mbit/s and sub-2Mbit/s services) were in the same 'low bandwidth traditional interface' market.
- 5.12 We then discussed whether Ethernet leased lines, asymmetric broadband (NGA) or EFM-based services were sufficiently close substitutes for their inclusion in the low bandwidth TI market.
- 5.13 We did not consider that migration to Ethernet or other services would exert a sufficient constraint on the prices of low bandwidth TI services for us to widen the market. While Ethernet offers product characteristics that are adequate for most users, there remain other users with more specialised requirements that would be unwilling to switch as they need the intrinsic characteristics of TI services. At low bandwidths, TI remained the cheaper technology and the existing base of TI users remained significant, and the comparison of price differentials and TI volumes suggested that the rate of migration was unlikely to be strongly influenced by small movements in relative prices.<sup>349</sup> We also considered that barriers to switching could slow the rate of migration to alternatives, in particular where switching entails more than changes to network connectivity, as the costs of changing end-users' equipment could be significant.<sup>350</sup>
- 5.14 Our main analysis of the substitutability of EFM and NGA services for TI leased line services was set out in Annex 10 of the May 2015 BCMR Consultation. We did not consider these services to be sufficiently close substitutes for low bandwidth TI

<sup>&</sup>lt;sup>349</sup> The situation in the wholesale low bandwidth TISBO market can be contrasted with that in the retail very low bandwidth TI market where: users must migrate due to switch-off of the network used to provide very low bandwidth services; there has been a major campaign to raise awareness of alternatives; some users will switch to 2Mbit/s TI services supported at the wholesale level by low bandwidth TISBO services; thus the no-SMP finding at the retail level reflects the effect of continuing wholesale regulation of 2Mbit/s TISBO, as well as migration opportunities.

<sup>&</sup>lt;sup>350</sup> Indeed, Openreach appears to recognise this aspect of migration from legacy services to Ethernet in its sales literature, where it stated "customers may consider Ethernet adoption as a viable alternative to legacy services like Time Division Multiplexing as part of a premises move, contract renewal or PBX change-out".

http://www.openreach.co.uk/orpg/home/products/ethernetservices/downloads/ethernet\_portfolio\_training\_pack.pdf

services to be part of the same market. This provisional view was based on a range of evidence including product characteristics, relative prices and migration trends, consumer survey evidence, the way EFM and NGA services are marketed, and barriers to switching. We noted that EFM was, in principle, a closer substitute for a leased line than an NGA service, but considered that the inclusion of EFM within the low bandwidth TI market would not alter our proposed SMP findings because EFM volumes were small in relation to the TISBO market.<sup>351</sup>

5.15 In light of our proposed finding that substitution to potential alternatives at the retail level would not be a sufficient constraint on TI prices, we proposed to identify a separate wholesale market for TI low bandwidth services.<sup>352</sup> We also noted that, at the wholesale level, TI services could be further segmented into terminating segments, also referred to as symmetric broadband origination (or access and backhaul) and trunk segments, in which competitive conditions were different. Hence, we proposed to identify a wholesale market for low bandwidth TISBO, separate from the market for TI trunk services (discussed below). We also included mobile backhaul links using TDM technology (RBS backhaul) in the wholesale TISBO product markets.<sup>353</sup>

We asked the following question:

Question 5.1: Do you agree with our proposal to identify a single product market for Traditional Interface Symmetric Broadband Origination (TISBO) services at low bandwidths? If not, what alternative would you propose and why?

### Stakeholders' comments

- 5.16 The majority of respondents that commented agreed that we should identify a separate TISBO market. However, Vodafone considered the market should be widened to include higher bandwidths.
- 5.17 BT disagreed with our proposal to define a low bandwidth TI market because it saw similarities to higher bandwidth TI services in terms of rates of migration. BT considered we should have also considered whether the low bandwidth TI market would pass the three-criteria test and is susceptible to *ex ante* regulation. BT considered the TI market decline and the existence of alternatives would mean the three-criteria test is not fulfilled. BT noted in particular:
  - Substitution to alternatives: BT considered that our market research showed a wide range of alternatives to low bandwidth TI services available to business users. BT argued that the 20% decline in circuit volumes was clear evidence of substitution to other technologies. The availability of regulated and unregulated

<sup>&</sup>lt;sup>351</sup> We also noted that EFM is provided using BT's unbundled copper local loops, not the local access network used to provide other Ethernet services. EFM services are included in the CISBO market on demand-side substitution grounds. <sup>352</sup> This is because substitution between CISBO and TISBO services at the wholesale level is only

<sup>&</sup>lt;sup>352</sup> This is because substitution between CISBO and TISBO services at the wholesale level is only feasible if substitution also occurs at the retail level. A CISBO service would not be used to provide a retail TI service or vice versa.

<sup>&</sup>lt;sup>353</sup> We discussed mobile backhaul links in Annex 11 of the May 2015 BCMR Consultation. We observed that in future the majority of backhaul links would use Ethernet interfaces, but we noted MNOs' expectation that they would continue to demand TI services, at least over the next few years of this market review period. We noted that the mobile backhaul links consuming TI services were known as RBS backhaul, and we proposed to continue to include them in the wholesale TISBO product markets.

alternatives did not suggest high or non-transitory barriers to competition for TI services.

- Alternative services were comparable by technology and price: BT presented comparisons of relative prices and technical characteristics (contention, distance limits, service availability, coverage and symmetry). BT considered we had incorrectly identified the costs of EFM circuits, which are closer to those of an 'equivalent' (in BT's view) TI leased line.
- Insufficient evidence that existing TI users cannot switch to alternatives: BT noted that we had referred to some users such as Critical National Infrastructure (CNI) operators which use TI services and are unable to switch to alternatives. BT argued, however, that we had not identified any CNI user that had specific issues preventing it from switching to other technologies. BT noted that a number of CPs already run telemetry networks over asymmetric broadband services.<sup>354</sup> BT's view was that we had failed to identify any end-users of low-bandwidth services which are unable to substitute to alternatives.<sup>355</sup>
- 5.18 BT considered that the TI services are a part of a broader market, in which there is one-way substitution to alternatives. BT noted that in such legacy markets, it is reasonable to expect high or even rising market shares for those that remain. Rational market entrants would choose to meet demand using a modern equivalent technology, so, as migration occurs, one would expect to see a gradual reduction in providers of the services using the legacy technology. In this scenario the incumbent provider would eventually become the provider of last resort.<sup>356</sup>

### Our response

- 5.19 Although we agree that demand for low bandwidth TI services is declining rapidly, there is a large installed base and the evidence suggests that a significant number of customers are likely to keep using these services. According to our assessment. which relies on BT's own forecasts, we expect BT to supply around ] low bandwidth TI local circuit ends in 2017/18, and about  $[\times]$ ] in 2018/19<sup>357</sup>. The fact that some customers have switched  $[\times]$ away from TI services, or are expected to do so in the near future, is not inconsistent with our view that many customers will keep using low bandwidth TI services. Since the migration rates are not sensitive to price changes (for reasons we set out below). the threat of migration by those customers who plan to migrate already is not likely to adequately protect customers who will keep using these services. These remaining customers will need safeguards against an operator with significant market power, and we therefore consider that it is appropriate and proportionate to retain ex ante regulation.
- 5.20 In its response to the May 2015 BCMR Consultation, BT focused mainly on declining volumes in the TI market and on the existence of alternatives, and suggested that these factors mean that the three-criteria test is not fulfilled. We disagree with this

 <sup>&</sup>lt;sup>354</sup> BT further noted that equipment exists to convert telemetry information into IP over Ethernet.
 <sup>355</sup> BT also sought clarification that analogue and SDSL services included in the low bandwidth TISBO market were not regulated.

<sup>&</sup>lt;sup>356</sup> BT referred to a Dotecon paper that suggested that the decline in the market may well prevent competitive entry, but this is not a barrier the incumbent can enjoy, as the operator itself is also facing a declining market.

<sup>&</sup>lt;sup>357</sup> These are mid-year figures, based on a volume forecast model used for the LLCC, which relies on BT's response to the 20<sup>th</sup> s135 issued on 24 July 2015.

suggestion. First, the declining nature of the market makes new entry less likely and worsens prospects for effective competition. Second, even if alternatives exist, then users may not switch to those alternatives if there are costs of doing so or this will result in switching to a service of lower quality. The question we ask is not only whether there are alternatives to low bandwidth TI services, but whether a hypothetical monopolist providing low bandwidth TI services could profitably increase prices above the competitive level.

- 5.21 BT suggested that we had made an error in our comparisons of Ethernet and TI service prices in Table A10.2 in Annex 10 to the May 2015 BCMR Consultation.<sup>358</sup> We have checked the EFM price using the BT Wholesale Pricing Tool<sup>359</sup>, and when we include the same additional wholesale rental charging elements as BT we also derive the same price as BT.<sup>360</sup> However, using the higher EFM price in our comparison would not alter the fact that, despite the price difference between EFM and TI services at 2Mbit/s bandwidth, the TI customers preferred the TI services to a cheaper EFM service. A higher EFM price means the price incentive to use EFM instead of TI services is somewhat weaker than it appeared from Table A10.2, but the differential remains significant.
- 5.22 BT also made several comments regarding the SSNIP test. BT suggested that we consider a much larger price change (than 10%) that would mirror the scale of reductions required by the charge controls.<sup>361</sup> We have not done so because market definition must precede any consideration of remedies such as a charge control.<sup>362</sup> Moreover, even given the charge controls we are imposing (and consequential reductions in Ethernet prices) we expect significant volumes of TI circuits to remain in use by the end of the charge control period. Expected migration to Ethernet will not by itself remove market power in the TISBO market. BT also suggested that leased line contracts are likely to be of shorter duration than a SSNIP period. This does not seem to be the case, since leased line contracts are typically longer than one year, which is the typical period considered appropriate for a SSNIP test.<sup>363</sup> In any case, in the May 2015 BCMR Consultation we did not claim that there was an actual "lock-in" effect, but instead asked whether any switching that would occur within a year of a price increase (a SSNIP) would be sufficient to make that increase unprofitable.
- 5.23 We emphasised in the May 2015 BCMR Consultation that the SSNIP test is a useful tool but not an end in itself and that it is not to be used mechanistically. In a declining market, it is difficult to disentangle switching that would occur irrespective of a theoretical price increase from switching that would occur in response to such a price increase. In Annex 10 of the Consultation we looked at the overall migration trend away from 2Mbit/s TI services given changes in relative prices in 2008-2013. We said

<sup>&</sup>lt;sup>358</sup> We reported that a 2Mbit/s TI service was priced at £3,253 per annum, while low bandwidth Ethernet was £6,838 and a 2Mbit/s EFM-based service was £614. BT suggested that the EFM price is actually higher (£1,875). <sup>359</sup> https://www.based.com/service.com

<sup>&</sup>lt;sup>359</sup> <u>https://www.btwholesale.com/portalzone/portalzone/categoryWiseApplications.do?tab=Orders</u>

<sup>&</sup>lt;sup>360</sup> We discuss wholesale EFM prices further in Annex 6.

<sup>&</sup>lt;sup>361</sup> BT response to the May 2015 BCMR Consultation, paragraph 15.21.

<sup>&</sup>lt;sup>362</sup> The CMA guidelines on market definition (OFT 403) state that "The price increase must be large enough that a response from customers is reasonably likely, but not so large that the price rise would inevitably lead to a substantial shift in demand, and so lead to markets being defined so widely that market shares convey no meaningful information on market power. The OFT will normally consider a price 5 to 10 per cent above competitive levels to be **small but significant**" (emphasis in original), paragraph 3.3. <sup>363</sup> See for example para 3.6 of CMA guidelines on market definition (OFT 403)

<sup>&</sup>lt;sup>363</sup> See for example para 3.6 of CMA guidelines on market definition (OFT 403) <u>https://www.gov.uk/government/uploads/system/uploads/attachment\_data/file/284423/oft403.pdf</u>

that if 2Mbit/s users were price sensitive, we would expect to see the rate of migration responding to changes in the differential between TI and CI prices. But despite the significant changes in relative prices identified, the trend in TI volumes was consistently and steadily downwards and there was no clear sign that the rate of migration away from TI responded to the changes in relative charges that had occurred. We concluded that rates of migration were insensitive to changes in relative prices of Ethernet and TI services.<sup>364</sup> This view is also supported by the responses to our Market Questionnaire, where we asked stakeholders about migration to other products. For example, Vodafone expressed the view that most end-users that could switch probably already had, and that most others would only switch as part of a wider change in their IT systems, given other switching costs.

- 5.24 Regarding BT's claim that there is insufficient evidence that existing TI users cannot switch to alternatives, the question for market definition is not just whether it is possible for users to migrate to other services, but rather at what cost. Some stakeholders said that the financial and other costs were sufficient to act as a barrier to such migration. UKCTA, for example, expressed concern about the costs and difficulties faced by TI customers when migrating to CI services in its response to the May 2015 BCMR Consultation. UKCTA drew attention to a number of issues which reduced or removed the incentive to migrate including:
  - the use of TI services to deliver TDM voice services for which, in its view, VOIP services were not fully substitutable. This was because VOIP was not of equivalent quality and because the user might need to change its private branch exchange (PBX) and other customer premise equipment (CPE) in order to use VOIP;
  - the need to incur "full new connection charges, ECCs, parallel running costs and early termination costs among others";
  - the fact that the rental for a CI service was often above that for a low bandwidth TI service.
- 5.25 We also note that BT itself provides examples of the potential problems users may face when switching to alternative services.<sup>365</sup>
- 5.26 Evidence from the two BDRC surveys we commissioned suggests that switching costs or difficulties are experienced by a material proportion of customers, and that these costs can be significant, even if this is not always the case. A given level of switching cost is likely to be more significant, in relation to the potential gains from switching, for a lower value service, such as a 2Mbit/s TISBO circuit, than for a higher value one. For example, according to the second BDRC survey, the average costs of switching supplier among users of Ethernet leased lines of up to 100Mbit/s were £3.74k<sup>366</sup>. To the extent that this figure is an indication of the level of switching

 <sup>&</sup>lt;sup>364</sup> See paragraphs A10.32-34 and Figure A10.1 in Annex 10 of the May 2015 BCMR Consultation.
 <sup>365</sup> For example, footnote 74 in section 15, part B of BT's response to the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>366</sup> Among those who had incurred costs when switching supplier. Respondents were asked to include both internal and external costs. Among those who had experienced costs of migration between services, the average cost was significantly higher at nearly £28k. However, only 8% of the sample who had migrated had previously used an SDH/PDH leased line.

costs facing low bandwidth TI users, it suggests that such costs can be material, and this would also be consistent with the views of UKCTA set out above.<sup>367</sup>

- 5.27 At the same time, a high proportion (79%) of respondents to the first BDRC survey who had TI leased lines said that they had no concerns about replacing them with Ethernet.<sup>368</sup> However, this does not mean that these respondents would switch in response to a SSNIP (or indeed in any circumstances); it may be that respondents had just not thought about switching. Only a quarter (24%) of TI leased line users surveyed had actively considered switching to Ethernet leased lines and only around half of these (13%) said that they intended to do so at the end of their current contract while the rest (11%) had decided against it. Around a third of those that had not considered switching said they are likely to consider it in the future (35%). Possibly coincidentally, the proportions of those who had considered switching to Ethernet (24%) and those who had concerns about doing so were similar (21%).
- 5.28 As noted above, we have decided to deregulate the retail market for very low bandwidth TI leased lines following BT's decision to withdraw very low bandwidth TI leased lines services from 2020. During the consultation process, we found that some very low bandwidth TI users' are unlikely to respond to price signals alone. Whilst some of the reasons for this are user-specific, we and CPs have found it necessary to undertake extensive campaigns to raise awareness of the need to migrate to alternative services, rather than rely on price signals to induce migration. In responses to the Retail Very Low Bandwidth Services Consultation, some users complained that, even when they are ready to migrate, there are delays as a result of poor service from Openreach.

### Assessment and conclusions

- 5.29 We view the low bandwidth TI services as a legacy market in overall decline. With a few exceptions most new data connections are based around Ethernet or business broadband connections. The decline in demand for TI services is related to three main drivers:
  - BT has signalled to end-users that it is ending support for the platform that supports sub-2Mbit/s services due to obsolescence of the equipment;
  - a large number of TI users are increasing their bandwidths above 10 Mbit/s or higher (where Ethernet is the cheaper technology); and
  - the widespread availability of NGA broadband and EFM services to support higher upload and download speeds using Wholesale Local Access remedies (i.e. LLU and VULA).
- 5.30 Despite these general trends, significant numbers of customers are expected to remain on low bandwidth TI circuits over the review period.
- 5.31 In our assessment we considered substitutability between TI services and Ethernet. Ethernet offers product characteristics that are similar to TI products for most users, but there remain other users that will be unwilling to switch. We consider that the

 $<sup>^{367}</sup>$  We note that switching costs of £3.74k would be slightly more than the £3,253 annual rental for a 2Mbit/s TI circuit referred to in footnote 357 above.

<sup>&</sup>lt;sup>368</sup> Note that this includes responses by medium and high bandwidth TI users, whom one would expect to have no concerns about migration to Ethernet.

qualitative differences between legacy TI products and Ethernet have eroded to such a degree that for many end-user requirements they are no longer important. This is reflected in the fact that carrier class Ethernet has largely become the ubiquitous standard for new business data connections. Thus, many businesses have now adopted Ethernet or alternative services in preference to TI services.

- 5.32 Nevertheless, there may still be barriers to some legacy users switching to Ethernet, in particular due to having to change end-user equipment. Furthermore, some legacy and some specialist applications will continue to require SDH/PDH leased lines as reflected in the EC Recommendation that identifies "demanding business applications" that may require TI services.
- 5.33 Increasingly, the consumers that remain on TI services are those with highly specialised requirements that are least likely to move away. Accordingly, even if the majority of current TI users are expected to switch eventually to Ethernet, over time those users that place high weight on the particular characteristics of TI services, and are least-price sensitive, may become an increasingly large part of the remaining TI customer base.
- 5.34 Moreover, pricing and migration trends also point to separate markets for TI services and Ethernet. TI remains the cheaper technology for users with low bandwidth needs (i.e. below 10Mbit/s). At higher bandwidths, TI services are at a significant premium relative to CI services. The results of the price comparison are consistent with the patterns of demand for TI services where a significant base of low bandwidth TI services remains, whereas there have been significant declines in the installed base for high bandwidth TI services.
- 5.35 We have considered how end-users would react to an increase above the competitive price of TI services (i.e. a SSNIP). Given the already existing price differences, there is likely to be a limited response to a small price increase. This is supported by evidence we have considered on the sensitivity of demand for TI services over time to large changes in the relative prices of TI and CI services. We examined the overall migration trend away from 2Mbit/s TI services given changes in relative prices in 2008-2013. Despite the changes in relative prices the trend in TI volumes was consistently and steadily downwards and there was no clear sign that the rate of migration away from TI responded to the changes in relative charges that had occurred. This suggests that the rate of migration from TI to CI services is unlikely to be strongly influenced by movements in relative prices.<sup>369</sup>
- 5.36 We also identify the following barriers to switching from TI leased lines to Ethernet services including:
  - the potential for service disruption;
  - parallel operation whilst the new service is tested; and
  - changes required to Customer Premises equipment: end-users with SDH/PDH interfaces switching to Ethernet may require a change of CPE. Examples include

<sup>&</sup>lt;sup>369</sup> As noted in footnote 349 above, the situation in the wholesale low bandwidth TISBO market can be contrasted with that in the retail very low bandwidth TI market.

changes to PBX equipment used to provide private circuit switched voice services.<sup>370</sup>

- 5.37 Where switching entails more than changes to network connectivity, end-users may take longer to change technology and may do so only as part of an IT refresh. There would be a likely delay to switching, up to the point where switching might only take place when the end-user equipment or applications come to the end of their product life cycle. Indeed, Openreach recognised this migration trend from legacy to Ethernet in its sales literature, where it stated "customers may consider Ethernet adoption as a viable alternative to legacy services like Time Division Multiplexing as part of a premises move, contract renewal or PBX change-out".<sup>371</sup>
- 5.38 We have also considered substitutability of low bandwidth TI services and NGA and EFM, and concluded that these services are not sufficiently close substitutes.
- 5.39 First of all, aside from bandwidth, the product characteristics of EFM and NGA are generally viewed as inferior to TI services. Asymmetric broadband services are viewed as inferior in terms of SLAs/SLGs and latency and jitter performance. Latency and jitter can vary and are dependent on the bandwidth capacity of the network and traffic at any given point in time. Therefore, asymmetric broadband services cannot often guarantee specified performance levels.
- 5.40 Evidence from CPs also suggests that they are reluctant to support the same level of SLAs/SLGs for EFM as seen for leased lines more generally. We regard EFM services as part of the CISBO market but, in terms of its positioning, EFM is marketed as 'Ethernet-lite', and we view it as less likely to be seen as a close substitute to a TI service in quality terms than other Ethernet leased lines.
- 5.41 Second, price and migration trends point to low bandwidth TI services being in a separate market from NGA or EFM. At lower bandwidths, EFM and asymmetric broadband are significantly cheaper than Ethernet services. Some of the users of TI low bandwidth services not needing significant bandwidth upgrades or leased lines characteristics may substitute to these cheaper services. However:
  - Our consumer survey shows that while there is some propensity for users to consider switching to NGA, the level of switching to NGA from leased lines would not impose a sufficiently material constraint on the prices of TI leased lines.
  - There is generally widespread stakeholder agreement that leased lines and NGA are not good substitutes. This is reflected in CPs' marketing of broadband to consumers on their websites. Hence, as with Ethernet leased lines, we do not include NGA services in the TI market.
- 5.42 EFM is cheaper than low bandwidth TI and it would be capable of delivering symmetrical bandwidth at 2Mbit/s. However, stakeholders generally seem to be of the view that most of the installed base of TI users are more likely to migrate to Ethernet leased lines, perhaps reflecting the quality differences described above. In

<sup>&</sup>lt;sup>370</sup> There is equipment available that allows PBX to IP conversion, but this would still entail an additional cost of moving from one technology to another.

http://www.openreach.co.uk/orpg/home/products/ethernetservices/downloads/ethernet\_portfolio\_training\_pack.pdf

any case, the number of EFM circuits is relatively small and the inclusion of EFM within the low bandwidth TI segment would not significantly alter BT's service shares.

- 5.43 Third, end-users switching from TI leased lines to either asymmetric broadband or EFM would face similar barriers to those switching to Ethernet services. In addition to these, there may be particular issues associated with migrating leased lines to asymmetric broadband, which may include adjusting existing systems in anticipation of different levels of contention, latency and lack of synchronisation.
- 5.44 To summarise, we considered evidence available to us, including product characteristics of low-bandwidth TI services and their potential substitutes, pricing and migration trends, and barriers to switching to other services, as well as stakeholders' comments and we conclude that it is reasonable to identify a single product market for TISBO services at low bandwidths up to and including 8Mbit/s.

# TI services at higher bandwidths

### BCMR 2013 and May 2015 BCMR Consultation

- 5.45 In the BCMR 2013, we identified separate markets for TI services at 34/45 Mbit/s and at 155 Mbit/s. We based this on price evidence and our assessment of differences in competitive conditions.
- 5.46 We identified separate geographic markets for TISBO services at 34/45Mbit/s and at 155Mbit/s for the WECLA and the rest of the UK (excluding Hull). BT was found not to have SMP in the WECLA for these bandwidths, but we found BT to have SMP in the rest of the UK (excluding Hull). We found the market for very high bandwidth TISBO at 622 Mbit/s to be effectively competitive in the UK (as a whole). We estimated BT to have a 5% share out of a total of fewer than 200 circuits for TI services at 622Mbit/s across the UK.
- 5.47 In the May 2015 BCMR Consultation we proposed not to include higher bandwidth TI services (above 8Mbit/s) in the same market as low bandwidth TI services. This was because demand characteristics and competitive conditions were materially different at higher bandwidths. We did not explicitly discuss the 622Mbit/s segment. Our updated data suggests that the 622Mbit/s segment is still insignificant and in decline as there are currently only 136 TI circuits at 622Mbit/s and above (0.1% of TI circuits sold). This does not suggest that there has been a material change to competitive conditions in this segment since the BCMR 2013.
- 5.48 We also considered that the factors pointing to separate low bandwidth TISBO and CISBO markets were not as relevant at higher bandwidths. In particular, we considered that TI services at higher bandwidths were most likely to be used for data transmission, for which Ethernet was an adequate and, at these bandwidths, cheaper substitute. We therefore anticipated very low volumes of TISBO services at speeds above 8Mbit/s by the end of the market review period. Given the significant expected declines in demand for higher bandwidth TISBO, we considered it would not be appropriate to include higher-bandwidth TI services within the CISBO market, in which (we proposed) BT would have SMP. We considered that to do so would be disproportionate because the imposition of *ex ante* regulation on higher-bandwidth TI services was unnecessary. Instead, in our regulatory judgment, we considered that the appropriate approach was to regard the TI mid and high bandwidth markets as markets which were no longer susceptible to *ex ante* regulation because they no

longer fulfilled the three-criteria test set out in the EC Recommendation.<sup>372</sup> We consider that our analysis of the application of the three-criteria test to medium and high bandwidth TISBO services would apply equally to very high bandwidth (622Mbit/s) TISBO services.

5.49 We asked the following question:

Question 5.2: Do you agree with our proposal not to identify any other Traditional Interface Symmetric Broadband Origination (TISBO) services above 2Mbit/s? If not, what alternative would you propose and why?

### **Stakeholder comments**

- 5.50 [ $\times$ ] agreed with our proposals, while TalkTalk did not raise any objections.
- 5.51 Vodafone did not agree with our proposal not to identify a TISBO market above 8Mbit/s. Vodafone highlighted that BT only has plans to close down the sub-2Mbit/s platform and will continue to supply customers at other bandwidths. BT has high market shares for medium and high bandwidth TI services outside of the WECLA. Vodafone referred to a survey it had conducted of its higher bandwidth customers, which suggested the following barriers to switching: distance limitations of EAD, high cost of replacing internal systems; delivery times for new fibre / EAD poor service.
- 5.52 Vodafone noted that CPs are not investing in TI, so competition will not increase. It said that BT has high returns on capital employed (31% in 2013) and likely still has SMP. Vodafone argued that those remaining on TI services are probably beyond the reach of BT's spine network and beyond the distance constraints of Ethernet. Vodafone therefore suggested that Ofcom should check on a circuit-by-circuit basis that those remaining on TI services faster than 8Mbit/s could migrate to Ethernet services.
- 5.53 UKCTA argued that current users of TI services are unable to migrate due to the costs of migration and said that there are some applications for which PPCs are still needed. It urged Ofcom to be mindful of the "very real possibility of customer harm resulting from further deregulation and price increases, combined with the lack of a suitable process for migration". UKCTA said that Ofcom should require BT to develop an efficient migration process, with only necessary and efficiently incurred costs allowed, and observe its actual results over the next three years before deregulating further (e.g. especially regarding the proposed deregulation of PPCs faster than 8Mbit/s).
- 5.54 BT supported our proposals not to identify any markets for TISBO services above 8Mbit/s as they do not pass the three-criteria test.<sup>373</sup> It argued that other services such as Ethernet are one-way substitutes for TI services. As a result, volumes have fallen rapidly and are expected to continue to fall over the period of the review such that volumes will be negligible by the end of the review period.

<sup>&</sup>lt;sup>372</sup> When considering if any market listed in the EC Recommendation is not susceptible to *ex ante* regulation in the specific national circumstances, NRAs should demonstrate that at least one of the three criteria is no longer met.

<sup>&</sup>lt;sup>373</sup> According to the EC Recommendation 2014/710/EU, the criteria are: (i) the presence of high and non-transitory barriers to entry; (ii) a market structure which does not tend towards effective competition within the relevant time horizon; and (iii) the insufficiency of competition law alone to adequately address the market failure(s) concerned.

### **Our response**

- 5.55 In response to Vodafone's concerns, we note that BT indeed has high service shares in the provision of TI services above 8Mbit/s across the UK outside of the CLA and the LP. Nevertheless, even taking into account that BT earns high profits on these services, it is still the case that: a) prices for TI services for higher bandwidths are much higher than the equivalent Ethernet services; b) the unique product characteristics of higher bandwidths TI services compared to Ethernet are less important to customers than at low bandwidths; and therefore c) migration<sup>374</sup> to CISBO services is more likely.
- Additionally, the segment size of TI services above 8Mbit/s is small<sup>375</sup> and is in 5.56 terminal decline. High BT service shares and current profitability levels in themselves would not justify regulation when other factors are taken into account, particularly the availability of cheaper alternatives which are able to provide the required service quality and features and the extent of migration predicted over the market review period.<sup>376</sup>
- 5.57 It also seems that Vodafone has misunderstood paragraph 4.495 of the March 2013 BCMR Statement to which it refers<sup>377</sup> in its response. In that paragraph we stated that, outside of the WECLA, BT's share of 140/155Mbit/s TI services was lower than its share of 34/45 Mbit/s TI services, which we took as evidence of CPs being able to overcome barriers to entry and competition to a greater extent at the higher bandwidths. The implication is that the lower BT share was due to switching to alternative suppliers of high bandwidth TI services rather than, as Vodafone claims, a result of customers switching to Ethernet services.
- Regarding the distance limitations for EAD guoted in Vodafone's high bandwidth 5.58 customer survey as one of the barriers to switching, we note that most higherbandwidth TI services are delivered over fibre, and therefore BT should be able to use the same duct and any spare fibre to supply Ethernet.<sup>378</sup> Moreover, taking into account the dark fibre remedy, we do not believe it likely that any TI customers would be out of reach of a major CP's POP using a wholesale Ethernet service.

<sup>&</sup>lt;sup>374</sup> Migration issues are being addressed as a part of the general and quality-of-service remedies of this statement - see Sections 8 and 13 and Annex 12. This also addresses the concerns raised by UKCTA.

<sup>&</sup>lt;sup>375</sup> According to our service share model, in 2014 in the UK there were around 5,000 local customer circuit ends in the TI segment above 8Mbit/s, whereas the number of TI local customer ends in the low bandwidth segment was above 250,000. <sup>376</sup> The necessity of the assessment of a market from a forward-looking perspective, including the

application of the three-criteria test, is emphasized throughout the EC Recommendation 2014/710/EU on relevant product and service markets within the electronic communications sector susceptible to ex ante regulation (for example, in paragraphs 7, 9 and 11). The Explanatory note accompanying the Recommendation also stresses that "The analysis should assess whether the market is prospectively competitive and whether any lack of competition is durable, by taking into account expected or foreseeable market developments". We believe that the migration from higher bandwidth TI services will be largely complete by the end of the review period. <sup>377</sup> Vodafone's response to May 2015 BCMR Consultation, p28, footnote 7.

<sup>&</sup>lt;sup>378</sup> We believe it is unlikely that EAD distance limits are a significant constraint on migration on the basis that BT needs national coverage and therefore its main Ethernet products should facilitate it. We know that BT Wholesale aggregates at ASNs so it seems reasonable to assume that the whole country can be reached from ASN/OHPs using EAD and EAD Extended Reach. We have used map analysis to check this by drawing circles around BT's ASN and OHP exchanges using the EAD ER radial distance limit of 35 km. This exercise showed us that most of the UK is indeed within reach from ASNs and OHPs, apart from a few isolated areas.

### Assessment and conclusions

5.59 In our assessment we considered the following. First, according to the circuit volume data, the volume of TI services above 8Mbit/s is very low compared to both low bandwidth TI services as well as CISBO services (see Table 5.1 below). In the provision of TI services above 8Mbit/s BT has a large share above 70% outside the CLA and the LP, but within the CLA and the LP BT's share is below 35%. In a model used for our charge control assessment, we forecast significant declines in these circuit volumes, resulting in fewer than [≫] circuits remaining by the end of the three year timeframe of this review.<sup>379</sup>

Type of service	CBDs	CLA	LP	RoUK	All UK
CISBO					
<ul> <li>volume (local customer ends)</li> </ul>	14,033	32,563	12,467	264,743	310,758
- BT Share	46%	45%	48%	57%	55%
TISBO low-bandwidth <=8Mbit/s					
<ul> <li>volume (local customer ends)</li> </ul>	7,888	31,743	11,469	207,574	252,679
- BT Share	88%	63%	69%	94%	88%
TISBO >8Mbit/s					
<ul> <li>volume (local customer ends)</li> </ul>	170	1,403	323	3,543	5,281
- BT Share	48%	24%	34%	72%	57%

### Table 5.1 Comparison of volumes of TISBO and CISBO services

Note: Figures include LLU and MNO backhaul. See Annex 10 for more details. Source: analysis of CPs' data

- 5.60 Second, the product characteristics unique to TI are less important for higher bandwidths. We consider that TI services above 8Mbit/s are most likely to be used for general data transmission purposes. The quality requirements of data transmission are more easily satisfied by Ethernet than those of voice transmission or telemetry applications for which a low bandwidth TI leased line is more likely to be used. Service quality differences are therefore much less important for higher bandwidth TI leased lines than for those of 8Mbit/s and below. Our analysis leads us to consider that migration from TI services above 8Mbit/s to Ethernet will continue over the three year review period.
- 5.61 Third, our pricing and migration analysis supports the view that there are fewer concerns for higher bandwidth TI customers switching to Ethernet. TI services at higher bandwidths are significantly more expensive than Ethernet services of equivalent bandwidth and also more expensive than low bandwidth TI.<sup>380</sup> The pricing of higher bandwidth TI services suggests two things:
  - there are strong incentives for higher bandwidth TI users to migrate to Ethernet, which are less likely to be tempered by a requirement for TI characteristics than is the case for some low bandwidth TI customers; and

 $<sup>^{379}</sup>$  This estimate is based on a volume forecast model used for the LLCC, which relies on BT's response to the 20<sup>th</sup> s135 issued on 24 July 2015.

<sup>&</sup>lt;sup>380</sup> For a more extensive discussion please see Annex 10 of the May 2015 BCMR Consultation.

- customers at lower bandwidth TI wishing to upgrade bandwidth would be more likely to switch to Ethernet than upgrade to higher bandwidth TI services.
- 5.62 These migration trends can be observed within market volume trends, as the base of high bandwidth TI services is already very low relative to other leased lines segments and there are virtually no new connections of TI high bandwidths. We observe that 100Mbit/s Ethernet (and increasingly 1Gbit/s) account for the very large majority of new supply. This is further supported by evidence from our market questionnaires and consumer survey evidence.
- 5.63 Further, unlike low bandwidth TI customers, some of whom place weight on the product characteristics of TI, we think it unlikely that there will be in future a significant number of high bandwidth TI customers who continue to require high bandwidths and TI characteristics.
- 5.64 Fourth, given price savings available, TI users have greater incentive to overcome barriers to switching. Some barriers to switching remain when a user is switching technologies (i.e. between TI and Ethernet). However, given the significant savings associated with moving to Ethernet, there is a greater incentive on the end-user to overcome these barriers than there is at low bandwidths.
- 5.65 To summarize, our view is that we should not include higher bandwidth TI services above 8Mbit/s within the low bandwidth TI market as the high bandwidth TI services continue to display significant differences to low bandwidth TI. In addition we anticipate very low installed volumes by the end of the period covered by this review, noting that for high bandwidth TI services, there are economic incentives to switch to Ethernet services and more scope to do so than at low bandwidths.
- 5.66 At the same time, we do not consider it appropriate to include higher bandwidth TI services within the product market that includes Ethernet services as it would be disproportionate considering the policy objectives set out in Article 8 of the Framework Directive.
- 5.67 Instead, in our regulatory judgment, we consider the appropriate approach is to regard the TI mid and high bandwidth markets as markets which are no longer susceptible to *ex ante* regulation because they no longer fulfil the three criteria test set out in the EC Recommendation:<sup>381</sup>
  - the presence of high and non-transitory structural, legal or regulatory barriers to entry;
  - a market structure which does not tend towards effective competition within the relevant time horizon, having regard to the state of infrastructure-based and other competition behind the barriers to entry; and
  - competition law alone is insufficient to adequately address the identified market failure(s).
- 5.68 For both the medium and high TI markets, we do not think it is likely that there will be additional market entry or that BT's competitors will gain significant share of the

<sup>&</sup>lt;sup>381</sup> When considering if any market listed in the EC Recommendation is not susceptible to *ex ante* regulation in the specific national circumstances, NRAs should demonstrate that at least one of these three criteria is no longer met.

supply of TI services within the timeframe of this review given that these markets are in significant decline. BT still has advantages with its greater network coverage and existing supply to many customers. Competitive supply requires significant sunk costs to be incurred upfront, particularly related to network extension. Outside of London, BT has maintained a significant share of 34/45 Mbit/s and 155Mbit/s segments and we do not expect this to change.

- 5.69 As set out above, the reason that the current installed base of TI high bandwidth circuits is low and predicted to fall further going forward is that customers are increasingly switching to Ethernet services. This reflects the fact that Ethernet services are now a cheaper and acceptable substitute, and we believe that the availability of Ethernet services will provide a sufficient constraint on the prices of higher bandwidth TI circuits above 2Mbit/s.
- 5.70 Our analysis leads us to consider that the market failures identified in the medium and high TI markets in the 2013 BCMR, which arose from a finding of SMP and for which extensive or frequent and timely intervention was previously considered indispensable, are no longer present. In this respect we note the Explanatory Note to the EC Recommendation which states that "[o]nly in markets where national and EU competition law is not considered sufficient by itself to redress market failures and to ensure effective and sustainable competition over a foreseeable time horizon, should be identified for potential ex ante regulation" (See Section 2.2(iii)). We also note the EC Recommendation which states that "[t]he third criterion serves to assess the adequacy of corrective measures that can be imposed under competition law to tackle persistent market failures" (Emphasis added. See Recital 16). In light of our analysis, we no longer consider there are any persistent market failures in either the mid or high TI markets that would warrant, for example, access obligations under certain circumstances or extensive intervention that should be maintained over time (e.g. monitoring of terms and conditions) or frequent and/or timely intervention.

# Identifying the boundary between TI terminating segments and trunk networks

### May 2015 BCMR Consultation

- 5.71 In the May 2015 BCMR Consultation, we observed that in the UK, most infrastructure providers have high capacity networks allowing them to link together major urban locations. This provided greater scope for competition in the provision of trunk services than terminating segments. We noted that, in the BCMR 2013, we had made a further subdivision of trunk into:
  - *competitive 'national trunk'*: these were typically segments serving longer distance national routes between major cities. We found these routes to be effectively competitive; and
  - *uncompetitive 'regional trunk' markets:* we identified shorter distance regional routes. We found BT to have SMP in the provision of regional trunk segments.
- 5.72 We proposed not to revisit our analysis of competitive national trunk segments, in line with the EC Recommendation.<sup>382</sup> We proposed to use the same national trunk

<sup>&</sup>lt;sup>382</sup> We noted the Explanatory Memorandum to the EC Recommendation, which stated that:

<sup>&</sup>quot;...Nowadays, almost all Member States have deregulated this wholesale market for trunk segments. Therefore the presumption that trunk segments are replicable on a national scale remains valid.

market definition as in the 2013 Statement based on the 46 'Trunk Aggregation Nodes' (TANs) identified at the time.<sup>383</sup> We also proposed to dispense with the distinction between the remaining uncompetitive 'regional' TI trunk segments and terminating segments, and to treat all of these circuits as terminating segments. This was in light of the fact that competitive conditions for regional trunk circuits and terminating segments are similar. We asked stakeholders the following question with respect to our TI trunk market definition proposals:

Question 5.4: Do you agree with our approach to, and proposed product and geographic market definition for wholesale TI trunk, including our proposal to treat 'regional trunk' segments as part of the TISBO market? If not, what alternative would you propose and why?

### Stakeholders' comments

- 5.73 Our full summary of stakeholders' comments is set out in Annex 14.
- 5.74 Two respondents ([≫] and Vodafone) agreed with our proposals to include 'regional trunk' segments as part of the TISBO market. Vodafone agreed that the regional trunk segments will have competitive conditions that are the same as terminating segments. It saw no competitive harm from designating a single product market to cover both service elements. [≫] also concurred with our market definition / SMP findings (with no further comments).
- 5.75 BT disagreed with rolling regional trunk into the terminating segments market. It argued that this approach was flawed and not consistent with the EC Recommendation or the approach of other NRAs. BT did not see why TI trunk services were treated differently to CI core. It noted that market analysis should be technology neutral and consistent.
- 5.76 BT did not agree with re-classifying regional trunk segments as terminating segments without what it referred to as "proper economic analysis addressing the issues it had raised in economic papers submitted in response to the CFI".

### **Our conclusions**

- 5.77 In Annex 14, we set out our consideration of stakeholders' responses and our final conclusions.
- 5.78 We conclude that we should continue to define national TI trunk based on segments between (non-adjacent) TI TANs. Unlike CI core, the evidence suggests that CPs are not expanding the coverage of their TI trunk networks. The direction of travel within the market means that increasing the number of TANs (and hence further

Consequently, NRAs should not revisit their analysis of trunk segments of leased lines where these have been previously found to be effectively competitive. This assumption does not exclude, however, that individual NRAs might find that certain trunk routes fulfil the three criteria and thus warrant ex ante regulation."

<sup>&</sup>lt;sup>383</sup> We referred to the approach adopted in the 2013 BCMR Statement, where we identified the boundary between trunk and terminating segments at specific network nodes known as Trunk Aggregation Nodes (TANs), with circuits between TANs classified as trunk segments.

deregulation) is not justified. We have therefore retained our existing TAN definition.<sup>384</sup>

- 5.79 We no longer distinguish between 'regional' trunk circuits and terminating segments (TISBO circuits) as we did in the March 2013 BCMR Statement. As we show in Annex 14, competitive conditions for regional trunk circuits and terminating segments are broadly homogeneous and therefore we include regional trunk within the terminating segments market.<sup>385</sup> Hence, our finding that BT has SMP in the low bandwidth TISBO market will include those segments previously defined as regional trunk.
- 5.80 We discuss in Section 11 the implications for remedies, in particular the need to ensure that BT provides TI terminating segments (including those which used services previously called 'regional trunk') on a non-discriminatory basis.

# **Geographic market definition**

5.81 As in previous market reviews, in the May 2015 BCMR Consultation we proposed that the geographic market for low bandwidth TISBO services was national in scope.

We asked the following question:

Question 5.1: Do you agree with our proposal to identify a single geographic market for the UK (excluding Hull)? If not, what alternative would you propose and why?

- 5.82 No stakeholders commented on the geographic scope of our proposals.
- 5.83 While we acknowledge that the amount of rival infrastructure is greater in some areas, especially in the CLA, we do not consider that these variations warrant definition of separate geographic markets for low bandwidth TISBO services. We consider that our market analysis clearly indicates that BT, in all parts of the UK (outside the Hull area) accounts for the large majority of low bandwidth TI circuits. We consider that, whilst the lack of entry in this market may have reflected past BT pricing behaviour, low bandwidth TISBO circuits are low value, legacy services and the decline in volumes forecast means that we do not expect competitive conditions to change materially over the course of the review period.
- 5.84 We consider that, in the circumstances, BT's very high share, which was significantly greater than 50% across the UK, indicated that competitive conditions are broadly homogenous, and that defining separate geographic markets would not yield differences in SMP findings.

<sup>&</sup>lt;sup>384</sup> It is clear that the overall TI trunk market will not have expanded. First, the key demand centres for TI services will not have changed fundamentally. Our TANs definition identifies at least one trunk node for most of the major urban centres in the UK. In fact, the evidence suggests that OCPs are actively reducing the number of interconnection points for TI services with no new PoH connections expected.

<sup>&</sup>lt;sup>385</sup> Other European NRAs have taken account of competitive conditions in defining the boundary between core and terminating segment markets. For example in the Irish NRA's last review of leased lines, it set out: "It is clear that there are large parts of the core network where investment in alternative infrastructure has not occurred and where competitive products and services are unavailable. Where these (i.e. uncompetitive) supply conditions exist, [....] the services provided are regarded as being in the terminating segment market."

5.85 We therefore identify a single national geographic market for low bandwidth TISBO services as UK (excluding Hull).

### SMP assessment

### May 2015 BCMR Consultation

- 5.86 We proposed to find that BT has SMP in the market for wholesale low bandwidth TISBO services in the UK outside the Hull area.
- 5.87 We considered that BT's existing position in the market was one of significant market power reflecting its very high market shares, the advantages of BT's near ubiquitous network and its greater ability to benefit from economies of scale and scope. We considered that this situation would persist due to high barriers to entry and the limited prospect of the market developing towards effective competition. We considered barriers to competition to be particularly high for TISBO markets, as revenue opportunities were limited due to the low value of services, declining volumes, and switching costs which limited the proportion of volumes that could be contested. We noted that OCPs would generally need to incur higher network extension costs than BT when connecting new customers and that the sunk nature of such costs meant that they constituted a barrier to entry. We did not consider that other factors such as countervailing buyer power and substitution to alternative services would constrain BT's market power. We asked stakeholders the following question:

Question 5.3: Do you agree with our SMP assessment with respect to low bandwidth TISBO services? If not, what alternative would you propose and why?

### Stakeholder comments

- 5.88 Three respondents that commented ([≫], Vodafone and [≫]) agreed with our proposed SMP findings. Vodafone noted that BT clearly has SMP as evidenced by service shares and high returns (43.4% return above WACC in 2013 for low bandwidth). [≫ ] told us that because its sites have a wide geographic distribution across the UK, BT is the only realistic provider of VLB leased lines.
- 5.89 BT did not agree with our proposed SMP findings. BT did not agree that high market shares suggested there was a regulatory issue that requires a remedy. It noted that for a legacy technology (within a wider market) it is reasonable to expect high market shares and for those to remain unchanged or even increase over time.
- 5.90 BT submitted that the SMP assessment should focus on the barriers to users switching to other technologies. BT pointed to the rapid decline in TI volumes as evidence that large numbers of users are able to switch. BT considered we had failed to account for the constraints from alternatives such as EFM and broadband.

### **Our response**

5.91 We acknowledge that, in theory, in a declining market where there is a lack of interest from potential entrants, the incumbent's market share may increase over time as a result of some customers switching to other newer products and/or other existing providers leaving the market. However, it remains the case that a high market share suggests a lack of competition, and new entry is unlikely due to the declining nature of this market. A no-SMP finding would therefore require BT's ability

to impose a SSNIP to be constrained by the effect of the SSNIP on migration (existing and potential competition in the market being ineffective), but the evidence suggests that migration is not price sensitive.

5.92 We do not rely on high BT market share or on BT's high profitability in providing low bandwidth TI services as the only basis for our SMP finding. Rather, and this is the key difference from medium and high bandwidth TISBO, in the May 2015 BCMR Consultation we presented evidence that suggests that there are a substantial number of customers who are likely to keep using low bandwidth TI services due to significant differences in product characteristics, price differences and barriers to switching. In addition, we presented evidence of the lack of sensitivity of migration trends to changes in prices. These facts point to insufficiently strong constraints on the ability of BT to increase its price, and support our SMP finding in the low bandwidth TISBO market.

### Application of SMP criteria and our conclusions

- 5.93 We find that BT has SMP in the market for wholesale low bandwidth (of up to and including 8Mbit/s) traditional interface symmetric broadband origination (TISBO) services in the UK outside the Hull area.
- 5.94 Annex 9 of this Statement describes our approach to assessing market power. Our market power determinations are the result of a thorough and overall forward-looking analysis of the economic characteristics in relevant markets, based on existing market conditions.
- 5.95 While volumes have been in decline, and are forecast to decline going forward, we expect a significant number of customers to continue using low bandwidth TISBO services during the review period. The continued use is an important consideration in our decision to define a market for low bandwidth TISBO services. Volumes in higher bandwidth TISBO services are significantly lower, and forecast to decline to very low levels over the review period. In addition, we note that OCPs are to a lesser extent involved in provision of legacy TISBO services than they are in supplying Ethernet and WDM services. For example, Zayo and EU networks provide a very limited number of legacy TISBO services.
- 5.96 We estimate BT's share of volumes in the supply of low bandwidth TISBO services in the UK outside the Hull area at 89%. As explained in Annex 9, we interpret (in accordance with the SMP Guidelines) a market share of this very high level to be a strong indicator of SMP unless special circumstances apply. In addition, we note that BT has maintained the very high share in the supply of these services as estimated in our previous reviews.
- 5.97 We consider that BT derives a significant competitive advantage from its extensive network infrastructure allowing it to provide services to most customers in the UK outside the Hull area at lower incremental costs and quicker than OCPs. This advantage and the factors driving it are explained in greater detail in Annex 9. OCPs will incur significant sunk costs when extending their networks, which will make them cautious to invest in network extension required for serving new customer sites.
- 5.98 BT's network advantage is likely further strengthened by economies of scope and scale. We consider that economies of scope and scale are likely present in this market, with economies of scope being more material. BT, benefitting from its provision of a wider range of services to a greater number of customers, can offer services at a lower average cost than OCPs. An entrant would need to gain a large

share of the market to achieve a comparable cost level. As entry on this scale would depress the post-entry price and profitability, entry may be deterred.

- 5.99 We also consider that significant barriers exist in markets for wholesale leased lines, and the low bandwidth TISBO market, in particular.
  - These barriers arise from the asymmetry between BT and OCPs in terms of the amount and coverage of existing network infrastructure. BT has extensive network connecting to most sites in the UK outside the Hull area, whereas OCPs would frequently have to (significantly) extend their networks in order to connect new customers. The significant costs of network extension and the sunk nature of investment costs mean that OCPs cannot justify the investments due to the risk of not recovering investment costs being too great.
  - We note that the latter risk is particularly great in low bandwidth TISBO market as revenue opportunities are limited due to the low value of the services, declining volumes, and switching costs limiting the proportion of volumes that can be contested.
- 5.100 As explained in Annex 9, the effective exercise of buyer power requires the buyer to have an alternative source of supply, such as a competing CP or the ability to self-supply. Practically, an alternative source of supply requires OCPs to have network infrastructure near customer sites. Whether OCPs have network infrastructure near customer sites depends on the location of sites and thus varies case-by-case. We do not consider that buyer power can materially constrain BT's market power.
- 5.101 We consider prospects for competition to be poor, and do not expect the market to become more competitive over the review period. This is because volumes are declining, and the value of services (as evidenced by prices) is low. This suggests that OCPs are unlikely to be able to justify extending their networks to provide these services. Costs of network extension will for most distances be too great. Even in areas where OCPs have infrastructure which could be used to supply low bandwidth TISBO services, and allowing for the possibility that relative prices may change, we do not expect competitive conditions to change materially over time.
- 5.102 We identify lower bandwidth Ethernet services and NGA as alternatives for at least some existing users of low bandwidth TISBO. Having assessed these products, we do not consider that these products, either alone or jointly, exert more than a limited constraint on BT's market power.
  - Lower bandwidth Ethernet services, including those provided using EFM, could be an alternative for users with no strict quality of service requirements.
  - Our survey evidence indicates that some users of business connectivity services may regard NGA as a substitute for low bandwidth TI services, but overall do not suggest that they are sufficiently close substitutes to be regarded as part of the same market.<sup>386</sup> However, as NGA is unlikely to provide the level of services most end-users require, we consider the impact of an additional constraint to be limited. We also note that there are a number of CNI users with high quality requirements likely to switch to 2Mbit/s TI services from very low bandwidth services over the course of the review period.

<sup>&</sup>lt;sup>386</sup> See Annex 9 to the May 2015 BCMR Consultation, paragraphs A9.32 to A9.41.

- The low value of services implies that switching costs can significantly reduce incentives to switch to alternative options. We also note that the substitution observed largely concerns migration to higher bandwidth services, and that this migration is driven by long-term requirements more than relative price differences.
- 5.103 We conclude that the totality of the evidence available to us, including high and persistent market share of BT, its high profitability, lack of prospects for potential competition, limited effect of price differences on migration trends, and barriers to switching point towards an SMP finding in the provision of low bandwidth TI services by BT.

### **Section 6**

# Assessment of wholesale and retail markets in the Hull area

# Introduction

- 6.1 This section presents our assessment of wholesale and retail leased lines markets in the Hull area. Our findings are in line with the May 2015 consultation proposals.
- 6.2 We identify the following wholesale and retail product markets in the Hull area:
  - The wholesale market for low bandwidth (up to and including 8Mbit/s) Traditional Interface Symmetric Broadband Origination (TISBO) services;
  - The wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) services;
  - The retail market for low bandwidth (up to and including 8Mbit/s) Traditional Interface (TI) services; and
  - The retail market for Contemporary Interface (CI) services.
- 6.3 We find that competitive conditions in the Hull area continue to be distinct from those in the rest of the UK. In particular:
  - at the wholesale level: KCOM and not BT is the only CP with extensive coverage and a large installed base of customers for fixed telecommunications services. It accounts for the large majority of wholesale supply of low bandwidth TISBO services and CISBO services in Hull (86% and 96% respectively); and
  - at the retail level: unlike the rest of the UK, the availability of regulated wholesale products has not been sufficient to allow effective competition in the supply of retail leased lines in Hull. KCOM is estimated to account for more than 70% of leased lines in TI as well as CI retail markets.
- 6.4 In light of KCOM's high market shares as well as other evidence supporting our preliminary view that it has a strong position in the supply of leased lines in the Hull area, we conclude that KCOM has SMP in the supply of low bandwidth TI services and CI services, at both the wholesale and the retail level.
- 6.5 We consider it appropriate for the retail TI and CI markets to be subject to *ex ante* regulation.
- 6.6 In what follows, we present our analysis and findings in the following order:
  - i) **wholesale markets**: assessment of the market definition and SMP findings for wholesale markets in the Hull area;
  - ii) **retail markets**: assessment of the market definition and SMP findings for retail markets in the Hull area; and

- iii) **application of the EC's three criteria test to retail markets:** Application of the three criteria test to the retail markets identified in the Hull area. This is required because the EC's Recommendation does not list retail leased line markets as being susceptible to *ex ante* regulation.<sup>387</sup>
- 6.7 For each point, we present the May 2015 BCMR Consultation proposals, summarise stakeholders' responses and then set out our conclusions for this market review period. We address stakeholders' comments as part of our final conclusions.

# Assessment of competition in wholesale markets

### Summary of consultation

### Market definition

- 6.8 In the May 2015 BCMR Consultation, we proposed to define wholesale markets and then move on to define retail markets in light of the wholesale market regulations.<sup>388</sup>
- 6.9 In relation to wholesale product markets, we considered that our key proposed findings for the rest of UK were also appropriate for the Hull area.<sup>389</sup> Therefore, we proposed to:
  - define a single market for CISBO services (including EFM-based services);
  - define a separate low bandwidth TISBO market for services up to and including 8Mbit/s; and
  - not define markets for higher bandwidth TISBO services.
- 6.10 We proposed to define the Hull area as a distinct geographic market and to retain the boundaries of the Hull area as delineated in the BCMR 2013.

### SMP assessment in wholesale markets

- 6.11 We proposed to find that KCOM has SMP in the wholesale markets defined in the Hull area (i.e. low bandwidth TISBO and CISBO markets). This was based on a range of factors, including:
  - KCOM's ubiquitous network infrastructure and the limited amount of rival infrastructure;
  - KCOM's very high market shares;
  - the presence of significant barriers to entry and expansion; and

<sup>&</sup>lt;sup>387</sup> 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 communication networks and services.

<sup>&</sup>lt;sup>388</sup> Our proposed approach to market definition can be found in Annex 8 of the May 2015 Consultation.

<sup>&</sup>lt;sup>389</sup> Our proposed analysis and findings for product market definition in the RoUK are set out in Sections 4 and 5 and Annexes 8-12 of the May 2015 Consultation.

- the absence of effective countervailing buyer power.
- 6.12 We considered that KCOM would still retain its SMP position during this market review period, despite network extensions in the Hull area by BT and CityFibre. Although recent network extensions improve the potential for competition in wholesale leased lines market in the Hull area, KCOM will continue to derive an advantage from its control over a more extensive network over the three-year period of this review.

### Stakeholders' comments

6.13 We invited stakeholders' comments on our consultation proposals for wholesale market in the Hull area. In particular, we asked the following questions:

Question 6.1: Do you agree with our approach to (wholesale and retail) market definition in the Hull Area? If not, what alternative would you propose and why?

Question 6.2: Do you agree with our assessment of SMP in the markets for low bandwidth TISBO and CISBO services in the Hull area? If not, what alternative would you propose and why?

6.14 Only KCOM commented on these questions. It mainly questioned our product market definition and SMP findings.

#### Comments on our approach to market definition

- 6.15 KCOM argued that we have not followed the usual approach to market definition. It argued that we should have started with the definition of retail markets assuming the absence of all regulation and then moved on to define wholesale markets.
- 6.16 It claimed that our new approach meant that the differences between the product markets in Hull and the product markets in the rest of the UK have not been identified. It offered two examples to illustrate this. First, our proposed product market definition included Ethernet First Mile (EFM) services, which are not provided by KCOM in the Hull area. Similarly, retail and wholesale CI/CISBO services above 1Gbit/s are within the regulated markets even though they are not offered by KCOM.
- 6.17 Furthermore, KCOM questioned whether EFM would be regulated if it was launched in the Hull area. In addition, it argued that if it were to offer CISBO services above 1Gbit/s, they should not be regulated in the absence of a proper market analysis.<sup>390</sup>

### Comments on separate market for mobile backhaul

6.18 KCOM argued that we should look separately at Mobile Network Operator (MNO) backhaul services when considering market definition and SMP assessment in Hull. It argued that it faces additional competition for MNO backhaul from CityFibre, which it did not at the time of the 2013 review. It added that there is more widespread use of microwave backhaul solutions by MNOs in Hull compared to the rest of the UK.<sup>391</sup>

<sup>&</sup>lt;sup>390</sup> See KCOM's response to the May 2015 Consultation, pages 2-3.

<sup>&</sup>lt;sup>391</sup> See KCOM's response to the May 2015 Consultation, pages 3-4.

### Comments on wholesale SMP findings

- 6.19 KCOM did not accept our provisional view that its market position would not change over this market review period. It argued that network deployment that has occurred or is expected to occur would have a significant impact on KCOM's leased line business over the forward-look period of this market review, particularly given the limited geographic area to be covered. KCOM cited CityFibre's deployment of fibre, both for MNO backhaul and for backbone connectivity from PureBroadBand's wireless network.
- 6.20 KCOM stated that new investments by CityFibre and others show that entry barriers are not as significant as we believed. It added that those investments would result in a significant change in KCOM's market position over the market review period. However, it stopped short of arguing for a no-SMP finding in TISBO and CISBO markets and seemed to suggest that the main impact of CityFibre would be in MNO backhaul segments.

### Ofcom's conclusions

- 6.21 Having considered KCOM's comments, and in light of our further analysis undertaken since the consultation, our conclusions are as follows:
  - a single market for CISBO services (including EFM-based services);
  - a separate low bandwidth TISBO market for services up to and including 8Mbit/s;
  - the Hull area is a distinct geographic market with the boundaries of the Hull area as delineated in the BCMR 2013; and
  - KCOM has SMP in the wholesale markets defined (i.e. low bandwidth TISBO and the CISBO markets in the Hull area).
- 6.22 In what follows we present the analysis and findings underlying these decisions.

### Product market definition

### We define two wholesale markets - CISBO and low bandwidth TISBO services

- 6.23 Sections 4 and 5 (and Annexes 6 to 8) set out our key findings regarding product market definition in the UK outside Hull. We consider that these findings are also appropriate for the Hull area and can be summarised as follows:
  - *TISBO and CISBO services are in distinct product markets*: TISBO services are legacy services and current users are migrating over time to other services, including CISBO. However, it is unlikely that this process of migration would be affected by modest changes in relative prices.<sup>392</sup> Therefore, we consider that TISBO and CISBO services are not sufficiently close substitutes to be included in a single market. In addition, the potential for competition for CISBO services is greater than for TISBO services (though in the Hull area there is very little competition for either).

<sup>&</sup>lt;sup>392</sup> Market definition for legacy (TISBO) services is discussed in Section 5. We set out evidence that the rate of migration between low bandwidth TISBO and CISBO services is not sensitive to changes in relative prices.

- For CISBO services, we define a single market for all bandwidths and technologies: We do not think it appropriate to segment CISBO leased lines into sub-markets on the basis of bandwidth or technology. As set out in Section 4, we consider that these services are linked by a chain of substitution. In addition, KCOM has a strong market position for CISBO services at all bandwidths.<sup>393</sup>
- For TISBO services, we define a single market for low bandwidth TISBO services but no market for higher bandwidth TISBO services: We consider that the conditions in higher bandwidth TISBO markets point to these markets no longer being susceptible to *ex ante* regulation. This is for the same reasons and based on similar developments set out in Section 5.
- We do not include asymmetric broadband (NGA) products in our markets for leased lines: For the reasons given in Section 4, we do not consider that asymmetric broadband is a sufficiently close substitute to warrant its inclusion in leased lines markets.
- We include Ethernet First Mile (EFM) services in the market for CISBO services: For the reasons given in Section 4, we consider that users of leased lines would view EFM services as a good substitute for bandwidth requirements of up to about 30Mbit/s to 40Mbit/s.
- 6.24 Accordingly, for the Hull area, we adopt the same wholesale product markets defined for the rest of UK,<sup>394</sup> namely:
  - wholesale market for CISBO services (including EFM); and
  - wholesale market for low bandwidth TISBO services (up to and including 8Mbit/s).

#### We disagree with KCOM's argument for defining a separate market for MNO backhaul

- 6.25 For the rest of the UK, we include MNO and LLU backhaul in the markets for their respective technically equivalent TISBO/CISBO services. As set out in Section 4, we consider that competitive conditions are sufficiently homogeneous between MNO and LLU backhaul services on the one hand and enterprise services on the other to be analysed as part of the same markets.
- 6.26 We disagree with KCOM that competition for MNO backhaul in the Hull area justifies defining a separate market. In principle, if competitive conditions differed between MNO backhaul services and their corresponding TISBO/CISBO services in the Hull area, it could be appropriate to define separate markets for MNO backhaul, even if they remain part of the same market outside Hull. However, we do not consider that KCOM faces strong competition from microwave-based solutions or network deployment by CityFibre.
- 6.27 First, we reject KCOM's argument for a separate MNO backhaul market on the grounds that the use of microwave for backhaul was more widespread in Hull than in

<sup>&</sup>lt;sup>393</sup> WDM services are not currently available in the Hull area. We consider, based on the asymmetry in network infrastructure between KCOM and OCPs, that should demand for such services arise KCOM would be in a very strong position to supply such services.

<sup>&</sup>lt;sup>394</sup> See Sections 4 and 5.
the UK outside Hull. This is consistent with our view in the BCMR 2013 and is based on the following:  $^{\rm 395}$ 

- data we obtained from MNOs in response to formal information requests showed that MNOs were reliant on KCOM for their backhaul;<sup>396</sup> and
- as in other parts of the UK, limitations on microwave usage meant there was no strong price constraint at the margin between microwave-based and fibre backhaul links.<sup>397</sup>
- 6.28 Second, we do not agree with KCOM that network deployment by CityFibre means we should define a separate market for MNO backhaul in Hull. The presence of CityFibre's infrastructure network as such does not appear to be a source of differences in competitive conditions between MNO backhaul customers and other users. This is because CityFibre is also intending to use its infrastructure network to supply non-MNO customers.
- 6.29 In addition, we consider that the network deployment by CityFibre is unlikely, by itself to lead to effective competition to KCOM during the course of this review period. We discuss this below in our SMP analysis (see paragraphs 6.50 6.60).

#### We disagree with KCOM's view that our approach to market definition is unusual or wrong

- 6.30 Our approach to product market definition is described in detail in Annex 4. In summary, we start with the definition of the wholesale market(s), which is primarily determined by substitutability between products at the retail level. Then we define retail market(s) in light of the wholesale market regulations.
- 6.31 Having considered KCOM's comments (see paragraph 6.15 6.16), we do not agree that our approach to market definition is unusual. In fact, this is the same approach we have used in previous market reviews, and is consistent with the relevant EC Guidelines.<sup>398</sup> We note that we have simplified the way we *present* our market definition analysis for this review. However, this does not have an impact on the outcome of our analysis (i.e. the product markets defined).
- 6.32 The new presentation of market definition aims to simplify our analysis. The formal process, presented in full in the BCMR 2013, starts with the definition of the retail markets in the absence of wholesale regulations. Then, in essence, the same analysis is repeated for the upstream wholesale markets, because substitution at the wholesale level is primarily determined by substitutability between products at the retail level. In this review, starting with wholesale market definition means that we have presented the analysis once only, instead of repeating it.
- 6.33 Therefore the proposed product market definitions for the Hull area have not been affected by the simplified presentation.

<sup>&</sup>lt;sup>395</sup> In response to the 2013 BCMR consultation, KCOM argued for a separate MNO backhaul market in Hull on the grounds that use of radio for backhaul was more widespread in Hull. We have rejected this on similar grounds.

<sup>&</sup>lt;sup>396</sup> This information was requested using our formal information gathering powers under Section 135 of the Communications Act 2003.

<sup>&</sup>lt;sup>397</sup> The use of microwave links for MNO backhaul is discussed in Annex 7, paragraphs A7.56 – A7.64 and A7.99 – A7.101.

<sup>&</sup>lt;sup>398</sup> Our approach to product market definition is described in detail in Annex 4. In particular, the relationship between wholesale and retail markets is described in paragraphs A4.18 – A4.22

- 6.34 Indeed, even in the BCMR 2013, there was no separate wholesale product market definition analysis for the Hull area. Product markets were defined first, and then geographic markets were defined on the basis of differences in competitive conditions. On this basis, in 2013, the same wholesale product markets were defined in all parts of the UK.<sup>399</sup> This is to be expected as the product characteristics, which determine the extent of substitution possibilities, and hence product market definition, are largely standard. A separate geographic market was defined in the Hull area in the BCMR 2013 for all product markets, as is again the case in this BCMR. By far the most significant source of geographic variations in markets is the number of competing operators present, and this is reflected in our approach and proposals.
- 6.35 The final stage of our market definition analysis is an assessment of the retail market *in the presence* of wholesale regulation. This again is consistent with the EC Guidelines and is unchanged from the 2013 review.<sup>400</sup> Moreover, as set out below, this stage of the analysis is in fact specific to conditions in the Hull area (see paragraphs 6.75 6.120).

#### BCMR SMP regulations do not apply to EFM services

- In response to KCOM's comment (see paragraphs 6.16 6.17), it may be helpful to 6.36 clarify our approach in relation to regulating EFM services. We note that BT raised a broadly similar question, which we answered in the "clarifications and corrections" document we published on 9 July 2015.<sup>401</sup> As in 2013, our view is that substitution between retail EFM-based services and retail low bandwidth CI leased lines is likely. The possibility of substitution to retail EFM-based services (where available) potentially exerts an indirect price constraint on wholesale low bandwidth CISBO prices. To be clear, such substitution takes place at the retail level. In markets outside Hull, we have taken account of EFM services in our calculations of CPs' shares of the CISBO market, which is a wholesale market. As KCOM notes, there are currently no EFM sales in Hull and hence the inclusion of EFM services in the CISBO market does not affect our market power analysis for the Hull area. However, EFM remains theoretically a source of potential entry into the CI market in Hull and, if such entry did occur, we would expect EFM-based services to be sold in competition with KCOM's CI leased lines in the CI market.
- 6.37 To be clear, we have not proposed any regulation, on either BT or KCOM, which would require the offer of a wholesale EFM service. In addition, any regulations on BT and KCOM imposed as remedies for SMP in the Wholesale Local Access (WLA) market (such as a requirement to provide MPF lines which CPs can then use to provide leased line services using EFM) also remain unaffected.

Remedy assessment takes into account non-provision of very high bandwidth CISBO in Hull

6.38 In our view, the main determinant of the intensity of competition is the number of CPs that have their own network infrastructure in an area. Their networks can in principle be used to provide services of all bandwidths, including in the Hull area. The

<sup>&</sup>lt;sup>399</sup> For example, see Figure 5.1 of the 2013 BCMR Statement.

<sup>&</sup>lt;sup>400</sup> For example, see Figure 71 in Annex 3 of the 2013 Statement, which shows the sequence in which markets are defined.

<sup>&</sup>lt;sup>401</sup> Ofcom, "Clarifications and corrections to the Business Connectivity Market Review consultation document of 15 May 2015 and the Leased Lines Charge Controls and Dark Fibre Pricing consultation document of 12 June 2015", 9 July 2015 at

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/Clarifications\_and\_corrections.pdf

equipment needed to supply a 10Gbit/s Ethernet service is standard and therefore KCOM could easily start to supply very high bandwidth (VHB) services as well as other Ethernet services. The market definition question then becomes more one of where a lack of infrastructure competition is likely to endure. Where there are variations in competition within the broader market, they can be taken into account in the assessment of proposed remedies.

- 6.39 Consistent with this approach, we take account of the fact that no VHB CISBO services are currently supplied by KCOM in Hull in our assessment of remedies for KCOM's SMP in the CISBO market.
- 6.40 We note that, in relation to VHB CISBO services, there has been a change in our product market definition since 2013, which affects services above 1Gbit/s. As set out in Section 4, in the 2013 review they were defined as a separate MISBO market, whilst in the May 2015 BCMR Consultation we proposed to include them in the CISBO market along with lower bandwidth services.
- 6.41 In paragraph 7.627 of the March 2013 BCMR Statement, we said:

"In terms of MISBO services, given that there is no extant market in the Hull area, we do not reach a conclusion with regard to the existence of SMP and it does not form part of our [SMP] assessment."

6.42 This does not amount to a finding that the MISBO market was competitive in Hull and indeed, the advantages KCOM derives from being "*in effect, the only access network provider in Hull*" (March 2013 BCMR Statement paragraph 7.638) would be a barrier to entry and competition at all bandwidths, including those formerly included in the MISBO market.

#### Geographic market definition

- 6.43 As in previous reviews, we define the Hull area as a distinct geographic market. KCOM (and not BT) is the CP with the more extensive coverage and greater installed customer base in the Hull area, indicating a clear difference in competitive conditions from the rest of the UK.
- 6.44 We retain the boundaries of the Hull area as delineated in the previous review. These boundaries follow the definition of the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and KCOM Group plc.

#### SMP assessment in wholesale markets

6.45 We find that KCOM has SMP in the markets for low bandwidth TISBO and CISBO services in the Hull area, and we consider KCOM will retain SMP in these markets over the course of the review period.

#### Control of infrastructure not easily duplicated

6.46 We explain in Section 4 above why network infrastructure, in our view, is the main determinant of competition for supply of wholesale leased lines, as CPs require network in the proximity of a site in order to compete to supply that site. We also note that the presence of rival infrastructure is an indicator of differences in competitive

conditions, with potential for competition confined to areas with greater presence of rival infrastructure.

- 6.47 KCOM's duct network is ubiquitous in the Hull area. It is because of its extensive network infrastructure that KCOM can supply wholesale leased lines to almost any site in the Hull area within a relatively short period of time and without incurring substantial costs in extending its network.
- 6.48 We do not consider that OCPs (in this section, we use the term OCPs to refer to CPs other than KCOM) have the ability or incentive to duplicate KCOM's network infrastructure in the Hull area. The costs of developing such an extensive network infrastructure would be very significant, and with KCOM already having developed its extensive infrastructure and having largely sunk the costs of doing so, OCPs would be unlikely to be able to recover their investment costs.
- 6.49 OCPs have some existing infrastructure in the Hull area, but it is very limited in comparison to KCOM's. Figure 6.1 illustrates the degree to which KCOM faces rival infrastructure in the Hull area. It shows that there are only two postcode sectors in the Hull area where businesses have on average one OCP located within 200m of their sites. As discussed in Section 4, we do not consider that the extent and depth of rival infrastructure in areas where there are on average only one (or even two) OCPs located within 200m of business sites is likely to be sufficient for effective infrastructure-based competition.



#### Figure 6.1: The distribution of network reach across postcode sectors in the Hull Area

Note 1: We determine the network reach value of a postcode sector as the average number of OCPs with a flexibility point within 200m of business sites located in that sector. Network reach values provide an estimate of presence of rival infrastructure. In the context of the Hull area, this concerns infrastructure owned and operated by CPs other than KCOM.<sup>402</sup> Annex 10 provides a more detailed description and explanation of the network reach analysis undertaken. Note 2: The purple line indicates the boundary of KCOM's former Licensed Area, the area we defined as the Hull geographic market (i.e. the Hull area) for the purpose of this review. The boundary of this area does not align with the boundaries of postcode sectors (indicated in black and blue). However, we use postcode sectors for our data analysis. Source: Ofcom analysis.

Recent network extension insufficient to change KCOM's position for this review

- 6.50 In the BCMR 2013, we noted that MS3 was in the process of extending its network in the Hull area. Our analysis of rival infrastructure shows that MS3's extension of infrastructure has been limited, and the service share analysis we carried out indicates that MS3 supplies a very limited number of leased lines. Furthermore, we understand MS3's primary focus to be the provision of business broadband (asymmetric) services rather than leased lines.
- 6.51 Two other CPs have recently made network investments in the Hull area which could be used to support competition in the supply of wholesale leased lines. Their network is not reflected in the figure above, so we assess their impact here.
  - 6.51.1 BT has increased its presence in the Hull area by installing a multi-service edge node at its Anson Exchange in the centre of Hull. Now fully operational, this will enable BT to provide Ethernet services to sites in the

<sup>&</sup>lt;sup>402</sup> Figure 6.1 above differs from Figure 6.1 of the May 2015 Consultation as the latter showed network reach values calculated using the same methodology as for the remainder of the UK, that is, OCPs were defined as all CPs excluding BT, and including KCOM.

Hull area, using a combination of its own infrastructure and regulated wholesale products purchased from KCOM.<sup>403</sup>

- 6.51.2 CityFibre has announced the completion of the first phase of a 62km fibre network in the Hull area that will be used to provide dark fibre to mobile cell sites operated by MBNL, and has indicated that it intends to expand its network to provide services to other sectors.<sup>404</sup>
- 6.52 We recognise that these recent network extensions improve the potential for competition in the markets for wholesale leased lines in the Hull area. This means that the longer-term prospects for competition in wholesale markets for leased lines in the Hull area may be somewhat better than they appeared in the past.
- 6.53 However, we understand that BT does not plan to deploy an access network in Hull but intends to purchase regulated access products from KCOM. We also understand that CityFibre's network, which could be used to provide competitive access services, covers only part of the Hull area (the former KCOM Licensed Area).<sup>405</sup> Moreover, the presence of just KCOM and CityFibre (an incumbent operator and a single OCP) would not be sufficient for effective competition in the CISBO market, for the reasons set out in Section 4.
- 6.54 Therefore, we do not consider that these or other potential investments will be sufficient for competition for wholesale leased lines to become effective over the course of the review period. We consider that KCOM will continue to derive an advantage from its control over its more extensive network in the Hull area over the review period. In other words, despite the network extensions in Hull, KCOM will continue to remain the only CP with a duct network that extends to most sites in the Hull area. It will be the only CP with network infrastructure close enough to customers' sites to be a realistic supplier in most cases.
- As mentioned above (see paragraphs 6.19 6.20), KCOM disagreed with this view. 6.55 In response to the May 2015 BCMR Consultation, KCOM argued that network deployment (e.g. by CityFibre) will change its market position for this review period. However, we note that KCOM did not provide evidence to support its arguments.
- Having considered KCOM's comment, we consider that our view is consistent with 6.56 the experience in the UK outside the Hull area. BT has, for some time, faced competition in many areas of the UK. Despite this, we find BT to have SMP in all areas except for the Central London Area (CLA). We consider that competition is effective in the CLA because businesses are particularly densely concentrated and there are many competing networks. The total demand for, and value of, leased lines in the Hull area are small in comparison to those in many other parts of the UK, making the Hull area an unlikely location for OCPs to make significant further investments in infrastructure.

<sup>&</sup>lt;sup>403</sup> Up to now, BT had to interconnect remotely (outside the Hull area), relying on KCOM wholesale products for Ethernet connections between sites within the Hull area and handover points outside the <sup>.</sup> Hull area. <sup>404</sup> CityFibre press releases 14 November 2014 and 31 March 2015.

<sup>&</sup>lt;sup>405</sup> A map of CityFibre's network in Hull has been published in a number of sources including, for example, the Hull Daily Mail.

6.57 To better illustrate this, Table 6.1 compares two competitive indicators for Hull and the rest of the UK (RoUK), where we find BT to have SMP.<sup>406</sup> This includes indicators on rival infrastructure and distribution of service shares. For a detailed explanation of each indicator see Section 4 and Annex 9.

Competitive indicators	Metrics		Rest of UK (exc. Hull)	Hull
Rival infrastructure	Average network reach* (100 metres)		0.8	0.1
	Average network reach (200 metres)		1.1	0.2
	Average network reach (500 metres)		1.9	0.7
	Depth of network reach – 100 metres (200 metres)**	1+	61% (71%)	7% (24%)
		2+	15% (30%)	0% (3%)
		3+	5% (12%)	0% (0%)
		4+	2% (5%)	0% (0%)
		5+	1% (2%)	0% (0%)
Distribution of service shares	share of incumbent operator (BT in RoUK and KCOM in Hull)	Low bandwidth TISBO	94%	86%
		CISBO Total	579/	96%
		(by volumes)	5170	
	Concentration (HHI)***	CISBO Total	4259	9182

#### Table 6.1: Competitive indicators for RoUK vs. Hull<sup>407</sup>

\* Average network reach concerns the average number of OCPs with a flexibility point within the buffer distance (100m, 200m, and 500m) of businesses. Determined at postcode sector level. In Hull, OCPs are defined as all CPs except KCOM. In the Rest of UK (exc. Hull) OCPs are defined as all CPs except BT.

\*\* Depth of rival infrastructure reflects the proportion of businesses in area that are located within the buffer distance (100m, 200m) of X+ OCPs, within X varying from 1 to 5.

\*\*\* The Herfindahl–Hirschman Index (HHI) is equal to the sum of squared market shares.

- 6.58 The table shows that the Hull area is even less competitive than the RoUK, where we find BT to have SMP.
- 6.59 First, the evidence on the presence and density of rival infrastructure based on network reach analysis shows that the presence and depth of rival infrastructure is very limited in Hull. Only 3% of businesses in Hull have two or more OCPs within 200m, and less than 0.5% have two or more OCPs within 100m.<sup>408</sup> We observe very low average network reach values of 0.1 for a 100m buffer distance, and 0.2 for a 200m buffer distance.
- 6.60 Second, the evidence on service shares and HHI reflects a low level of competition. For CISBO services the market structure in Hull is less competitive than the RoUK. KCOM's service share in the Hull area is 96% compared to 57% for BT in the RoUK. In addition, market concentration is much higher in Hull compared to the RoUK as reflected in the HHI indicators (9182 compared to 4259).<sup>409</sup> For low bandwidth TISBO

 <sup>&</sup>lt;sup>406</sup> The RoUK is defined in Section 4 and excludes the Central London Area (CLA) and the London Periphery (LP), as well as excluding the Hull area.
 <sup>407</sup> As with Figure 6.1, the recent network investments in the Hull area made by two CPs are not

<sup>&</sup>lt;sup>407</sup> As with Figure 6.1, the recent network investments in the Hull area made by two CPs are not reflected in the figures in Table 6.1.

<sup>&</sup>lt;sup>408</sup> The figure is shown as 0% in Table 6.1 due to rounding.

<sup>&</sup>lt;sup>409</sup> The HHI for the CISBO market in the Hull area approaches the theoretical maximum value of the index (10000) for a monopoly.

services, KCOM's share in the Hull area is also very high (86%), only slightly lower than BT's share in the RoUK (94%).

#### Market share and market share trends

6.61 Table 6.2 presents distribution of CPs' shares and total volumes for low bandwidth TISBO and CISBO markets. Annex 10 explains the approach followed in estimating market shares based on "customer ends".<sup>410</sup>

#### Table 6.2: Distribution of shares in wholesale markets in the Hull area

	Low bandwidth TISBO	CISBO	
КСОМ	86%	96%	
ВТ	13%	3%	
Level 3	0%	0%	
Colt	0%	0%	
Interroute	0%	0%	
Total volumes	1,893	985	

Source: Ofcom analysis.

- 6.62 According to our estimates, KCOM maintains a very high share in both markets: 86% in low bandwidth TISBO and 96% in CISBO. KCOM's very high shares give rise to a strong presumption that KCOM has SMP, corroborating the evidence regarding the limited presence of rival infrastructure described above.
- 6.63 In the previous review, we found KCOM to have a share close to 100% in both markets. Our market share estimates for this market review period suggest that BT sells at least some wholesale services in the Hull area (13% in low bandwidth TISBO, and 3% in CISBO). However, our analysis is likely to slightly overestimate BT's actual shares as a number of circuits supplied by BT outside the Hull area are included in the data analysis.<sup>411</sup>
- 6.64 Based on the service share analysis, the constraints from OCPs are not on a scale sufficient to suggest that KCOM now faces, or will face over the three year review period, effective competition.

<sup>&</sup>lt;sup>410</sup> Customer ends refer to leased lines circuit ends terminating at customer premises. <sup>411</sup> In fact we think the BT share of low bandwidth TISBO is likely to be overstated for three possible reasons: i) some of the circuits may in fact be microwave links, which we regard as outside the TISBO market, as we understand BT uses microwave to supply some RBS backhaul in the Hull area; ii) some of the links may in fact be provided over wholesale circuits purchased from KCOM; and iii) a very small number may be outside the boundary of the Hull area market (the former KCOM Licensed area) in postcode sectors which straddle the boundary. We have calculated these shares for an approximation to KCOM's former Licensed Area based on postcode sectors, some of which straddle over the boundary of the KCOM Licensed Area. This means that we may include some BT circuits that are supplied in these postcode sectors, but which are in fact outside KCOM's Licensed Area. As such, the estimates of market shares in Table 6.2 underestimate KCOM's share of wholesale markets in the Hull area, though only very slightly.

#### Barriers to entry and expansion

6.65 As explained in Annex 9, sunk costs and switching costs can give rise to barriers to entry and expansion in wholesale leased lines markets. The large asymmetry between KCOM and OCPs – in terms of the presence and coverage of their networks, and installed customer base – strongly suggest that such barriers are likely to be present in the Hull area.

#### Economies of scale and scope

- 6.66 Annex 9 explains economies of scale and scope, and why, in our view, economies of scale and scope arise in wholesale leased lines markets. We consider that KCOM derives a material advantage from the scale and scope of its operations in wholesale markets for fixed telecommunications services including leased lines in the Hull area. The scale and scope of KCOM's operations are considerably greater than that of any OCP in the area.
- 6.67 KCOM is not large when compared to OCPs that primarily operate outside the Hull area. A number of such CPs supplying wholesale leased lines in the Hull area have a greater customer base (in fixed telecommunications services and leased lines), in the UK as a whole, than KCOM.
- 6.68 The scale and scope of operations outside the Hull area can have some bearing on costs incurred in providing leased lines. For example, a CP supplying a large number of Ethernet services in the UK outside the Hull area, like BT, may be able to negotiate lower prices of equipment per unit.
- 6.69 However, as the costs of developing the infrastructure required for providing wholesale leased lines in the Hull area are much more significant than these potential cost savings, we do not consider that the benefits of large scale and scope outside the Hull area offset the advantages KCOM derives from its greater scale and scope within the Hull area itself.

#### Profitability analysis

6.70 As discussed in Annex 17, we do not place weight on the analysis of the profitability of KCOM's provision of wholesale services in the Hull area as we do not consider that the returns on capital employed (ROCEs) reported by KCOM provide a reliable reflection of economic profitability.

#### External constraints

- 6.71 Some users might be prepared to switch to services, such as asymmetric broadband, which are outside wholesale leased lines markets in response to a rise in the relative price of leased lines.<sup>412</sup> We refer to the effect (if any) of customers switching to services in other markets as an "external constraint" on the prices of leased lines.
- 6.72 We note that KCOM is found to have SMP in all fixed telecommunications wholesale markets in the Hull area, and that KCOM is the only CP with an extensive network in the Hull area. KCOM's strong position in other fixed telecommunications markets

<sup>&</sup>lt;sup>412</sup> A product forms a distinct market if, in the event of a SSNIP, switching to other products would not be sufficient to make that SSNIP unprofitable. However, even if a SSNIP would be profitable, the possibility that substitution to products outside the market has some, though lesser, constraining influence on prices remains.

implies that it is unlikely that external constraints materially affect our assessment of KCOM's SMP in wholesale markets for leased lines.<sup>413</sup>

#### Countervailing buyer power

6.73 We do not consider that countervailing buyer power is likely to effectively constrain KCOM. As explained in Annex 9, effective buyer power requires purchasers to have a credible threat to meet requirements through another source of supply. However, the limited presence of rival infrastructure in the Hull area, as evidenced in Figure 6.1 and Table 6.1 above, implies that purchasers of leased lines in the Hull area will typically have at most one OCP with network infrastructure within a reasonable distance of their site. This means that another source of supply will frequently not be available.

#### Prospects for competition

6.74 Annex 9 explains why and how we account for *potential* competition and *potential* entry as part of our SMP assessment. We consider that the longer-term prospects for competition in wholesale markets for leased lines in the Hull Area may be somewhat better than they appeared in the past, in the light of the recent investments by BT and CityFibre noted above. However, we do not consider that these or other potential investments will be sufficient for competition for wholesale leased lines to become effective over the course of the review period. This view is consistent with experience in the UK outside the Hull area, where BT faces some competition in many areas and has done so for some time, but despite this, it is only in the CLA, where businesses are particularly densely concentrated and where there are many competing networks, that competition is effective. In comparison, the Hull area is smaller and geographically isolated. Moreover, the total demand for and value of leased lines are small in comparison to those in other parts of the UK, making the Hull area an unlikely location for OCPs to make significant investments in infrastructure.

# Assessment of competition in retail markets

#### Summary of consultation

- 6.75 In the May 2015 BCMR Consultation we proposed to define the following retail markets in the Hull area in the presence of wholesale SMP regulation:
  - The retail market for low bandwidth (up to and including 8Mbit/s) TI services; and
  - The retail market for CI services.
- 6.76 We proposed to define separate retail TI and CI markets because:
  - TI and CI services were not close demand-side substitutes at the retail level, and this would not be affected by the imposition of wholesale regulation;<sup>414</sup> and

<sup>&</sup>lt;sup>413</sup> KCOM is likely to be regulated in other fixed telecommunications markets in which it has a strong position. However, and despite this, external constraints by their nature tend to be relatively weak, whilst constraints from competition within wholesale leased line markets in the Hull area are also weak.

<sup>&</sup>lt;sup>414</sup> Our reasoning was set out in details in Section 5 of the May 2015 BCMR Consultation.

- whilst, in principle, wholesale regulations could facilitate supply-side substitution at the retail level, in practice we considered the scope for this to be limited.
- 6.77 We proposed to find that KCOM, despite the availability of KCOM's wholesale products on regulated terms, has SMP in the retail markets for low bandwidth TI and CI services in the Hull area. We explained that this reflected, in particular:
  - KCOM's very high shares in these markets;
  - the limited presence of rival infrastructure;
  - KCOM's economies of scale and scope; and
  - the existence of significant barriers to entry and expansion.
- 6.78 We explained that we considered it appropriate to impose *ex ant*e regulation in these retail markets as we considered wholesale SMP regulation to be insufficient for sustaining effective competition in retail markets in the Hull area in the light of:
  - KCOM's very high shares of retail markets despite existing wholesale regulation; and
  - the limited presence of rival infrastructure in Hull (network as well as Points-of-Presence (PoPs)).

#### Stakeholders' comments

6.79 We asked the following questions:

Question 6.3: Do you agree with our assessment of SMP for the markets for low bandwidth TI and CI services in the Hull Area? If not, what alternative would you propose and why?

Question 6.4: Do you agree with our assessment of wholesale remedies not being sufficient to sustain effective competition in retail markets in the Hull Area? If not, what alternative would you propose and why?

6.80 Only KCOM commented on our assessment of competition in retail markets in Hull. Below we summarise KCOM's comments and set out our response to them. These relate primarily to our proposed SMP findings.

#### Comments on proposed SMP finding in retail markets

- 6.81 KCOM reiterated its comments about the deployment of alternative infrastructure by other CPs and suggested that this also impacts retail SMP. KCOM also disagreed with our preliminary view that wholesale remedies are not sufficient to sustain competition in retail markets. It claimed that we underestimated the competitive constraint KCOM faces from the deployment of alternative infrastructure.
- 6.82 Furthermore, KCOM pointed out that when it supplies circuits with one end in Hull and the other outside Hull, it must provide part of the circuit off-net (i.e. it must rely on third party suppliers to deliver the complete circuit). KCOM argued that this negates any perceived advantage from KCOM's market position and undermines our SMP findings in retail markets.

#### Ofcom's conclusions

- 6.83 Having considered KCOM's comments, and in light of the further analysis undertaken, our conclusions are as follows:
  - we define a single retail market for CI services;
  - we define a separate retail market for low bandwidth TI services (up to and including 8Mbit/s); and
  - we find that despite the availability of KCOM's wholesale products on regulated terms, KCOM has SMP in the retail markets for low bandwidth TI and CI services in the Hull area.<sup>415</sup>

#### Market definition

- 6.84 As discussed earlier, our retail market definition takes into account the presence of wholesale SMP regulation. That is, we assume KCOM has to provide access to its low bandwidth TISBO and CISBO products on regulated terms. The availability of KCOM's wholesale product implies that OCPs can use these wholesale products to compete for provision of retail leased lines.
- 6.85 The product scope of these retail markets mirrors that of the wholesale product markets defined above. This is because:
  - the definition of those wholesale product markets took account of demand-side substitution at the retail level, and this is not affected by the imposition of wholesale SMP regulation; and
  - whilst wholesale SMP regulation makes entry into retail markets quicker and easier, and so could in theory facilitate supply-side substitution between retail services, in practice we believe significant barriers to such substitution remain. We discuss these below in our assessment of SMP under the heading "barriers to entry and expansion".
- 6.86 Based on the above, we define the following retail markets in the Hull area:
  - low bandwidth (up to and including 8Mbit/s) TI services; and
  - CI services.

#### SMP assessment in retail markets

- 6.87 As explained further below in our SMP assessment, we consider that, in the Hull area, wholesale SMP regulation has not been and will not be sufficient to sustain effective competition in retail markets within the period covered by this review.
- 6.88 Under the existing wholesale SMP regulation, KCOM maintains a very high share in markets for retail leased lines, and we expect KCOM to maintain a strong position in

<sup>&</sup>lt;sup>415</sup> In accordance with section 91 of the Act, having reached the view that SMP regulation would not be sufficient for effective competition in retail markets over the three year period of the review, we consider it appropriate for these markets to be subject to ex ante regulation. This requires the three criteria test to be met, our assessment of which is set out in the following sub-section.

these markets, primarily because of the limited presence of rival infrastructure (not just networks, but also rival operators' PoPs) in the Hull area. This severely impairs the ability of OCPs to compete for supply of retail leased lines.<sup>416</sup>

6.89 Despite the availability of KCOM's wholesale products at regulated terms, we consider that KCOM has SMP in the retail markets for low bandwidth TI and CI services in the Hull area. We explain why in the rest of this section, taking each relevant indicator of SMP in turn. In addition, we do not expect KCOM's position to change materially over the course of the review period.

#### Market share and market share trends

- 6.90 We have collected circuit data on CPs' supply of leased lines in the Hull area, which we use to estimate KCOM's retail market share:
  - we assume that the total volume of retail leased line sales in the Hull area is equal to the total volume of wholesale leased line sales in the Hull area (which is equal to the total volume of leased lines supplied "on net" by CPs);<sup>417</sup>
  - we estimate OCPs' retail sales as the volumes of leased lines that they reported having supplied, whether originally sourced on-net or off-net; and
  - we estimate KCOM's retail sales as the total volume of retail sales less our estimate of OCPs' sales.
- 6.91 Having applied this approach, we find that KCOM's market share is significantly above the threshold associated with a presumption of dominance. We estimate KCOM to have a share of 73% in low bandwidth TI, and 82% in CI services. Our wider assessment and understanding of competition in these markets support these estimates.
- 6.92 The observation that KCOM, despite the availability of regulated wholesale products, has maintained very high shares in retail markets provides a strong indicator that KCOM is not being effectively constrained by its competitors in these markets.

#### Control of infrastructure not easily duplicated

- 6.93 As described below, we consider that in the Hull area, despite the availability of KCOM's regulated wholesale products for use by any CP, KCOM derives a significant competitive advantage from its more extensive network infrastructure.
- 6.94 In order to offer a retail service a CP requires a wholesale product the terminating segment connecting to a customer's site. The CP can either purchase this terminating segment from another CP or self-supply using its own network infrastructure. In the Hull area, an OCP would typically have to purchase the terminating segment from KCOM as it and other OCPs have no or only limited infrastructure in the proximity of sites. Given the circumstances in the Hull area KCOM is frequently the only potential supplier of terminating segments retail

<sup>&</sup>lt;sup>416</sup> Effective retail competition requires that OCPs have the capability to combine regulated wholesale products purchased from KCOM with their own network infrastructure. We consider that their limited infrastructure in the Hull area implies that OCPs typically do not have this capability.

<sup>&</sup>lt;sup>417</sup> A circuit is provided on-net where the CP connects its electronic equipment to physical links it either owns and operates or leases from another company (for example dark fibre). A leased line that is provided using an active wholesale product purchased from another CP is referred to as 'off-net'.

competition in the Hull area thus depends on the ability of OCPs to offer retail services by combining regulated wholesale products with their own network infrastructure.

- 6.95 Although OCPs can purchase regulated wholesale products, there are two factors which restrict OCPs in their ability to provide retail services combining regulated wholesale products with their own network infrastructure.
  - In order to purchase regulated wholesale products from KCOM, an OCP needs to interconnect its network with KCOM's network within the Hull area. This requires the CP to make significant investments in order to extend its network to the Hull area and to establish a PoP within the Hull area. In general, OCPs are unlikely to be able to justify the investments required for building this infrastructure as the value of retail services is low, and in the case of TI services demand is also in decline. We assess the scale and impact of the CP investments that have taken place in the Hull area in the following sub-section. We note that OCPs typically opt to interconnect to KCOM's network outside the Hull area (typically at cities some distance from the Hull area), using unregulated wholesale products from KCOM.<sup>418</sup> Remote handover increases the costs of providing retail services, most clearly for circuits with both ends in the Hull area, and in itself provides an indication that OCPs typically do not have the capacity to interconnect with KCOM within the Hull area.
  - A further barrier may be the need for arrangements for interconnection with KCOM that differ from those used to interconnect with BT elsewhere in the UK. In particular, OCPs would need to establish new commercial, technical and operational arrangements to interconnect with KCOM and would need to develop their operational support systems to interface with KCOM's.
- 6.96 In the light of the above, we consider that OCPs are unlikely to invest in PoPs because the limited demand in the Hull area is unlikely to be sufficient to justify such investments. In most cases, the investment costs are likely to be too large when compared to the small scale of leased lines markets in the Hull area (1,893 low bandwidth TISBO and 938 CISBO circuits), particularly in circumstances where KCOM is the incumbent retail supplier to most existing users of retail services. Absent material investments in infrastructure, most OCPs, in our view, are likely to remain dependent on KCOM for conveyance of traffic to handover points outside the Hull area, and are unlikely to develop the capability to provide retail services.
- 6.97 In fact, to-date, there were limited investments in alternative infrastructure in the Hull area, which we discuss below.

# Alternative infrastructure is insufficient to change KCOM's market position in this review period

6.98 As noted above in paragraph 6.51, two OCPs have recently undertaken network extensions in the Hull area. In particular:

<sup>&</sup>lt;sup>418</sup> CityFibre may be an exception, given its presence in Hull and purchase of KCOM's network assets outside Hull.

<sup>&</sup>lt;sup>419</sup> [×

- BT installed a node at its Anson Exchange, which will increase BT's ability to serve businesses in the Hull area; and
- CityFibre has committed to invest in its fibre network in the Hull area initially to provide dark fibre to MBNL, but with plans to expand its network to other leased lines customers.
- 6.99 Similar to our view for wholesale markets (see paragraph 6.52), these investments suggest that there is some potential, at least in the longer term, for retail markets in the Hull area to become more competitive over time. BT, in particular, will in the future be better placed, relative to its current position, to compete for circuits with one end in the Hull area and the other outside it. CityFibre will also be relatively well-placed to establish interconnection with KCOM given that it has presence in Hull and in the light of its acquisition of KCOM's network assets outside Hull.
- 6.100 However, we do not consider that these investments will, by themselves, undermine KCOM's SMP at the retail level over the review period as:
  - KCOM retains a competitive advantage in the Hull area because of the greater amount and coverage of its local infrastructure, and its capacity to provide services at a local level;
  - [×

≫]

• [×

 $\approx$ ]; <sup>420</sup> Whilst a third party supplier could enter retail markets using dark fibre purchased from CityFibre, a CP contemplating such entry would be faced by the limitations of the small size of the available market and the costs of establishing a presence in Hull. Moreover, for the market to become effectively competitive, more than one CP might have to enter by this route.

- KCOM starts with a very high share of retail markets and erosion of this will take time. CPs have told us that it can be hard to induce users of leased lines to switch supplier unless contracts are up for renewal. More generally, and as noted in the BDRC end-user survey, retail users often perceive barriers to switching supplier.<sup>421</sup>
- 6.101 As mentioned above (see paragraphs 6.19 6.20), KCOM disagreed with this view. In response to the May 2015 BCMR Consultation, it argued that the deployment of alternative infrastructure will change its market position over this review period. In addition, KCOM argued that it is at a competitive disadvantage to rivals as it must rely on off-net circuits when providing retail multi-site services that connect sites in the Hull area to other parts of the UK.

<sup>&</sup>lt;sup>420</sup> Annex A of [ $\gg$ ] letter of 17<sup>th</sup> March 2015, page 5.

<sup>&</sup>lt;sup>421</sup> See Section 8 of the BDRC end-user survey. Available at <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/annexes/BCMR\_2014\_report-bdrc.pdf</u>

6.102 We do not agree with KCOM's arguments. Firstly, we do not anticipate that the new node at its Anson exchange will have a material impact on BT's retail sales in the Hull area. [≫

≫].422

- 6.103 Secondly, we consider that to the extent that KCOM is at a disadvantage when competing for multi-site contracts, this should already be reflected in its retail market shares. As mentioned above, our analysis shows that KCOM has a very high market share in retail services in Hull (82%). We note that KCOM agreed that its retail market share in Hull is high.<sup>423</sup>
- 6.104 This is further supported by our analysis of KCOM's circuit data in the Hull area. Table 6.3 shows the proportion of circuits sold by KCOM through different channels. These are split into circuits with one end in Hull and those with both ends in Hull.

	Circuits with one end outside Hull	Circuits with both ends in Hull	Total
Direct Retail – sales by KCOM's Hull business unit KC	[≻]	[×]	[≫]
Intercompany – wholesale sales to KCOM business units operating outside the Hull area	[]×]	[⊁]	[×]
Wholesale – sales to other CPs	[×]	[×]	[≫]
Total	[×]	[×]	[≫]

#### Table 6.3: KCOM sales in Hull by channel and type of circuit ends<sup>424</sup>

Source: Ofcom analysis based on KCOM's circuit data

- 6.105 We use the data in Table 6.3 to estimate KCOM's share of retail circuits having one end outside Hull, its share of circuits with both ends in Hull, and its share of all circuits having at least one end in Hull. First we estimate what proportion of all circuits have one end outside Hull and what proportion have both ends in Hull. Given KCOM's very high retail and wholesale market share, we use the total number of circuits (ie wholesale and retail combined) sold by KCOM as a proxy for total retail circuit sales in Hull in order to do this.
- 6.106 The table shows that a large proportion of KCOM's sales provide connectivity between sites within Hull to sites and interconnection points for onward transmission beyond Hull. Approximately [≫ ] of the circuits sold by KCOM in Hull have one end outside Hull.<sup>425</sup> This includes

<sup>424</sup> Circuits with one end outside Hull include circuits where the "end type" in the dataset is categorised by KCOM as "1 end". Circuits with both ends in Hull include those categorised by KCOM as "same/Adi" or "Not same".

<sup>&</sup>lt;sup>422</sup> See note of call with BT about Hull on 10 November 2015.

<sup>&</sup>lt;sup>423</sup> See KCOM response to May 2015 Consultation, question 6.5, page 6. KCOM mentioned that they "accept that the analysis undertaken by Ofcom shows a high market share".

<sup>&</sup>lt;sup>425</sup> The proportion of circuits with interconnection outside Hull can be even higher as the circuits with both ends in Hull may be part of national multi-site contracts

intercompany sales ([%]%) and wholesale sales ([%]%) as well as retail sales ([%]%).<sup>426</sup>

6.107 Table 6.3 then shows that, at the retail level, KCOM has a higher share of circuits with one end in Hull than other CPs (KCOM has [ $\gg$ ]% out of the [ $\gg$ ]% of circuits which have one end in Hull, compared with other CPs' share of [ $\gg$ ]%) and also a higher share of all circuits ([ $\gg$ ]% compared with [ $\gg$ ]%<sup>427</sup>). In our view, this information supports our view that KCOM has an advantage when competing for multi-site contracts.

#### Economies of scale and scope

- 6.108 We consider that KCOM derives a competitive advantage based on its more extensive network infrastructure, and the scale and scope of its retail operations.
- 6.109 As noted above, cost-effective use of regulated wholesale products requires network infrastructure and scale. Owning and operating network infrastructure, as explained in Annex 9, gives rise to economies of scale and scope due to the high proportion of fixed and common costs associated with developing infrastructure. A CP providing retail leased lines using terminating segments rented from KCOM would need:
  - i) suitable accommodation, such as space in a KCOM exchange;
  - ii) backhaul to connect its Hull node to its network outside the Hull area;
  - iii) aggregation equipment to combine terminating segments onto its backhaul circuits; and
  - iv) a support capability to maintain the equipment located at the PoP.
- 6.110 There would inevitably be some fixed costs associated with these and there would also be some economies of scale, particularly in relation to the fixed costs associated with establishing PoPs and in backhaul capacity.
- 6.111 The significant difference in scale between KCOM's network infrastructure in the Hull area and those of OCPs implies that KCOM has a cost advantage in providing retail leased lines in this area. The small size of the retail markets in the Hull area combined with KCOM's very high shares suggest that other operators are likely to have relatively few customers over which to recover their fixed costs, and that economies of scale and scope associated with KCOM's much larger customer base are likely to give it a material advantage. These factors suggest that OCPs would be unlikely to be able to match KCOM's costs.

#### Barriers to entry and expansion

6.112 As well as barriers to entry and expansion arising from KCOM's extensive network infrastructure and economies of scale and scope, the presence of switching costs makes it more difficult for OCPs to break into retail markets by winning retail customers from KCOM.

<sup>&</sup>lt;sup>426</sup> Intercompany sales are wholesale circuits sold to KCOM business units operating outside the Hull area. We do not consider that CityFibre's purchase of KCOM's fibre network outside Hull will have an impact on our findings. Although Cityfibre will own the fibre network, this is unlikely to affect KCOM's arrangements with existing customers.

<sup>&</sup>lt;sup>427</sup> Shares of total volumes do not add to 100% due to rounding

- 6.113 Even changes in retail supplier where the wholesale supplier stays the same which would be the standard case in the Hull area given KCOM's strong position in supply of wholesale services often require changes in the physical routing of a circuit resulting in a temporary loss of service for the customer. Reluctance to switch supplier is likely to be more important for low bandwidth TI services as this market is in decline and so customers are unlikely to be willing to incur any switching costs associated with moving to an alternative TI provider when they anticipate switching to an alternative technology within a few years anyway.
- 6.114 Overall, we consider that the circumstances in the Hull area low volumes and value of retail leased lines, KCOM's very high share of existing customers, the impact of switching costs at the retail level, and the costs and scale economies associated with owning and operating network infrastructure in the Hull area imply that material barriers to entry and expansion are present in these retail markets. The fact that only BT and CityFibre have actually set up PoPs in the Hull area provides further support for this.
- 6.115 In the case of low bandwidth TI services, these barriers are exacerbated by the declining demand and the low value per circuit, again with the cumulative effect of reducing OCPs' incentives to incur the costs required for entry into, and expansion in, this market.
- 6.116 Other factors, more specific to the Hull area, have the effect of raising barriers to entry in the market for CI services. At the time of the 2014 Wholesale Broadband Access market review, and unlike the UK outside the Hull area, competitive pressure from LLU operators providing Ethernet services using EFM technology was absent. The reasons for the absence of LLU operators in the Hull area were set out in Ofcom's wholesale broadband access market review, as follows:

"One of the notable barriers to entry is the small market size. There are only a limited number of exchanges in the Hull Area, a number of which only serve a small number of premises. In addition, the costs of LLU deployment would be much higher than in the rest of the UK, in particular because of bespoke configuration and backhaul costs, since a PO [Principal Operator] would need to have an access point in (or around) the Hull Area. There are also fixed costs associated with purchasing LLU from KCOM, including the costs of developing systems that interface with KCOM's systems, which are required to order, maintain and manage LLU products. We understand that although a number of operators such as The Post Office and MS3 have considered taking LLU from KCOM, none have yet established plans to do so, a number citing that it did not make commercial sense...to do so."<sup>428</sup>

6.117 We consider that the small market size and the backhaul costs associated with interconnection outside the Hull area, noted above as reasons for the absence of LLU operators in the Hull area, are also particularly relevant for our assessment concerning the limited competition for retail leased lines in the Hull area.

<sup>&</sup>lt;sup>428</sup> Ofcom, *Review of the Wholesale Broadband Access Markets, Statement*, 26 June 2014 paragraph 5.90 at: <u>http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/statement/</u>

#### Countervailing buyer power

6.118 We consider that buyer power is unlikely to effectively constrain KCOM's market power in these retail markets. Effective buyer power requires purchasers to be able to make credible threats to move volumes to another supplier. However, we consider that the lack of alternative suppliers of retail services, which is unlikely to be overcome due to the limited presence of rival infrastructure in the Hull area, means that customers are unable to exert countervailing power.

#### Prospects for competition

6.119 The longer-term prospects for competition in the retail markets in the Hull area may be somewhat better than they appeared in the past, in the light of the new investments by BT and the earlier investments by MS3 noted above. However, we do not consider that competition will become effective in the retail TI and CI markets in the Hull area over the period covered by the market review. The small size of the market, economies of scale and scope, and barriers to switching mean that, over the course of the review period, competition is unlikely to develop sufficiently for KCOM to be materially constrained by competitors and consumers.

#### Market power determination

6.120 In light of the considerations we have set out above, we find that KCOM has SMP in the retail markets for low bandwidth TI and CI services. We consider the wholesale SMP regulation, as summarised in paragraphs 14.4 and 14.5 in Section 14, to be insufficient to sustain effective competition in retail markets. Some of the same factors which led us to find KCOM to have SMP in wholesale markets, also underlie our finding that competition in retail markets is not effective, i.e. the limited presence of rival infrastructure in the Hull area, economies of scope associated with owning and operating infrastructure, and barriers to entry and expansion. We take account of the prospects for competition in setting appropriate remedies in retail markets in the Hull area.

## Application of the EC's three criteria test to retail markets

#### Summary of consultation

- 6.121 In the May 2015 BCMR Consultation, we noted that retail markets for low bandwidth TI and CI services are not listed by the EC as susceptible to *ex ante* regulation; therefore they must be shown to meet the EC's three criteria before *ex ante* regulation could be imposed.
- 6.122 We considered that the three criteria test is satisfied when applied to the retail markets for low bandwidth TI and CI services in the Hull area. We concluded the following on each criterion:
  - First criterion high structural barriers to entry: the sustained absence of retail competition and the existence of significant barriers to entry showed that this criterion was met;
  - Second criterion no tendency to effective competition: KCOM's very high share and the small size of retail markets in the Hull area were unlikely to justify the OCP investments required for competition to intensify, showing that this criterion was met; and

• Third criterion - competition law is insufficient: *ex ante* regulation of KCOM's provision of retail services would be more effective than reliance on competition law in preventing KCOM from engaging in practices that would harm competitors and consumers, meeting the third criterion.

#### Stakeholders' comments

6.123 We asked the following consultation question:

Question 6.5: Do you agree with our finding that the three criteria test is met when applied to the retail markets in the Hull Area?

- 6.124 KCOM did not agree with our proposed conclusion for the three criteria test. It argued that the leased lines markets do not differ sufficiently from other retail markets that we have already deregulated.
- 6.125 In terms of the first criterion (*presence of high and non-transitory barriers to entry*), KCOM argued that:
  - competitive entry from CityFibre shows that barriers are not as high as we suggest;
  - wholesale SMP regulation reduces barriers to entry in retail markets; and
  - we overstated the incumbent advantage KCOM has in leased lines markets. KCOM claimed that many contracts are national and multi-site, and its incumbency offers no intrinsic advantage in winning national tenders.
- 6.126 In terms of the second criterion (*market structure does not tend toward effective competition*) KCOM accepted it had a high market share but expected that recent developments would significantly reduce its shares during the review period.
- 6.127 In terms of the third criterion (*competition law is insufficient*) KCOM did not accept that competition law would be insufficient and argued that retail SMP regulation offers no benefits above competition law.
- 6.128 KCOM also referred to our market reviews such as the Fixed Access Market Review (FAMR), where we had found competition law would be sufficient in the relevant retail markets. In addition, KCOM argued that we would be stifling innovation by retaining retail-level regulation.

#### Ofcom's conclusions

6.129 As discussed below, we consider that the three criteria test is satisfied when applied to the retail markets for low bandwidth TI and CI services in the Hull area.<sup>429</sup> We note

<sup>&</sup>lt;sup>429</sup> This is in contrast to the retail market for very low bandwidth services in the rest of the UK. One key difference between the retail markets in the Hull area and the retail market for very low bandwidth services in the rest of the UK is that users of very low bandwidth services in the UK outside the Hull area have alternatives (low bandwidth TI services at 2Mbit/s and CI services) that are available in retail markets characterised by effective competition. This, in combination with continuing wholesale regulation, ensures that market failures due to SMP are absent in the rest of UK. Our reasoning is set out in detail in our statement on this issue: *Business Connectivity Market Review: Very low bandwidth leased lines, Statement,* 28 April 2016, <u>http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/</u>

that as these markets are not included in the EC's Recommendation, ex ante regulation of these markets requires the three criteria test to be met. 430

#### The EC's Recommendation

- 6.130 The EC's Recommendation lists those markets, at a European level, in which the EC considers ex ante regulation may be warranted. It is important to note that it is precisely because we have a duty to identify markets in which ex ante regulation may be warranted appropriate to our national circumstances,<sup>431</sup> that we may identify markets that are not listed in the EC's Recommendation.
- 6.131 Insofar as is relevant, the EC's Recommendation states:
  - "Ex ante regulation imposed at the wholesale level should be considered sufficient to tackle potential competition problems on the related downstream market(s). A downstream market should only be subject to ex ante regulation if competition on that market still exhibits significant market power despite the presence of ex ante regulation on the related wholesale upstream market(s)...Should a national regulatory authority...demonstrate that wholesale interventions have been unsuccessful, the relevant retail market may be susceptible to *ex ante* regulation provided that the national regulatory authority has found that the three-criteria test prescribed in this Recommendation is met";432
  - "National regulatory authorities may identify other markets than those listed in this Recommendation and apply the three criteria test. A national regulatory authority should conduct a gradual analysis of the markets that [are] situated downstream from a regulated upstream input, to determine whether they would be effectively competitive in the presence of regulation upstream, until it reaches the retail market(s)"433; and
  - "National regulatory authorities should also apply the three-criteria test to those markets listed in the Annexes to [the 2003 EC Recommendation]<sup>434</sup> and to Recommendation 2007/879/EC<sup>435</sup> which are no longer listed in the Annex to this Recommendation if they are currently regulated in the light of national

<sup>&</sup>lt;sup>430</sup> 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 communication networks and services. <sup>431</sup> See Article 15(3) of the Framework Directive. Section 79(1)(a) of the Act states that "OFCOM must

identify (by reference, in particular, to area and locality) the markets in which in their opinion are the ones which in the circumstances of the United Kingdom are the markets in relation to which it is appropriate to consider whether to make [a market power determination]."

See Recital 18.

<sup>&</sup>lt;sup>433</sup> See Recital 21.

<sup>&</sup>lt;sup>434</sup> Commission Recommendation 2003/311/EC of 11 February 2003 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 communication networks and services.

<sup>&</sup>lt;sup>435</sup> Commission Recommendation 2007/879/EC of 17 December 2007 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 communication networks and services.

circumstances, in order to assess whether, on the basis of such national circumstances, such markets are still susceptible to *ex ante* regulation"<sup>436</sup>.

#### The three criteria test

- 6.132 In assessing how the three criteria test is satisfied for the retail markets identified, we have taken due account of the EC's Explanatory Note. We have also taken account of the ERG Three Criteria Guidance, which provides guidance on the burden of proof required for sustaining that a market is a candidate market for *ex ante* regulation, and on the interaction between the three criteria and SMP assessment. We regard the following guidance of particular relevance to our assessment:
  - first, "the burden of proof necessary to demonstrate that the three criteria are...met should under no circumstances be higher than the burden of proof required for a finding...of SMP";
  - second, "it should be recalled that the first criterion (presence of high and nontransitory barriers to entry) and the second criterion (tendency towards effective competition) are inherently related to the SMP assessment. Therefore, in those cases where the SMP analysis will be undertaken (e.g. for the purposes of regulating a market no longer included in the Recommendation), reference to the SMP analysis should in principle be sufficient to prove that the first and second criterion are also met. The same conclusions should also hold true with regard to the level of detail (data that needs to be supplied) necessary for the passing of the three criteria";
  - third, "the burden of proof for fulfilling the three criteria test and maintaining at national level a market that was included in [the Previous EC Recommendation] but that is no longer included in [the EC's Recommendation]...should be lower than the burden of proof that may be required for defining a market that has never made part of the list of candidate markets retained by the European Commission in its Recommendations"; and
  - fourth, "in order to prove fulfilment of the three criteria test for maintaining regulation on a market listed in [the Previous EC Recommendation] but not in [the EC's Recommendation], in principle it should be sufficient for NRAs to substantiate why the elements invoked by the European Commission in its Explanatory Note to justify withdrawal of a market from the list on the basis of the three criteria are not applicable to the national circumstances, thus leading to the conclusion that the situation is closer to that existing under [the Previous EC Recommendation]."

#### Application of the three criteria test to the retail markets

We consider there are high structural barriers to entry in these markets

6.133 Whilst wholesale SMP regulation has been applied (and will continue to apply), we consider that the sustained absence of retail competition indicates there are high and non-transitory barriers to entry. As shown in our SMP assessment in retail markets (see paragraphs 6.112 to 6.117 above) we consider that OCPs in the retail markets for low bandwidth TI and CI face significant barriers to entry in establishing the network infrastructure and PoPs in the Hull Area that are necessary to effectively use

<sup>&</sup>lt;sup>436</sup> See Recital 22.

KCOM's regulated wholesale products in providing retail services. With no or limited infrastructure in place, OCPs are typically not able to provide retail services. We consider that these barriers apply to the provision of both low bandwidth TI and CI services.

6.134 Having considered KCOM's comment (see paragraph 6.125), we note that it has not submitted any material new evidence to show that we have overstated the significance of entry barriers. It has highlighted the competitive entry by CityFibre in particular and also claimed that it is at a disadvantage for national multi-site contracts. However, having considered the likely impact of BT's investment in Hull, CltyFibre's entry and KCOM's position in competing for multi-site contracts (see paragraphs 6.98 – 6.107 above), our conclusion remains that entry barriers are high.

We consider the structures of these markets do not tend towards effective competition within the relevant time horizon

- 6.135 We do not consider that these retail markets will become effectively competitive over the course of the review period.<sup>437</sup>
- 6.136 We refer to our SMP assessments above (see paragraphs 6.87 6.120) for an outline of our view that the structures of these markets do not tend towards effective competition. More particularly, we note that (i) KCOM continues to maintain very high shares; and (ii) the small size of the markets and, in case of low bandwidth TI services low value of services, will mean that OCPs are unlikely able to justify the investments in network infrastructure, PoPs and local presence required for attaining the capability to compete for provision of retail services throughout the Hull area.
- 6.137 As discussed above (see paragraphs 6.100 6.103), we reject KCOM's argument that the deployment of alternative infrastructure will materially affect KCOM's market position over the course of this review.

# We consider competition law alone would be inadequate to address the market failure(s) concerned

- 6.138 We consider that even with wholesale SMP regulation in place, KCOM, in the absence of *ex ante* regulation in these retail markets, would have the ability and incentive to:
  - engage in price and non-price practices that are unduly discriminatory;
  - cease to provide some legacy services in the retail market (such as analogue leased lines) prematurely, in order to force customers to migrate to newer and more profitable services; and
  - charge consumers excessive prices.
- 6.139 We consider *ex ante* regulation of KCOM's provision of retail leased lines would be more effective than reliance on competition law alone in guaranteeing a timely and effective response in addressing the risk of KCOM engaging in these practices, in particular for the following reasons:

<sup>&</sup>lt;sup>437</sup> This is consistent with the approach taken in the EC's Explanatory Note in relation to the application of this second criterion.

- *ex ante* regulation allows for the imposition of specific and targeted SMP remedies to address the competition problems identified and for the subsequent monitoring of those remedies:<sup>438</sup>
  - in order to address the risk of excessive pricing, we require KCOM to publish its retail prices to provide transparency about KCOM's charges. This will enable us or others to assess whether these charges are fair and reasonable;
  - additionally, we require KCOM to produce a Pricing Transparency Report and submit it to Ofcom. This will allow us to monitor KCOM's compliance with the SMP conditions imposed; and
  - we also impose the requirement to supply retail leased lines, to not unduly discriminate and to publish a reference offer;
- *ex ante* regulation would provide clarity to both KCOM and to the market as to the types of practices which would be regarded as compliant and non-compliant. This can be achieved through appropriately drafted SMP remedies and, given their intended clarity and transparency, would be less costly to enforce in the event that enforcement was deemed necessary.
- 6.140 Furthermore, in the absence of *ex ante* regulation in this retail market, KCOM could still be in a position to engage in price and non-price discrimination against its competitors in the Hull area.
- 6.141 Lastly, absent *ex ante* regulation, retail prices for business products are not likely to be sufficiently transparent, making it more difficult to detect undue discrimination or other anti-competitive practices. Our analysis of KCOM's prices has raised some concerns about transparency of KCOM's retail prices. As we discuss in more detail in Section 14, in the BCMR 2013 we allowed KCOM some retail pricing flexibility. We allowed KCOM to offer bespoke discounts and required it to only publish its maximum prices in its reference offer. In the course of this review we have found this arrangement has not been fully effective. KCOM has published very high retail prices compared to what it charged before as well as what is charged in the rest of the UK. Then it regularly offers bespoke discounts, which provides little transparency of the retail prices that are typically paid by end-users.
- 6.142 As mentioned above (see paragraph 6.128), KCOM argued that competition law should be sufficient in retail leased line markets on the basis that we had found it to be sufficient in other retail markets in the Hull area, in particular those covered by our Fixed Access Market Review (FAMR). However, we do not believe that imposing *ex ante* regulation in the BCMR would be inconsistent with the FAMR regulations because the circumstances in the relevant markets are different.<sup>439</sup>

<sup>&</sup>lt;sup>438</sup> Timely intervention using ex ante powers can prevent harm which might otherwise be irreversible. It may also avoid the need for frequent repeated interventions. In the July 2015 Strategic Review of Communications discussion document, we say that "a determination whether competition law may be sufficient…may, for example, involve a trade-off between risk of harm to consumers on the one hand, and cost of regulatory error as well as regulatory burden, on the other." Paragraph 14.11

<sup>&</sup>lt;sup>439</sup> We note that the removal of retail regulation in the markets covered by the FAMR in Hull reflected a view that competition law would be sufficient to address remaining market failures in those markets. In relation to the first two criteria, we considered that high and non-transitory barriers to entry remained and the market structure did not tend towards effective competition.

- 6.143 In the FAMR, we concluded that competition law was sufficient in light of specific market circumstances. We believed that:<sup>440</sup>
  - prices were transparent and could readily be benchmarked against national prices for equivalent products;
  - there had been no dispute or complaint about KCOM's pricing since the relaxation of price regulation in 2010; and
  - Ofcom had rarely been required to use its *ex ante* powers in relation to KCOM and it therefore appeared disproportionate to impose these on KCOM again.
- 6.144 However, the specific circumstances in leased line markets are different. For example, as mentioned above, we have concerns about the lack of transparency of KCOM's retail prices. In addition, we have concerns about the level of KCOM's retail prices. We consider that these concerns would be even greater in an unregulated market. Our analysis of KCOM's retail leased lines charges, completed since the May 2015 BCMR Consultation, indicates that KCOM's charges might be significantly higher than BT's for comparable services.
- 6.145 In the light of this, we cannot be confident that *ex post* competition law alone would be sufficient, particularly given the high entry barriers and a market structure which does not tend towards effective competition.

<sup>&</sup>lt;sup>440</sup> Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 Volume 1: Statement on the markets, market power determinations and remedies, 26 June 2014, Section 6 at <a href="http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume1.pdf">http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume1.pdf</a>

## Section 7

# General approach to remedies and assessment of passive remedies

# Introduction

- 7.1 In this section we introduce our approach to assessing what remedies are appropriate to address the competition problems we have identified in the markets in which we have concluded that BT or KCOM has SMP. We also explain why we are including a dark fibre remedy in the package of remedies we are imposing on BT.
- 7.2 This section covers the following:
  - removal of regulation;
  - the competition problems that we have identified;
  - insufficiency of national and Community competition law;
  - regulatory framework;
  - our consideration of passive remedies;
  - our consideration of the combined impact of all the remedies; and
  - our consideration of the impact of remedies in the LP.
- 7.3 From section 8 onwards, we set out the specific regulatory obligations we have decided to impose on BT in the various markets in which we have provisionally concluded that it has SMP outside the Hull area. We have structured these sections as follows:
  - Section 8 general remedies for each of the wholesale markets;
  - Section 9 dark fibre remedy for CISBO markets;
  - Section 10 specific active remedies for the CISBO markets;
  - Section 11 specific remedies for the low-bandwidth TISBO market;
  - Section 12 remedies for interconnection and accommodation services;
  - Section 13 remedies in relation to quality of service;
  - Section 15 and Volume 2 charge control remedies; and
  - Section 16 and Annex 28 changes to regulatory financial reporting arrangements.
- 7.4 In Section 14 we set out the remedies we are imposing on KCOM in retail and wholesale markets in the Hull area.

7.5 Annex 35 is a notification revoking the SMP services conditions imposed as a result of the BCMR 2013, and imposing new SMP conditions in each of the markets in which we find a person to have SMP.

# **Decision to remove regulation**

- 7.6 Where we determine that a person no longer has SMP in a given market, we are required by section 84(4) of the Act to revoke any SMP conditions applied to that person in previous market reviews. Similarly, where we determine that no person has SMP in a new market, we have no powers to impose SMP conditions on any person in relation to that market.
- 7.7 As explained in Sections 4 and 5, we have defined a number of markets in which no person has SMP. In these markets we revoke any conditions imposed as a result of the BCMR 2013 and do not impose any new SMP conditions. The markets are
  - medium bandwidth TISBO in the UK excluding the Hull area;
  - high bandwidth TISBO in the UK excluding the Hull area;
  - wholesale regional TI trunk segments in the UK<sup>441</sup>;
  - CISBO in the CLA;
  - Medium bandwidth TISBO in the Hull area;
  - High bandwidth TISBO in the Hull area; and
  - Very high bandwidth TISBO in the Hull area.
- 7.8 We have published a separate statement concerning our decisions in relation to the retail market for very low bandwidth TI leased lines in the UK excluding the Hull area, at bandwidths below 2Mbit/s.<sup>442</sup>

# **Competition problems we identified**

- 7.9 In light of our assessment of competition in relevant markets in Sections 4 to 6 above, we have identified the following competition problems associated with our SMP findings:
  - Concerns that, in the absence of appropriate *ex ante* regulation, BT and KCOM would not make access to their networks, services or associated facilities available on terms that would secure efficient investment and innovation, both in the relevant wholesale markets and in the related downstream retail markets.
  - Concerns that, in the absence of appropriate *ex ante* regulation, BT and KCOM would favour their downstream retail businesses to the detriment of their

<sup>&</sup>lt;sup>441</sup> We note however, as explained in Section 5, that we have found that segments previously identified as regional TI trunk should be included in the market for low bandwidth TISBO services. <sup>442</sup> Ofcom, *Business Connectivity Market Review: Very low bandwidth leased lines, Statement*, 28 April 2016, <u>http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/</u>

competitors in the relevant retail markets (including by price or non-price discrimination).<sup>443</sup>

- Concerns that, in the absence of appropriate *ex ante* regulation, there is a relevant risk of adverse effects arising from BT, and KCOM, fixing and maintaining some or all prices at an excessively high level or imposing a price squeeze.
- Concerns that, in the absence of appropriate *ex ante* regulation, there is a risk that the poor quality of service offered by BT in the provision and repair of wholesale services will impact detrimentally on all downstream providers of leased lines, including BT's retail businesses, and ultimately to the detriment of consumers.
- Concerns that, in the absence of appropriate *ex ante* regulation in the relevant retail markets, KCOM would have the ability and incentive to engage in pricing and non-pricing practices to the detriment of consumers.
- 7.10 In the relevant sections relating to the specific remedies we are imposing, we set out in more detail why we consider that each of the remedies is based on competition problems we have identified. As set out in Article 8(4) of the Access Directive, our package of *ex ante* remedies must be based on the nature of the competition problems identified and must be proportionate and justified in light of the objectives laid down in Article 8 of the Framework Directive.
- 7.11 As set out in the preceding sections, our market analysis has led us to conclude that BT and KCOM have SMP in certain markets, but has also highlighted that there are some differences in competitive conditions between and within those markets. We have therefore exercised regulatory judgment by reference to both the nature and extent of the competition problems identified to assess the most appropriate way of addressing those competition problems in the light of the relevant objectives.

# National and Community competition law

- 7.12 Under Article 8(2) of the Access Directive, where we designate an operator as having SMP on a specific market, we are required to impose remedies. However, in considering the imposition of remedies, we take into account the potential application of competition law. Typically, we find that competition law is not sufficient to address the competition problems identified, for the following main reasons.
- 7.13 First, we have taken account of the fact that the products in the wholesale markets we have identified are inputs into other downstream markets. Appropriate *ex ante* intervention at the upstream level can promote effective competition in downstream markets. Appropriate *ex ante* intervention at the upstream level can also facilitate the emergence of effective competition at the upstream level itself. Competition law, insofar as is relevant, prohibits the abuse of a dominant position it does not seek to promote competition, which is one of the aims of our package of *ex ante* remedies.

<sup>&</sup>lt;sup>443</sup> We note in this regard the purchase of Everything Everywhere by BT, which will increase the size of BT's downstream retail mobile business, and may therefore have an impact on BT's incentives. However, we do not consider that this changes the nature of the competition concern arising from BT's SMP.

- 7.14 Secondly, the requirement to address the competition problems in each of the markets in which we find SMP means imposing an interconnected and complex package of remedies, including provisions to ensure that they remain effective during the three year review period.
- 7.15 For example, we are imposing both general and specific network access obligations, in the form set out in Annex 35. These conditions provide for a number of direction-making powers, which allow us to direct BT and KCOM as to the application of both the general and specific network access obligations. This ensures that their application can be specifically tailored to address the competition problems we have identified over the course of the three year review period.
- 7.16 Thirdly, we think it is important to provide sufficient certainty about the rules applying to the dominant provider in the wholesale leased lines markets. We consider this certainty is best achieved through *ex ante* regulation. *Ex ante* regulation will also allow for timely intervention by us proactively enforcing the conditions and, if necessary, by parties bringing regulatory disputes to us for swift resolution.<sup>444</sup>
- 7.17 Whilst we consider that these points are relevant to our consideration of remedies generally, we also explain in our assessment of individual remedies where we think there are particular additional relevant points relating to the sufficiency of competition law.

## The relationship with the BT Undertakings

- 7.18 In considering the sufficiency of competition law, we have also had regard to the BT Undertakings, which are in essence a remedy under national competition law, the Enterprise Act 2002. They seek to deploy a variety of mechanisms aimed at defining equivalent treatment, and at preventing and detecting discriminatory conduct by BT when supplying wholesale network access and backhaul services to its downstream competitors.
- 7.19 We consider that the BT Undertakings are not sufficient to address the competition problems we have identified in the various relevant markets. In particular, as we explained in 2005 when we accepted them in lieu of a reference to the Competition Commission, the BT Undertakings are intended to complement *ex ante* regulation under the Act.
- 7.20 We also recognise that, in the context of Ofcom's DCR, stakeholders have raised concerns about the ability of active and passive SMP remedies to address fully the competition problems associated with BT's SMP. These concerns largely relate to the current model of functional separation of BT, as set out in the BT Undertakings. For example, concerns that certain decisions about Openreach investment and strategy are taken by BT Group, and concerns about the independence of Openreach's governance. These are issues which are broader in scope than the matters considered as part of this market review. Our initial conclusions on the concerns raised and our approach to the reform of Openreach are explained in the DCR Statement.<sup>445</sup>

 <sup>444</sup> See sections 185 to 191 of the Act, in particular section 185(1A).
 <sup>445</sup> See Making communications work for everyone: Initial conclusions from the Strategic Review of Digital Communications, 25 February 2016, available at: http://stakeholders.ofcom.org.uk/telecoms/policy/digital-comms-review/dcr-feb-16/

# **Regulatory Framework**

- 7.21 We set out the regulatory framework relevant to this review, including some of the legal tests that we have applied, in Annex 2. The types of *ex ante* wholesale remedies we are imposing are those set out in Articles 9 to 13 of the Access Directive and which are implemented into domestic law in sections 87 and 88 of the Act. They are:
  - network access obligations;
  - ancillary services such as interconnection and accommodation that facilitate the use of network access;
  - non-discrimination obligations;
  - transparency obligations;
  - price control obligations; and
  - accounting separation and cost accounting obligations.
- 7.22 The definition of network access as set out in Article 12(1)(a) of the Access Directive encompasses both active and passive network access. Specifically, Article 12(1)(a) states that operators "may be required [...] to give third parties access to specified network elements and/or facilities, including access to network elements *which are not active*..." (emphasis added).
- 7.23 Accordingly, we use the term 'passive remedies' to refer to access remedies which are provided without the requirement on BT to install or operate electronic equipment, and may include obligations to provide duct and pole access, or dark fibre. In contrast, the term 'active remedies' describes access remedies which include in addition to the underlying infrastructure the provision of transmission equipment for the conveyance of the signals.
- 7.24 In considering what remedies to impose under section 87(3) we are required to take into account, in particular, those factors set out in section 87(4) namely:
  - 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 network access imposed unnecessary;
  - the feasibility of the provision of the network access imposed;
  - 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 imposed (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 remedies; and

- the desirability of securing that electronic communications services are provided that are available throughout the member States.
- 7.25 We also take account of the requirements of Article 8 of the Framework Directive, as set out in section 4 of the Act. These include:
  - A requirement to promote competition in relation to, amongst other things, the provision of electronic communications networks and electronic communications services (section 4(3) of the Act).
  - A requirement to encourage the provision of network access and service interoperability for the purpose of securing efficiency and sustainable competition, efficient investment and innovation and the maximum benefit for the persons who are customers of communications providers (section 4(7) and (8) of the Act).
- 7.26 We also note from our general duties (section 3(4) of the Act) our obligations to have regard to (amongst other things):
  - the desirability of promoting competition in relevant markets;
  - the desirability of encouraging investment and innovation in relevant markets; and
  - the desirability of encouraging the availability and use of high speed data transfer services throughout the UK.
- 7.27 In relation to conditions relating to network access pricing, section 88(1) of the Act provides these should appear to us to be appropriate for the purposes of promoting efficiency, promoting sustainable competition and conferring the greatest possible benefits on end-users.
- 7.28 Taking account of all of these considerations requires us to exercise our regulatory judgment. In some cases the considerations will point in different directions, and we therefore have to balance competing concerns to determine the most appropriate remedies. For example, when we take account of considerations relating to investment, we consider it appropriate to consider the effect on investment both at the infrastructure level and at the level of provision of active services. In turn, we balance these impacts on investment against considerations relating to the promotion of competition in relevant markets, in particular at the downstream level.
- 7.29 Similarly, when considering efficiency, we take into account the impact on three types of efficiency:
  - allocative efficiency, which is achieved when prices are close to cost, ensuring that all consumers who value a product at more than its cost are able to purchase it;
  - productive efficiency, which is achieved when the costs of production are minimised; and
  - dynamic efficiency, meaning that firms have the correct incentives to invest and to innovate.

- 7.30 In the May 2015 BCMR Consultation we asked whether stakeholders agreed with our approach to assessing what remedies are appropriate to address the competition problems we have identified, and if not, what alternative approach we might take.
- 7.31 Although we received some responses to this question, these were typically related to more specific issues, such as our assessment of passive remedies, the appropriate remedies for the TISBO market and potential simplification of the suite of active remedies which we had proposed. We address those comments in the sections of this statement to which they relate directly, including our assessment of passive remedies below.

# **Consideration of passive remedies**

#### Introduction

- 7.32 We can impose network access remedies at different levels in the value-chain of leased lines. Broadly speaking, these can be divided into active remedies and passive remedies.
- 7.33 Active remedies require the SMP operator to offer functioning electronic services, which, for fibre-based leased lines, means that it must not only provide its optical fibres but also install and operate appropriate electronic transmission equipment.
- 7.34 Passive remedies are upstream of active remedies in the value-chain, and include dark fibre and duct access remedies. A dark fibre remedy would require the SMP operator to provide unlit strands of its optical fibre, which access-seekers could attach to their own electronic equipment to deliver services. Further upstream of dark fibre in the value-chain, a duct access remedy would require the SMP operator to provide access to its underground ducts, allowing access-seekers to install their own fibre cables as well as their own equipment. Dark fibre and duct access are passive remedies, because they both require the SMP operator to provide physical access to passive (i.e. non-electronic) elements of its network infrastructure, but not the active electronics.
- 7.35 The DCR Statement emphasises the benefits that can be realised from competition higher up the value chain driving investment and innovation. Ofcom's strategy includes encouraging such competition by requiring BT to open up its ducts to rival operators wanting to build their own fibre networks to provide FTTP services, and will be implemented over the next decade. Our assessment of passive remedies in leased lines markets for this market review period is made in the context of that wider strategy.

# Summary of our considerations of passive remedies in the May 2015 BCMR Consultation

- 7.36 We consulted on passive remedies in the April 2014 CFI, the November 2014 BCMR Consultation and the May 2015 BCMR Consultation. In the May 2015 BCMR Consultation we included dark fibre in the package of remedies we proposed to impose on BT in the CISBO markets in which we found provisionally that it had SMP.
- 7.37 We considered that we would need to impose active remedies in this review period, whether or not we were to decide to impose any passive remedies, because the industry currently relies heavily on BT's regulated leased line services.

- 7.38 We proposed that including passive remedies in the package of remedies could offer the following benefits relative to imposing active remedies alone:
  - enhancing dynamic efficiencies by offering CPs more scope to innovate and to differentiate their leased line services;
  - improving productive efficiencies by allowing CPs to reduce equipment costs overall; and
  - offering future opportunities to simplify regulation.
- 7.39 We recognised that duct access may offer some benefits over and above those of dark fibre:
  - allowing CPs to deploy infrastructure for additional services (for example, residential broadband services) alongside leased lines; and
  - providing an infrastructure component which could help a CP to assemble fibre networks in cities in the form of rings rather than in BT's "tree-and-branch" architecture.
- 7.40 We also recognised that duct access could allow CPs to invest in fibre in areas where BT had not done so. However, we noted that BT currently offers to provide fibre leased lines anywhere in the UK, subject to excess construction charges<sup>446</sup>, and therefore considered that this potential benefit of duct access would be less relevant to leased lines than to residential broadband services.
- 7.41 We identified and analysed some risks associated with passive remedies in the leased lines markets. In summary, we considered the risks of:
  - inefficient entry, because investment decisions may be distorted by arbitrage
    opportunities arising from inconsistent pricing at different levels in the value-chain
    of leased lines (insofar as it would be impractical to vary the price of an upstream
    product to reflect the prices of the corresponding downstream alternatives in all
    circumstances);
  - undermining BT's incentives to invest in its network, by denying BT a fair opportunity to recover its efficiently incurred costs, including its common costs;
  - undermining other CPs' incentives to invest in their own physical infrastructure;
  - distributional impacts, with winners and losers among different groups of customers if passive products were to prompt BT to rebalance the pattern of recovery of its common costs across its range of services;
  - some lessening of competition, if economies of scale enabled by passive remedies were to lead to consolidation in the market; and

<sup>&</sup>lt;sup>446</sup> Excess construction charges are regulated charges with which BT recovers the costs of construction work (such as a site survey, installation of new duct, new blown fibre and drilling through walls) unique to the site of a single end-user. Construction work in parts of Openreach's common network (i.e. which can serve more than one end-user) is outside the scope of excess construction charges.

- substantial additional costs which BT could incur to develop passive products, and CPs may also incur in developing capabilities to consume them.
- 7.42 We considered that the pricing of passive remedies (in particular the relative pricing of active and passive remedies) would be a key driver of how and where passive remedies would be used, and of their ultimate impact on competition and consumers. Therefore, we considered that our assessment of the balance between the benefits and risks of passive remedies had to take into account the ways in which the remedies could be designed to maximise their benefits and minimise their risks.
- 7.43 We considered it possible to design a package of active remedies and dark fibre which would deliver substantial benefits relative to imposing active remedies alone, while mitigating the risks we had identified. This assessment was based on a dark fibre remedy priced by reference to BT's 1Gbit/s active Ethernet products, minus the LRIC of the costs avoided by BT in providing dark fibre.
- 7.44 Although we had identified certain additional benefits of a duct access remedy, we thought we could mitigate the risks in relation to price compatibility with the active leased lines more effectively with dark fibre, primarily because of how such a remedy would have to be priced. Having considered the benefits and the risks, we thought that a package of active remedies and dark fibre would provide a better balance between benefits and risks in leased lines markets than a package of active remedies and duct access either with or without dark fibre for this review period.
- 7.45 We therefore proposed a package of remedies which included both dark fibre and active remedies.
- 7.46 We asked stakeholders whether they agreed with our assessment of the benefits and risks associated with a package of remedies including passive remedies. We also asked whether they agreed with our assessment that a dark fibre remedy designed and priced in the way we described would provide the best balance between the benefits and risks, and whether they agreed with our proposal to impose such a remedy.

#### Stakeholders' responses, our assessment and conclusion

- 7.47 In overall terms, respondents can be divided into three broad sets of opinion on these questions:
  - *those who agreed with our proposals* included [≫], GTC, Hyperoptic, Six Degrees Group, Sohonet, Virtual 1;
  - those who supported imposition of passive remedies, but believed that we should impose dark fibre at a lower (cost-based) price and also impose duct access included the members of the Passive Action Group (Colt, Vodafone, Sky, TalkTalk, H3G); and
  - those who did not agree that we should impose passive remedies, which included BT, KCOM and members of the Infrastructure Investors Group (CityFibre, EU Networks, Virgin and Zayo).
- 7.48 There were some large and wide-ranging responses, and we have therefore grouped our detailed discussion and consideration of responses to these questions into a number of annexes to this Statement, as follows:

- benefits of a dark fibre access remedy Annex 18;
- impacts of passive remedies Annexes 19 and 20;
- approach to pricing and design of a dark fibre access remedy Annexes 21 and 22; and
- dark fibre pricing Annex 23.

#### Intervention at the appropriate level in the value-chain

- 7.49 In considering the case for passive remedies, we recognise that the industry currently relies heavily on BT's regulated active wholesale leased line services. For example, Openreach's revenues from non-BT CPs for regulated Ethernet and WDM wholesale services in the year ending 31 March 2015 were £356m.<sup>447</sup> CPs would need time to adapt their processes to use passive input products and to switch their users' services from active products to passive products, and it would therefore be necessary to have a transition period in which both active and passive remedies coexist. We have therefore started from a presumption, with which no stakeholder disagreed, that we should continue to impose active remedies in this review period.
- 7.50 This presumption is relevant to our assessment of passive remedies for this review in two ways. First, it means that we are assessing whether we should impose passive remedies *in addition* to (rather than instead of) active remedies. Second, it means that in assessing the appropriate form of passive remedy for this market review period, we must take into account the need for such a remedy to coexist with active leased lines remedies at least on a transitional basis.
- 7.51 Some stakeholders commented that we had not made clear which competition problem we intended to address with dark fibre, that we had not distinguished between problems we were seeking to address with active remedies and problems we were seeking to address with passive remedies, and that none of the competition problems we had identified appeared to require the imposition of dark fibre.
- 7.52 Our approach to remedies is to design the most appropriate package of *ex ante* remedies to address the likelihood that BT would not make access to its networks, services or associated facilities available on terms that would secure efficient investment and innovation, both in the relevant wholesale markets and in the related downstream markets.
- 7.53 We review this design of the package of remedies each time we carry out a BCMR, which we do every three years, in accordance with the European Regulatory Framework. An important part of our considerations is identifying the most appropriate level in the value-chain at which to impose network access, and whether to impose network access at more than one level in the value-chain.
- 7.54 We recognise that we need to strike a balance in this regard. On the one hand, the further upstream in the value-chain we intervene the more value we expose to competitive investment and innovation. On the other hand, intervention further upstream could narrow competition to fewer larger players, or may not result in

<sup>&</sup>lt;sup>447</sup> Calculated from BT's *Revised Current Cost Financial Statements 2015*, as sum of external revenues for AISBO non-WECLA, MISBO non-WECLA and AISBO WECLA, pages 77, 89 and 83 respectively.

effective and sustainable competition. Intervention upstream would also limit BT's flexibility in how it recovers its common costs, which could impact BT's and other CPs' incentives to invest, and may also have implications for total demand. We are also mindful that, if an upstream intervention is additional to other interventions, so that we intervene at multiple levels of the value chain, any inconsistencies in pricing between those levels can incentivise inefficient entry. This is a particular concern in this review period during which, for the reasons set out above at paragraph 7.49, we consider that passive remedies would need to coexist alongside active remedies.

#### Benefits of passive remedies

- 7.55 In summary, our view is that passive remedies dark fibre and/or duct access would:
  - enhance dynamic efficiency by allowing each CP to determine independently whether, when and how to develop its active leased line services, rather than having to rely on BT, and hence encourage CPs to innovate by providing incentives to achieve a first-mover advantage and the ability to differentiate products.
  - promote productive efficiencies, by providing CPs with opportunities to reduce duplication of leased lines equipment, reducing equipment costs and leading to lower prices; and
  - could allow us to reduce regulation in future, by rolling back active remedies in leased lines markets as and when competition based on passive remedies becomes established.
- 7.56 As explained in our DCR statement, duct access would expose passive elements of the value-chain to competition. Duct access could deliver the following benefits over and above those of dark fibre:
  - lower the barriers CPs face in investing in and expanding their fibre networks;
  - allow CPs flexibility in configuring their networks' topology; and
  - giving CPs greater control of their customers' experiences of the provisioning and repair of fibre circuits.<sup>448</sup>

#### Form of passive remedy for leased lines

- 7.57 We think that at this stage in leased lines markets, it is appropriate to impose dark fibre and not duct access.
- 7.58 We think that at present most of the benefits of passive remedies for customers of leased lines will lie in exposing the active layer to competition, and that, for the purpose of this market review, dark fibre will deliver those benefits. The benefits specific to duct access are likely to be greatest where there is little or no fibre, particularly in the mass market, whereas most customers of fibre leased lines are larger businesses, and BT currently offers to provide them with leased lines throughout the UK, using its extensive fibre network.

<sup>&</sup>lt;sup>448</sup> Although we note that many of the underlying challenges of fibre provisioning would likely apply equally to duct access as to dark fibre.
- 7.59 We explain below how we consider that a dark fibre remedy enables us to manage the implementation risks during a transitional period whilst active remedies and passive remedies coexist. We consider that including duct access in the remedies package at this stage would make it more difficult to manage implementation risks, particularly in managing prices at different levels in the value chain to avoid creating incentives for inefficient entry while active remedies are an important part of the remedy package.
- 7.60 In its comments regarding the Draft Statement, the Commission did not share Ofcom's view that imposing universal duct access would create undue implementation risks (related to correct price differentials along the value chain). The Commission considered that the risks could be mitigated by the use of a uniform costing methodology with consistent asset valuation along the value chain, in line with the approach adopted for pricing dark fibre in relation to the 1Gbit/s active product.
- 7.61 We consider that it would be impractical to set a duct access price on an activeminus basis and in line with our approach to pricing dark fibre. This is because, unlike dark fibre there is not a one-to-one relationship between the potential duct access product and an active leased line product (or indeed the dark fibre product and a potential duct access product).
- 7.62 A duct access product would typically be used to deploy fibre access networks (e.g. supporting both FTTP and leased line deployments within a given area) and therefore each component of a duct access product, such as a sub-duct rental for a particular duct segment, would typically contain many fibres supporting multiple services of different types. The utilisation of individual rental components would vary according to the network design and services sold. Moreover, the number and type of duct rental components utilised by individual circuits would vary depending on circuit routing through the duct network. For example, some circuits would pass through more high-utilisation segments of ducts than others. Consequently, there is not a direct relationship between the components of a duct access product and active products. We therefore consider that it would be impracticable for duct price to be set on an active minus basis with reference to an active wholesale product (or indeed the dark fibre product).
- 7.63 Where over time competition based on passive remedies proves effective and sustainable, active remedies may not be needed, and the pricing of dark fibre and duct access could be made more compatible, incentivising CPs to make efficient input choices between them.
- 7.64 In our recent DCR Statement we said that our strategy over the next decade will include requiring Openreach to make it easier for other CPs to use its duct and pole network in order to facilitate investment in new fibre-to-the-home (FTTH) networks, in part because there is currently little or no fibre in mass market areas which would allow deployment of FTTH. We recognised that CPs are less likely to deploy new networks if they are unable to connect larger businesses as well as residential customers, and said that, where CPs deploy to residential and small business consumers at scale, we will look to remove the current restriction which prevents use of duct and pole access for connecting larger businesses. We will consider this in our review of the wholesale local access market and in implementing the EU Civil Infrastructure Directive, which is expected to come into effect in the UK in the summer of 2016. We will also look to ensure that there are efficient operational processes for using duct and pole access, and require the establishment of an online database of the relevant infrastructure. We will continue to consider the potential role

that duct and pole access could play in leased lines markets in light of these developments and will take them into account at our next review, assuming it is not necessary to intervene before then.

- 7.65 In reaching this view, we have taken into account consultation responses on the benefits and risks of having a duct access remedy in addition to, or instead of, dark fibre.
- 7.66 BT and Virgin also said in response to the May 2015 BCMR Consultation that current active remedies already offer scope for new and innovative products to be developed and that we had not identified any major innovation that would emerge following the introduction of a passive remedy.
- 7.67 We consider that dark fibre would promote more effective competition in the active level of the value chain of leased lines because, unlike the current situation with active remedies, CPs would be able to develop their services independently of BT and of each other. In our view, this is an important benefit, enduring over time as technologies and users' needs evolve, and distinct from the values of specific developments which would emerge from time to time.

#### Risks and impacts of a dark fibre access remedy for BT's network and its users

- 7.68 We set out detailed assessment of the benefits of dark fibre in Annex 18. Our detailed assessment of the impacts of dark fibre on BT and on users of its networks, and the risks to them, is set out in Annex 19. We summarise the conclusions of that assessment here.
- 7.69 We recognise that a dark fibre remedy creates a risk that we undermine BT's existing investments in its network, weaken its incentives to invest in its network in future, and threaten its opportunity to recover its efficiently-incurred costs. However, as set out in more detail in Annexes 21 and 22, we consider that this risk can be mitigated by the design and pricing of a dark fibre remedy, and we have designed the remedy we are imposing accordingly.
- 7.70 Specifically, we have required BT to provide dark fibre in the same configurations as its existing active Ethernet services, and to set the price of its dark fibre product on an 'active minus' basis relative to its 1Gbit/s Ethernet services. These features of our remedy design mean not only that Openreach will be able to recover its incremental costs of dark fibre, but also that the contributions Openreach's sales make to BT's common costs from dark fibre will be the same as those from the corresponding 1Gbit/s Ethernet services. We have also taken account of dark fibre in our design of the LLCC (see Annex 32 and Section 5 of Volume 2), to ensure that BT will have a fair opportunity to recover its efficiently incurred costs, including its common costs.
- 7.71 We recognise that, in imposing dark fibre simultaneously with active remedies, there is a risk of inefficient entry incentivised by regulatory arbitrage opportunities, which could result from inconsistencies between the pricing of dark fibre and of active products. However, we consider that our approach mitigates this risk appropriately by requiring BT to price dark fibre on an 'active minus' basis relative to its 1Gbit/s Ethernet services, both in absolute terms and relative to active prices (see Annex 21), and by providing guidance that the differential between the prices of the active product and dark fibre should be set equal to the avoided costs on a long-run incremental cost (LRIC) basis (see Annexes 23 and 24).

- 7.72 Our design of the dark fibre remedy limits the scale of the costs which BT and other CPs are likely to incur in developing and implementing the dark fibre remedy (see Annex 22). Furthermore, the design of the LLCC provides BT with the opportunity to recover the implementation costs (see Annex 32).
- 7.73 We recognise that the dark fibre remedy is likely to trigger some rebalancing of prices for active services, and that this could give rise to concerns about allocative efficiency. We consider that our design of the dark fibre remedy mitigates this risk significantly in that it limits the need for any rebalancing of prices to active services of speeds higher than 1Gbit/s (see Annexes 21 and 22). We may need to reconsider the appropriate approach to pricing if a duct access remedy becomes available for leased lines and is likely to lead to material shift from active remedies and dark fibre to duct access.
- 7.74 We have considered whether dark fibre could affect the structure of competition in the market. Some consolidation in the market is possible, to the extent that economies of scale and long-term commitments could be more important in applications of dark fibre than those of active services, with smaller CPs exiting the market and reducing the extent of competition. However, we do not think that this impact will likely be large or that it will harm competition overall, given the greater opportunities that dark fibre could open up.

#### Impacts of dark fibre on investments in rival infrastructure

- 7.75 We recognise the importance of infrastructure-based competition. Stakeholders' responses to our May 2015 BCMR Consultation reflected on different impacts that dark fibre could have on infrastructure investments. While some, including Virgin and CityFibre, feared that dark fibre would discourage investment, others, including Colt and Vodafone, argued that a dark fibre remedy would not harm efficient rival investment and could even encourage rival investment.
- 7.76 We have considered the potential impacts that dark fibre could have on BT's competitors' investments in infrastructure, and set out our considerations in detail at Annex 20. We summarise these considerations and our conclusions below.
- 7.77 Our approach is designed not to deter efficient investment. It requires BT to set the price of dark fibre by reference to its charge-controlled products operating at 1Gbit/s, and is therefore consistent with the design of the controls which we are imposing on BT's charges for regulated active services, which provides incentives for efficient investment for BT and for rival infrastructure operators.
- 7.78 Furthermore, this pricing approach will limit the impact of the dark fibre remedy mainly to the prices of services with bandwidths above 1Gbit/s and commercial dark fibre circuits. Jointly, these products represent (and will continue to do so over the review period) a relatively small proportion of the total supply of business connectivity.

#### Pricing dark fibre to balance benefits against risks and impacts

7.79 We recognise that the relative prices of dark fibre and active services will be key in determining where and how CPs will use dark fibre. In particular, the lower the price of dark fibre the more CPs will prefer to use it over active regulated services, and the scale of some of the benefit of innovation and productive efficiency will increase. On the other hand, the lower the price of dark fibre the greater the likelihood of reduced

incentives – both on the SMP operator and other CPs – to invest in their own local access infrastructure, and the greater the impact on current pricing structures.

- 7.80 In our judgement, setting the price of dark fibre on an 'active minus' basis relative to Openreach's 1Gbit/s EAD services achieves the best balance between the benefits on the one hand and the risks and potential negative impacts on the other. We set out our reasoning in detail in Annexes 21, 22 and 23.
- 7.81 Members of the PAG thought that we should set a lower, 'cost-based', price for dark fibre to stimulate greater take-up. In our judgment, the benefits of additional take-up of dark fibre under the 'cost-based' approach would be outweighed by the risk of potential adverse impacts in this review period.
- 7.82 In our design of the remedy and in setting its price for the three-year period of this review we aim to deliver many of the benefits of passive remedies and to start managing the transition of competition in leased lines over time from its current reliance on BT's regulated active services towards the model we set out in the DCR, in which competition in telecoms in general would rely more comprehensively on passive remedies.
- 7.83 In particular, we have set the price of dark fibre to mitigate the risks appropriately. The price of dark fibre is consistent with the design of the controls which we are imposing on BT's charges for regulated active services, which provides incentives for efficient investment for BT and for rival infrastructure operators. It incentivises access-seekers to factor the economic merits into their choices of regulated access between dark fibre and active services, it ensures that BT will continue to have a fair opportunity to recover its efficiently-incurred costs and it will require limited rebalancing of charges, so that charges to more price-sensitive customers do not need to increase in nominal terms.

#### Conclusions on passive remedies

7.84 In light of these assessments we believe that it is appropriate to change our regulation of network access from previous reviews. In particular, we have decided to impose a dark fibre remedy priced on an 'active minus' basis relative to BT's 1Gbit/s Ethernet services alongside active remedies. We consider that this would promote efficiency and better sustain effective competition in fibre-based leased lines than would be possible with active remedies alone, both in the relevant wholesale markets and in the related downstream retail markets.

### Overall impact of our package of remedies

- 7.85 We have concluded that the package of remedies we are imposing on BT is appropriate to address the competition problems we have identified and is proportionate. In reaching this conclusion we have considered the combined impact which all the remedies in the package will have on the leased lines markets.
- 7.86 We recognise, in particular, that the charge control will have a substantial short-term impact, requiring BT to reduce its wholesale charges significantly over the review period. It will therefore have a material impact on the revenues of BT and of its rivals.
- 7.87 CityFibre has argued that, in order to promote investment, we should refrain from imposing a charge control. We have nevertheless decided to impose one because we consider that, without it, costs to consumers would be very high and that the current and planned alternative infrastructure of which we are aware outside the CLA

and Hull is unlikely to support competition which is effective enough to justify removal of regulation.

- 7.88 BT currently earns a high return on the capital it employs for leased line services. Significant cuts in its charges are therefore needed to bring them to an efficient level, a level which we judge to be one at which BT's return on capital employed would be the same as its weighted average cost of capital. The charge control is designed to bring BT's charges down to that level over the review period.
- 7.89 We have designed the control to apply to services of bandwidths up to and including 1Gbit/s. We consider that BT's CCA FAC is a cost standard against which we can set prices consistent with signals for efficient investment, and that it is therefore the appropriate cost standard for this charge control. We explain this further in Section 5 of Volume II of this statement.
- 7.90 BT's competitors' share of very-high-bandwidth services (WDM services and Ethernet services with bandwidths greater than 1Gbit/s) is generally greater than their share of lower-bandwidth services, and we are imposing lighter constraints on BT's charges for those services. In particular, we are imposing a safeguard cap on the BT's charges for very-high-bandwidth services in the RoUK geography, and no control on such charges in the LP geography. (We discuss the impact of the remedies in the LP more specifically below). We have also taken into account the constraint imposed by the dark fibre remedy on the prices of very-high-bandwidth services.

# Impact of remedies in the LP

- 7.91 As discussed in our SMP assessment in section 4, there are some particular characteristics of the LP which we consider it appropriate to take into account in our assessment of remedies.
- 7.92 In particular, we found that OCPs have invested in networks to supply high value sites in this area, but that this rival infrastructure is patchy, reflecting the much sparser distribution of high value sites in the LP relative to the CLA. This in turn is reflected in the much lower average network reach figures for the LP than in the CLA.
- 7.93 Although we expect migration from 1Gbit/s to very-high-bandwidth (VHB) services during the market review period, we do not expect these migrations to attract new infrastructure build by rival CPs. As a result, we expect migrating customers to continue to have limited alternatives to BT.
- 7.94 However, we recognise that the relative success of alternative infrastructure operators in VHB services in the LP to date is a relevant consideration, and we have therefore considered whether our remedies package poses a particular risk to rival infrastructure investment in the LP such that there might be a case for a lighter-touch package of remedies (for example, not including a dark fibre remedy).<sup>449</sup>

<sup>&</sup>lt;sup>449</sup> This approach is consistent with the BEREC common position on geographic aspects of market analysis (definition and remedies). This states "NRAs have to strike a balance between two types of errors: "Type 1 errors", in which there is deregulation (or lighter regulation) where in fact regulation (or stronger regulation) would still be justified; and "type 2 errors", in which there is regulation (or stronger regulation) where no (or lighter) regulation would be justified". See paragraph 169 at: http://berec.europa.eu/eng/document\_register/subject\_matter/berec/regulatory\_best\_practices/comm

- 7.95 As set out in this section and sections 8 and 9, the key features of the package of remedies we are imposing are:
  - CPI-x% charge control on Ethernet <=1Gbit/s:
  - Dark fibre access, priced at "active minus" relative to BT's Ethernet 1Gbit/s • services, to be available by October 2017;
  - No safeguard cap on BT's charges for active very-high-bandwidth services.
- 7.96 We consider that the regulated dark fibre remedy is likely to have some impact on OCPs who are currently the main suppliers of VHB services in the LP (including Virgin, Zavo and EU Networks). In particular, dark fibre prices on a "1Gbit/s active minus" basis will constrain the prices of VHB services.
- 7.97 In principle, these CPs' reduced VHB revenues would be offset by the benefit which lower VHB prices, based on use of regulated dark fibre, would bring to VHB users. However, a concern could arise to the extent that the reduced prices led to a reduction in efficient investment. We expect the overall effect on existing infrastructure-based competition to be limited. One reason is that the number of VHB circuits in the LP which might be affected is small and so, therefore, is the likely effect on OCPs' revenues.<sup>450</sup> In addition, the costs of OCPs building duct and fibre networks are largely sunk and so existing infrastructure-based competition is unlikely to be harmed in any event.
- 7.98 We notified our draft statement to the European Commission, BEREC and the national regulatory authorities of other member states in line with the consultation process set out in Article 7 and Article 7a of the Framework Directive. In the Commission's response to our notification, it made two comments, one of which concerned the identification of geographic areas which are suitable for lighter remedies. We summarise and respond to this comment below:
  - In its comments on our draft statement, the Commission noted that a more 7.98.1 granular geographic differentiation of remedies could reduce the likelihood that alternative providers downscale their investments or exit the market because of the imposition of remedies undermining their business cases. In light of this, the Commission called for a clear set of characteristics to be used to identify all those areas in the UK where infrastructure competition has already developed to an extent that the imposition of lighter touch remedies would be appropriate.
  - 7.98.2 It considered that in applying this approach, we may find that the imposition of a charge control for VHB services may no longer be appropriate in other areas in addition to the LP, such as the CBDs. It also noted that in these areas with a significant degree of infrastructure competition, access to BT's physical duct infrastructure may be sufficient to ensure an adequate level of additional competitive access and pressure at the infrastructure level, and that a dark fibre remedy may not be necessary or proportionate. It therefore asked us to consider the imposition of a lighter set of remedies not only in the LP area, but also other parts of the UK based on a clear set

on\_approaches\_positions/4439-berec-common-position-on-geographic-aspects-of-market-analysisdefinition-and-remedies <sup>450</sup> For more detail, see Annex 5 paragraph A5.39.

of criteria reflecting all relevant parameters of the state of infrastructurebased competition therein.

- 7.98.3 In light of the Commission's comments, we have looked again at our assessment of whether to define separate markets for the LP and CBDs in 4.456, noting that this reasoning is also applicable to our identification of areas where it may be appropriate to apply lighter touch remedies than in the RoUK. We conclude that the factors we have taken into account in our assessment do reflect all relevant parameters of the state of infrastructure-based competition and furthermore that a consideration of these factors leads us to conclude it is not appropriate to apply lighter touch remedies in any areas other than the LP. We therefore continue to consider lighter touch remedies only in the context of the LP in this review. We set out our reasons for continuing to consider that a safeguard cap on VHB services is appropriate in the RoUK but not in the LP in 8.224 8.225.
- 7.98.4 In light of the Commission's comments, we have also given further thought to whether it is necessary or proportionate to impose a dark fibre remedy in the LP, given that our assessment identifies it as an area where lighter touch remedies may be appropriate. In particular, we have considered whether access to BT's ducts in the LP could be sufficient to ensure an adequate level of additional competitive access and pressure at the infrastructure level.
- 7.98.5 For the reasons we set out above in 7.60 7.62, we continue to consider that it would not be appropriate or practical to impose a duct and pole access remedy in this BCMR. As a result, we do not consider a duct and pole remedy to be a viable alternative to a dark fibre remedy at the time of publication.
- 7.98.6 We consider there is potential for competitive harm to arise in relation to VHB services in the LP, particularly with respect to those customers migrating from 1Gbit/s to VHB services who will have limited alternative to BT, for the reasons set out in 7.93 above. We consider that a dark fibre remedy will constrain the prices of VHB services in the LP, protecting these customers from BT's SMP. We also consider the risks to rival infrastructure from the introduction of a dark fibre remedy in this area are low for the reasons set out in 7.96 7.97. We therefore continue to conclude that the benefits from imposing a dark fibre remedy in the LP outweigh the potential risks to infrastructure competition and this is therefore the appropriate means of addressing the competition problem that we have identified in the LP in relation to VHB services.
- 7.98.7 The design of a universal physical infrastructure access remedy is currently being considered as part of a wider strategic review in Ofcom. As and when such a remedy becomes available, we will consider in subsequent BCMRs whether dark fibre remains an appropriate remedy for areas we identify as having a sufficient degree of rival infrastructure to consider lighter touch remedies, assuming it is not necessary to intervene before then.
- 7.99 Moreover, the evidence we have seen suggests that material expansion of OCP networks in the LP is highly unlikely. In reaching this view, we place particular weight on the experience of the past few years, when light touch regulation has been applied in the LP but little additional investment in network expansion has taken

place. Our assessment of OCPs' planned infrastructure investments shows that none are focused on the LP. This includes those investments planned before we published the remedies for the LP. We therefore consider it unlikely that migration to VHB will lead to materially greater infrastructure investment in the LP, particularly given that the majority of customers migrating to VHB services will be the current users of lower bandwidth services. BT already has a large share of lower bandwidth services and derives a significant advantage from its existing network and connections.

- 7.100 We also consider that there are some particular benefits associated with our package of remedies in the LP. In particular, requiring BT to supply regulated dark fibre in the LP would allow CPs using regulated dark fibre outside the LP to use a single solution everywhere outside the CLA. This could benefit CPs, even if some additional investment in competing infrastructure in the LP would be displaced, and we expect the result to be increased choice and innovation.
- 7.101 Overall, we consider that the benefits of the package of remedies we are imposing are sufficient to outweigh the risks associated with them, even taking into account any additional risk to alternative infrastructure investment in the LP. As a result, we conclude that it is appropriate to impose the package of remedies following from our SMP assessment in the LP.

## Section 8

# General remedies for wholesale leased lines markets

# Introduction

- 8.1 In this section we set out our decision to impose a number of general SMP remedies on BT in the following wholesale leased lines markets:
  - wholesale market for low bandwidth Traditional Interface Symmetric Broadband Origination (TISBO) in the UK excluding the Hull area, at bandwidths up to and including 8Mbit/s;
  - wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) in the London Periphery area (LP); and
  - wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) in the Rest of the UK excluding the Hull area (RoUK).
- 8.2 The remedies we have decided to impose on KCOM in the Hull area are set out in Section 14.
- 8.3 By general remedies, we mean those that apply across most or all of the wholesale leased lines markets in which we find BT to have SMP, rather than to a specific product or service.
- 8.4 These remedies form part of the package of remedies that we have decided to impose in these markets, which also includes: obligations to provide specific types of wholesale leased line, a dark fibre remedy, quality of service remedies, and accommodation and interconnection obligations. Our decisions concerning these additional obligations are set out in subsequent sections of this statement.
- 8.5 The general remedies apply to all forms of network access that we require BT to offer in these markets, including the dark fibre remedy we have decided to impose. Where relevant, we explain in this section where we think a different approach is appropriate for the dark fibre remedy and where we consider that it is appropriate to adjust the general remedies in light of the dark fibre remedy.
- 8.6 These SMP remedies are based on the nature of the competition problems we have identified in our market analysis, in particular our SMP assessment, in these markets. We summarise these competition problems in Section 7.
- 8.7 We consider that these remedies achieve our statutory duties and satisfy the relevant legal tests. In reaching these decisions, we have also taken account of our regulatory experience from previous market reviews, recent developments in these markets, views expressed by stakeholders during our consultation process, and expected developments over the course of the review period of three years.

# Summary of decisions

8.8 Table 8.1 summarises the general remedies that we have decided to impose on BT in the three wholesale leased lines markets in which BT has SMP.

#### Table 8.1: Summary of general remedies we are imposing on BT

	General remedies
_	Requirement to provide network access on reasonable request
-	Requirements relating to requests for new forms of network access
-	Requirement not to discriminate unduly
-	Equivalence of Inputs (in CISBO markets only)
-	Requirement to publish a reference offer
-	Requirement to notify changes to charges terms and conditions
-	Requirement to notify technical information
-	Accounting separation
-	Cost accounting
-	Price control

- 8.9 In summary, we have decided to make some changes relative to the remedies we imposed in the 2013 Review:
  - amendments to the price controls, as discussed in more detail in this section;
  - amendments to remove certain Ethernet repair TRCs from the scope of the charge control;
  - amendments to the scope of the EOI obligation in light of BT's acquisition of EE;
  - the removal of the requirement for BT to send Ofcom copies of Reference Offers, notifications of changes to charges, terms and conditions, and notifications of changes to technical information;
  - an amendment to the requirement for BT to publish Reference Offers and notifications of changes to technical information on its website to require the information to be publicly accessible, i.e. not requiring password access;
  - the removal of the requirement for BT to include in its Reference Offers and notifications of changes to charges, terms and conditions the amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP;
  - a new requirement for BT to include within its Reference Offers a commitment to provide customers with an Initial Contractual Delivery Date;

- a new accounting separation obligation to reflect the changes to the framework for BT's regulatory financial reporting that we set out in the 2014 Regulatory Reporting Statement;<sup>451</sup> and
- in light of our decision to impose a new condition concerning quality of service we have decided not to re-impose the former SMP condition requiring transparency of quality of service.

## Assessment of appropriate remedies

- 8.10 In this subsection we set out our considerations and reasoning in respect of the general remedies we have decided to impose in the wholesale leased lines markets. We assess each of the general remedies in turn by setting out:
  - the BCMR 2013 remedies;
  - the aim and effect of the regulation;
  - the proposals set out in the May 2015 BCMR Consultation;
  - stakeholder responses to our proposals;
  - our further considerations, reasoning and decisions; and
  - our consideration of the relevant legal tests for imposing the regulation.

#### Requirement to provide network access on reasonable request

#### BCMR 2013 remedies

8.11 Under the BCMR 2013 remedies, BT was required to provide network access on reasonable request and to provide such access as soon as it is reasonably practicable and on fair and reasonable terms, conditions and charges or such other terms, conditions and charges we may from time to time direct.

#### Aim and effect of the regulation

8.12 As our analysis in the preceding sections shows, the level of investment required by a third party to replicate BT's network and build sufficiently large access networks to compete is a significant barrier to entry. In our view, an obligation requiring dominant providers to make access to their network facilities available to third parties on reasonable request is fundamental to promoting competition in downstream markets. We consider that, in the absence of such a requirement, BT would have both the incentive and ability to refuse access at the wholesale level thereby favouring its own retail operations. This would hinder sustainable competition in the corresponding downstream markets, ultimately against end-users' interests.

#### Proposals set out in the May 2015 BCMR Consultation

8.13 We proposed to impose an SMP condition requiring BT to provide network access where a third party reasonably requests it in respect of each of the wholesale leased

<sup>&</sup>lt;sup>451</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bt-transparency/statement/financial-reporting-statement-may14.pdf</u>

lines markets in which we proposed that BT has SMP. We proposed that BT should be required to provide network access where a third party reasonably requests it on fair and reasonable terms, conditions and charges, and to comply with any direction Ofcom may make from time to time.<sup>452</sup>

#### Stakeholders' responses to our proposals

- Hyperoptic<sup>453</sup> and Sohonet<sup>454</sup> welcomed all the general remedies we proposed to 8.14 impose on BT in the wholesale TISBO and CISBO markets.
- Virgin said the proposed general remedies are broadly appropriate, given they are 8.15 largely carried forward from current conditions.<sup>455</sup>
- 8.16 BT commented on the approach taken to the fair and reasonable charges obligation in the draft legal instrument, describing it as a practical and sensible update. It welcomed the alignment of the BCMR with the 2014 FAMR to clarify that the fair and reasonable obligation does not apply to products which are subject to a more specific form of cost regulation (basis of charges or a charge control). 456

#### Our decision

- 8.17 We consider the obligation to provide network access on reasonable request, and on fair and reasonable terms, conditions and charges, to be fundamental to promoting competition in downstream markets. We note that no consultation respondents objected to our proposals. We have therefore decided to impose an SMP obligation requiring BT to provide network access where a third party reasonably requests it in respect of each of the wholesale leased lines markets in the UK in which we have found BT has SMP.
- 8.18 In the May 2015 BCMR Consultation we proposed that the BT should also be required to provide network access on fair and reasonable charges including where that network access is also subject to the charge control obligations. After further consideration, we have decided that the fair and reasonable charges obligation should not apply to those services whilst they are also subject to a charge control.
- In relation to margin (or price) squeeze, the Access Guidelines<sup>457</sup> note that a 8.19 vertically integrated operator may have an incentive to put pressure on competitors by reducing the margin between the wholesale and the retail price to the point where it is not sufficient to cover the relevant measure of retail costs.<sup>458</sup> They further note that protection against that type of behaviour may be achieved by imposing a nondiscrimination obligation and that charges which created a margin squeeze would not be fair and reasonable.

<sup>452</sup> The draft legal instrument in the May 2015 BCMR Consultation excluded charges from the fair and reasonable network access obligation, where the basis of charges and charge control condition applies. This was a drafting error. However, we have reviewed our position, taking account of stakeholder input on the draft legal instrument. <sup>453</sup> Hyperoptic's response to the May 2015 BCMR Consultation, page 13.

<sup>&</sup>lt;sup>454</sup> Sohonet's response to the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>455</sup> Virgin's response to the May 2015 BCMR Consultation, page 36.

<sup>&</sup>lt;sup>456</sup> BT response to the May 2015 BCMR Consultation, page 65.

<sup>&</sup>lt;sup>457</sup> Imposing access obligations under the new EU directives, Oftel, 13 September 2002, available at http://www.ofcom.org.uk/static/archive/oftel/publications/ind guidelines/acce0902.pdf

<sup>458</sup> See paragraph 3.34.

- 8.20 However, we consider that the charge controls and non-discrimination obligations, as well as *ex post* competition law, are sufficient to address effectively the risk that BT may seek to impose a margin squeeze, or to otherwise act anti-competitively in setting its prices for the period of the charge control. As we discuss in more detail in Volume II, we have designed the charge controls to safeguard against the risk of adverse effects arising from price distortion, particularly excessive pricing or unduly discriminatory pricing.
- 8.21 In light of this, we consider that it would not be proportionate to apply an additional obligation to set fair and reasonable prices for charges whilst they are also subject to the charge controls.
- 8.22 We note that this position only applies to the extent that such network access is subject to the charge controls. Therefore, we consider that it will still provide appropriate protection in relation to products or services, existing and new, which fall outside the scope of the charge controls.
- 8.23 We have decided 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, conditions and charges for providing third parties with network access. The condition includes 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.

#### Legal tests

- 8.24 For the reasons set out above and summarised below, we are satisfied that that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 8.25 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 services conditions about the recovery of costs and cost orientation, subject to the conditions of Section 88 being satisfied.
- 8.26 When considering the imposition of such conditions in a particular case, we must take into account six factors set out in Section 87(4) of the Act, including *inter alia*:
  - the technical and economic viability of installing and using other facilities, including the viability if other network access products whether provided by the dominant provider<sup>459</sup> or another person<sup>460</sup>, that would make the network access unnecessary;
  - the feasibility of the network access;

<sup>459</sup> In this instance, BT

<sup>&</sup>lt;sup>460</sup> i.e. other CPs

- 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 required (taking account of any public investment made); and
- the need to secure effective competition, including where it appears to us to be appropriate, economically efficient infrastructure based competition, in the long term.
- 8.27 In deciding to impose the general requirement for the provision of network access, we have taken all these six factors into account.
- 8.28 The definition of access and the way in which we might assess reasonable demands for access are set out in our Access Guidelines.<sup>461</sup> We consider it is appropriate in cases where we find a CP to have SMP (such as BT in this case) to impose an access obligation on that provider requiring it to meet all reasonable requests for network access within the relevant wholesale market, irrespective of the technology required, on fair and reasonable terms, conditions and charges.
- 8.29 As discussed in our SMP assessment in Sections 4 and 5, there are considerable sunk costs associated with building networks to provide leased lines services. We consider it is unlikely to be economically viable or efficient to build competing access networks on a sufficient scale to provide an effective constraint on BT's SMP in the downstream markets.
- 8.30 Therefore, we are of the view that a requirement for BT to provide general network access is appropriate. It facilitates competition in downstream markets by enabling CPs to compete without the need to invest in a network, an investment which we consider, on the basis of our market analysis, represents a structural barrier to entry and expansion in the leased lines markets.
- 8.31 Consequently, we consider these requirements are necessary for securing effective competition, including economically efficient infrastructure based competition, in the long term. The requirements for BT only to meet reasonable network access requests also ensures that due account is taken of the technical and economic viability of installing and using other facilities, the feasibility of the network access requested, and of the investment made by BT initially in providing the network.
- 8.32 We consider that this decision meets our duties under sections 3 and 4 of the Act. We consider that the imposition of a network access obligation promotes competition in relation to the provision of electronic communications networks and services, ensuring the provision of network access and service interoperability for the purposes of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of the obligation would ensure that BT offers the wholesale products required by other CPs to compete effectively in the downstream markets.
- 8.33 We believe that the condition we have decided to impose meets the requirements of section 4. Specifically, we believe section 4(8) is met, in that the obligation has the purpose of securing efficient and sustainable competition in the markets for electronic communications networks and services, by helping to ensure that other CPs can continue to compete effectively in the downstream retail markets by using wholesale products offered by BT.

<sup>&</sup>lt;sup>461</sup> See footnote 7

- 8.34 Section 47(2) of the Act requires conditions and directions respectively to be objectively justifiable, non-discriminatory, proportionate and transparent. The conditions and directions we have decided to impose are:
  - objectively justifiable, in that they facilitate and encourage access to BT's network and therefore promote competition to the benefit of consumers;
  - not unduly discriminatory, as they are imposed only on BT and no other CP has been found to hold a position of SMP in these markets;
  - proportionate, since they are targeted at addressing the market power that we have found BT holds in these markets and do 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 networks in order to facilitate effective competition.
- 8.35 For the reasons set out above, we consider that the conditions we have decided to impose are appropriate to address the competition concerns identified, in accordance with section 87(1) of the Act.

#### The BEREC Common Position

8.36 We have also taken utmost account of the BEREC Common Position in reaching our decision, including BP5 and BP36 which appear to us to be particularly relevant in this context.<sup>462</sup> We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

#### Requests for new forms of network access

#### BCMR 2013 remedies

- 8.37 Under the BCMR 2013 remedies, BT was subject to an obligation that specified detailed requirements for the handling of requests for new types of network access. It required BT to publish guidelines specifying the content and form of requests and how they would be handled; to provide guidance to CPs on drafting reasonable product specifications; and set out timescales within which BT must acknowledge and process requests.
- 8.38 Openreach's Statement of Requirements (SoR) process is the mechanism through which BT meets the BCMR new access request conditions for CISBO services. BT Wholesale has a separate SoR process for TISBO services.

#### Aim and effect of the regulation

8.39 In the absence of regulation, vertically integrated operators have the ability to favour their own downstream business over third party CPs by differentiating on price or terms and conditions. One form of discrimination is in relation to the handling of

<sup>&</sup>lt;sup>462</sup> BoR (12) 126, *BEREC* common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.11. 26.pdf.

requests for new types of network access. This has the potential to distort competition at the retail level by placing third party CPs at a disadvantage compared with the downstream retail business of the vertically integrated operator in terms of their ability to introduce new services to meet their customer needs and in terms of their ability to offer innovative services in order to compete more effectively.

8.40 We consider that obligations specifying how requests for new types of network access should be handled can mitigate the risk of this type of discrimination.

#### Proposals set out in the May 2015 BCMR Consultation

8.41 In their responses to the April 2014 BCMR CFI, TalkTalk and Vodafone raised concerns about Openreach's product development process. They claimed that Openreach did not always respond to CPs' requests in a timely manner and routinely rejected development requests that were in consumers' interests. These concerns echoed those raised in the course of the FAMR 2014. We therefore considered that, in the first instance, they are best addressed by our monitoring programme instigated following the FAMR. This programme is monitoring the SoR process across all relevant regulated markets in order to gain a better view of the concerns that stakeholders have raised. In the meantime, we proposed to retain the BCMR 2013 obligations regarding requests for new network access.

#### Stakeholders' responses to our proposals

- 8.42 BT said while it does not object to Ofcom maintaining obligations requiring BT to publish SoR guidelines and to help CPs, it does not agree that the obligations still need to specify the timescales for acknowledging and processing such requests. The specific timescales were removed from the FAMR markets from October 2010 and has since been embedded in the SoR processes and associated guidelines in operation in Openreach.
- 8.43 BT considered that the concerns raised by CPs in their response to the CFI were unfounded. BT noted that:
  - The monthly SoR KPIs that it produces and shares with the OTA2, the EAO and Ofcom show fair treatment of all CP SoRs.
  - The EAB had concluded in its Annual Report 2015 that Openreach had improved the transparency of its SoR process and accelerated its decision-making process with regard to rejecting or progressing SoRs. The EAB also concluded it was satisfied that Openreach is committed to running an equivalent SoR process and that BT Wholesale's SoR process is operating equivalently and without issues.
  - The EAO had concluded in its Overview of BT's Behavioural Dashboard H2 2014/2015 report that the Openreach SoR process is green (i.e. no concerns) and that there was improved delivery of Ethernet SoRs.
- 8.44 Based on this analysis, BT said we should align the proposed SMP condition for dealing with new forms of network access in the BCMR with the condition imposed in the FAMR, whereby the key requirement is limited to the publication of industry agreed guidelines which must meet an agreed set of principles including setting reasonable timescales for each stage of the process. This would provide flexibility for

BT and CPs to agree future changes to the process (including timescales) without the need for regulatory intervention.  $^{\rm 463}$ 

- 8.45 Virgin said it supports the review of the SoR process.<sup>464</sup>
- 8.46 [≻] welcomed [≻

≫]<sup>465</sup>

#### Our decision

- 8.47 We remain of the view that the concerns about the Openreach SoR process are best addressed as part of our monitoring programme of the Openreach SoR process given that the concerns are not restricted to the BCMR markets. We plan to set out the conclusions of our monitoring programme, including if appropriate, proposals for changes when we publish our forthcoming Wholesale Local Access Market Review consultation. We note the comments made by stakeholders about the SoR process and will consider them as we determine our next steps.
- 8.48 Consequently we do not consider it appropriate to make changes to the BCMR condition on new network access requests at this stage. We have therefore decided to retain the current requirements on requests for new network access. We consider that this requirement remains an appropriate and proportionate *ex ante* measure to complement the general network access requirement discussed in the preceding sub-section.
- 8.49 Whilst acknowledging the concerns about the current arrangements we consider that the new network access obligations, together with the obligation not to discriminate unduly, provide a clear framework under which BT must operate, including timescales for BT's response to product development requests. The Access Guidelines also provide further guidance concerning requests for new product developments.<sup>466</sup> Concerns about specific product development requests that cannot be addressed satisfactorily through industry fora or in cooperation with the OTA2 can be escalated to Ofcom through the disputes and complaints process.
- 8.50 We have decided not to follow BT's suggestion of making changes to the new network access condition to align it with those applied in the fixed access markets. Given CPs' concerns about the time taken to progress product development requests we consider it appropriate to continue to specify the timescales for evaluation of requests. In the first instance it is for CPs to hold BT to the specified timescales. Where BT does not comply with the timescales we would expect to take enforcement action under the condition.

<sup>&</sup>lt;sup>463</sup> BT response to the May 2015 BCMR Consultation, pages 63-64,.

<sup>&</sup>lt;sup>464</sup> Virgin response to the May 2015 BCMR Consultation, page 36,.

 $<sup>^{465}</sup>_{465}$  [ $\times$ ] response to the May 2015 BCMR Consultation, page 8.

<sup>&</sup>lt;sup>466</sup> Oftel, *Imposing access obligations under the new EU Directives*, 13 September 2002, www.ofcom.org.uk/static/archive/oftel/publications/ind\_guidelines/acce0902.pdf.

- 8.51 We also note that the condition requires BT to publish guidelines in relation to requests for new forms of network access and allows us to direct BT to make amendments to the guidelines.
- 8.52 Finally, [ $\gg$ ] comments about [ $\gg$

≫]

#### Legal tests

- 8.53 For the reasons set out above and summarised below, we are satisfied that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 8.54 Section 87(3) authorises the setting of a SMP condition 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 the times required by or under the conditions.
- 8.55 In reaching our decision, we have taken into account the factors set out in section 87(4) of the Act:
  - The technical and economic viability, having regard to the state of market development, of installing and using facilities that would make the requested network access unnecessary;
  - The feasibility of the provision of network access proposals;
  - 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 requested;
  - The need to secure effective competition in the long term;
  - Any rights to the intellectual property that are relevant; and
  - The desirability of securing that electronic communications services are provided that are available throughout the Member States.
- 8.56 In particular, we consider that the SMP condition specifying how BT should handle requests for new network access is required in order to ensure that BT does not discriminate in favour of its own downstream business. The obligation achieves this by:
  - requiring BT to publish reasonable guidelines specifying the required content and form of requests for new network access and how they will be handled;
  - requiring BT to provide sufficient technical information to CPs to allow them to draft product specifications that are efficient and which satisfy the reasonable requirements; and
  - specifying timescales within which BT must acknowledge and process requests.

- 8.57 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. We note, in particular, that the SMP condition is aimed at promoting competition in downstream markets, by ensuring that access seekers are able to make requests for new forms of network access based on an agreed SoR process.
- 8.58 We also consider that the SMP condition meets the criteria set out in section 47(2) of the Act. The condition is:
  - Objectively justifiable, in that its purpose is to support the non-discrimination obligations in the processing of requests for new network access;
  - Not unduly discriminatory, as it applies to BT only, in the markets where we have found it to have SMP;
  - Proportionate, as it continues to provide a SoR process based on the currently implemented process, while allowing scope for industry to be involved in agreeing process improvements; and
  - Transparent, in that the condition is clear in its intention to set requirements for the processing of requests for new network access.
- 8.59 For the reasons set out above, we consider that the SMP condition we have decided to impose is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

#### The BEREC Common Position

8.60 We have also taken utmost account of the BEREC Common Position including BP6 which appears to us to be particularly relevant in this context.<sup>467</sup> We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

#### Requirement not to discriminate unduly and Equivalence of Inputs (EOI)

#### BCMR 2013 remedies

8.61 The BCMR 2013 remedies prohibited BT from discriminating unduly in relation to the provision of network access in each of the wholesale leased lines markets.

#### Aim and effect of the regulation

8.62 A non-discrimination obligation is intended as a complementary remedy to the network access obligation, principally to prevent the dominant provider from discriminating in favour of its own downstream divisions and to ensure that competing providers are placed in an equivalent position. Without such an obligation, the dominant provider is incentivised to provide the requested wholesale network access service on terms and conditions that discriminate in favour of its own downstream divisions. For example, BT may decide to charge its competing providers more than the amount charged to its own downstream units or it might strategically provide the same services but within different delivery timescales. Both these behaviours could have an adverse effect on competition.

<sup>&</sup>lt;sup>467</sup> BoR (12) 126, see footnote 12 above.

- 8.63 Non-discrimination can have different forms of implementation. A strict form of nondiscrimination – i.e. a complete prohibition of discrimination – would result in the SMP operator providing exactly the same products and services to all CPs (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. Essentially, the inputs available to all CPs (including the SMP CP's own downstream divisions) would be provided on a truly equivalent basis, an arrangement which has become known as EOI. An EOI obligation removes any degree of discretion accorded to the nature of the conduct. The concept of EOI was first identified in the Strategic Review of Telecoms in 2004/05 as one of our key policy principles to ensure that regulation of the telecommunication markets is effective. Following on from this review, a specific form of EOI was implemented in 2005 by means of the BT Undertakings.
- 8.64 On the other hand, a less strict implementation of non-discrimination may allow for flexibility and result in a more practical and cost-effective implementation of wholesale inputs in cases where it is economically justified. As part of this review, we have considered what form of non-discrimination obligation would be appropriate in each of the wholesale leased lines markets.

#### Proposals set out in the May 2015 BCMR Consultation

The wholesale low bandwidth TISBO market in the UK excluding the Hull area

8.65 In this market we proposed to impose an SMP condition prohibiting BT from discriminating unduly. We proposed to interpret this obligation in accordance with our guidelines of November 2005 on Undue discrimination by SMP providers (the Discrimination Guidelines).<sup>468</sup>

#### The wholesale CISBO market in the RoUK excluding the Hull area

8.66 In this market we proposed to impose SMP conditions requiring BT to deliver CISBO services to competitors with no undue discrimination and on an EOI basis.

The wholesale CISBO market in the LP

- 8.67 In this market we proposed that BT should be subject to:
  - an EOI obligation and an obligation of no undue discrimination for the provision of low, mid and high CISBO (i.e. single service Ethernet services at bandwidths up to and including 1Gbit/s); and
  - a non-discrimination obligation only for the provision of very high CISBO (i.e. single service Ethernet services at bandwidths above 1Gbit/s and WDM services).

#### Amendments to EOI definition to reflect changes to CI core boundary

8.68 We proposed to amend the exception to the EOI obligation that applies to certain Backhaul Segments to reflect our proposed revised market definition, such that BT would not be required to provide network access on an EOI basis from Backhaul

<sup>&</sup>lt;sup>468</sup> See <u>http://stakeholders.ofcom.org.uk/consultations/undsmp/contraventions/</u>

Segments that connect BT's 21 "Core Nodes" with Competitive Core Nodes (rather than TANs).

#### Discounts

8.69 We noted that different types of discounts may or may not be discriminatory depending on the circumstances, but we did not propose any changes to the no undue discrimination obligation to specifically address discounts.

#### Stakeholders' responses to our proposals

- 8.70 TalkTalk disagreed with our proposal not to apply an EOI obligation to very high bandwidth CISBO services in the LP for two reasons. Firstly, it argued there would be almost no additional cost required to impose EOI on these services given EOI is already applied to very high bandwidth services elsewhere in the UK. Secondly, it argued that our proposed dark fibre remedy was unlikely to be an effective alternative 'vehicle for competition' given that it would not become fit for purpose for many years.<sup>469</sup>
- 8.71 In its response to the June 2015 LLCC Consultation<sup>470</sup>, BT said that it supported our proposal that it should be allowed to offer every type of discount (volume discounts, geographic discounts, time-limited discounts and term products) subject to the non-discrimination obligations.
- 8.72 CityFibre said it was concerned that BT's use of discounts could give it competitive advantage against infrastructure CPs competing in the same upstream market. It proposed that, in addition to non-discrimination tests, Ofcom should also undertake predation tests where BT offers volume, term or geographic discounts, to ensure that BT cannot use these discounts to gain a competitive advantage against infrastructure OCPs in the upstream market.<sup>471</sup>
- 8.73 Vodafone said that the proposals on discounts set out in the June 2015 LLCC Consultation offered BT the opportunity to create discounts that are better suited to its downstream businesses. To remedy the issue, Vodafone proposed that we should introduce a clear obligation to ensure that external purchasers (in aggregate) of services should receive the same proportional saving from discounts as BT.<sup>472</sup>
- 8.74 Vodafone also queried Condition 4.3 of the draft EOI condition. In its view it would be wrong for BT to be allowed to use WDM services with different interfaces to those supplied to other CPs.<sup>473</sup>
- 8.75 In a supplementary submission, BT asked us to review the scope of the EOI obligations in light of its acquisition of EE which was completed on 1 February 2016. BT was concerned that:
  - some circuits that predated the acquisition had not been supplied by BT and might therefore be regarded as not compliant with the EOI obligation; and

<sup>&</sup>lt;sup>469</sup> TalkTalk response to the May 2015 BCMR Consultation and June 2015 LLCC Consultation, page 49.

<sup>&</sup>lt;sup>470</sup> BT response to the June 2015 LLCC Consultation, pages 27-31.

<sup>&</sup>lt;sup>471</sup> CityFibre response to the May 2015 BCMR Consultation and June 2015 LLCC Consultation, pages 18-19.

<sup>&</sup>lt;sup>472</sup> Vodafone response to the June 2015 LLCC Consultation, pages 11-13.

<sup>&</sup>lt;sup>473</sup> Vodafone/Towerhouse LLP – Errors in Ofcom Draft BCMR Legal Instruments, page 2.

 the EOI obligation would apply to core network segments within the EE network because the EE network core nodes were not listed as core nodes in the draft SMP condition for the EOI obligation.<sup>474</sup>

#### Our decision

#### The wholesale low bandwidth TISBO market in the UK excluding the Hull area

- 8.76 In the case of the wholesale low bandwidth TISBO market, we do not consider it proportionate to require EOI. BT's current wholesale services for TI are Partial Private Circuits (PPCs), and an EOI requirement for PPCs would entail a major reengineering of BT provisioning systems and processes. This would be disproportionate given that the TI market is declining and on a forward-looking basis PPC users will move to other products, including Ethernet-based leased lines.
- 8.77 We therefore consider that a less strict implementation is appropriate for the wholesale TISBO market and have decided to impose an SMP Condition prohibiting BT from discriminating unduly. We will interpret this obligation in accordance with our guidelines of November 2005 on Undue discrimination by SMP providers (the Discrimination Guidelines).<sup>475</sup> We consider that undue discrimination in particular would occur where, in the absence of objective justification:
  - BT was to refuse to reflect relevant differences between (or was to refuse to reflect relevant similarities in) the circumstances of customers in the transaction conditions it offers; and
  - BT was to discriminate between internal and external customers.

#### The wholesale CISBO market in the RoUK excluding the Hull area

- 8.78 In this market, we believe it is appropriate to require that CISBO services are delivered to competitors on an EOI basis. This is because:
  - CISBO products are upstream inputs to three major retail telecommunications markets – the broadband market, the mobile services market and the retail CI leased lines market. Our wholesale regulation must aim to ensure there is a level playing field for competitors in both these markets. The requirement to make wholesale inputs available on an EOI basis would seek to prevent BT engaging in discriminatory practices that could adversely affect competition and ultimately cause detriment to citizens and consumers;
  - prohibiting undue discrimination while stopping short of EOI could result in BT
    providing competitors with a different set of products to those it provides to itself,
    potentially using different processes and systems for their development, delivery,
    maintenance and repair. While this may not be unduly discriminatory (depending
    on the precise circumstances), it would fall short of true equivalence and could
    undermine effective competition. For example, it may act as an impediment to
    improved products being made available equally promptly to BT and to its
    competitors. It is therefore necessary, in our view, to require provision on an EOI
    basis in addition to the prohibition of undue discrimination;

<sup>&</sup>lt;sup>474</sup> Emails from Openreach to Ofcom dated 17 February 2016.

<sup>&</sup>lt;sup>475</sup> See <u>http://stakeholders.ofcom.org.uk/consultations/undsmp/contraventions/</u>

- Openreach's CISBO services are still subject to further product development and quality enhancements and we consider EOI consumption provides the right incentives for BT to implement the changes and make better product variants available to both its downstream divisions and competitors. Discrimination in favour of downstream divisions is not necessarily related to setting different prices for the same wholesale inputs. There are other forms of discrimination which are often referred to as non-price discrimination. Without EOI, the dominant provider may be incentivised to supply products with different levels of quality – e.g. different SLAs and SLGs, provide fault repair of products on different timescales, create new variants to fulfil the requirements of its downstream division, and take longer to address, or avoid addressing, the requirements of its competitors. All these aspects are crucial for competition in the CISBO leased lines markets and we consider EOI can address any such potential issues; and
- as a result of BT's commitments in the Undertakings, it is BT's current practice to supply CISBO circuits on an EOI basis by means of its access division Openreach. We therefore consider that imposing a very similar requirement in the market review would not be onerous as it would not require BT to re-engineer existing systems and processes.

#### The wholesale CISBO market in the LP

- 8.79 The considerations set out above are also applicable to the wholesale CISBO market in the LP and absent other considerations would indicate that EOI is the most appropriate form of non-discrimination obligation for this market. We have, however, had regard to the fact that in the BCMR 2013 the provision of MISBO services (equivalent to very high CISBO) was not regulated in the WECLA (which closely equates to the CLA and the LP). Also we expect the dark fibre remedy we are imposing to become the main vehicle for competition for very high bandwidth CISBO services.
- 8.80 In the May 2015 BCMR Consultation we proposed that it would not be proportionate to impose an EOI obligation in relation to very high bandwidth services because it might no longer be required once the dark fibre service became available.
- 8.81 Having considered the consultation responses we have concluded it would be proportionate to impose an EOI obligation for very high bandwidth CISBO services. Firstly, this is because it will take some time for BT to launch its dark fibre service and for CPs to ramp up their usage of it.<sup>476</sup> Consequently, we anticipate that CPs will continue to require very high bandwidth CISBO services, throughout this market review period. Secondly, as TalkTalk noted, the additional costs on BT associated with extending the EOI requirement to very high bandwidth CISBO services in the LP are unlikely to be significant given this requirement already applies in the rest of the UK. Moreover, the obligation will apply only to new connections and will not require BT to modify any circuits provided on a non-EOI basis before it comes into force. As discussed in more detail above, we also consider that an EOI obligation would address the risk of price or non-price discrimination in the supply of very high bandwidth CISBO services in the LP more effectively than a no undue discrimination obligation alone.

<sup>&</sup>lt;sup>476</sup> As we discuss in Section 9, we are requiring BT to launch its dark fibre service by 1 October 2017. This is six months later than we anticipated in the May 2015 BCMR Consultation.

- 8.82 This change brings very high bandwidth CISBO services into line with lower bandwidth CISBO services in the LP (i.e. low, mid and high CISBO). In the BCMR 2013, these services fell within the wholesale AISBO market in the WECLA and were subject to *ex ante* regulation including an EOI obligation. We also expect that, to a significant extent, competition will continue to be based on the use of active remedies. Consequently we consider that EOI is the most appropriate form of non-discrimination obligation for these services.
- 8.83 In summary, we have decided that in the wholesale CISBO market in the LP, BT will be subject to an obligation not to unduly discriminate and an EOI obligation for the provision of all CISBO services

#### Form of non-discrimination obligation for the dark fibre remedy

- 8.84 As we discuss in more detail in Section 9, we are imposing a dark fibre remedy in the wholesale CISBO market in the LP and the wholesale CISBO market in the RoUK excluding the Hull area.
- 8.85 In Section 9 we have also set out our decision concerning the form of nondiscrimination obligation that would apply to the dark fibre remedy.

#### Amendments to EOI definition to reflect changes to CI core boundary

8.86 In light of our changes to the definition of the CI core market discussed in Section 4, we have amended the EOI obligation. Our revised market definition adds additional BT exchanges and competitive data centres to the existing Trunk Aggregation Nodes (TANs) in an expanded CI core market. As explained in Section 10, we have decided to use the term "Competitive Core Node" to describe a node which is either a TAN or a Data Centre Core Node. Hence, we have amended Condition 4 to make it clear that the obligation to provide network access on an EOI basis does not apply to Backhaul Segments that connect BT's 21 "Core Nodes" with Competitive Core Nodes (rather than TANs). The amendment is set out in Annex 35.

#### Amendments to the EOI definition to reflect BT's acquisition of EE

- 8.87 Having considered BT's comments we have concluded that it would be appropriate to amend the EOI obligation to reflect BT's acquisition of EE.
- 8.88 Firstly, we consider that it would not be proportionate to require BT to replace non-EOI circuits (specifically circuits self-provided by EE) that predate the acquisition of EE with EOI circuits. We have therefore amended SMP condition 4.2(d) so that network access provided other than on an EOI basis prior to 30 April 2016, rather than before 31 March 2013 as proposed, is not required to be provided on an EOI basis.
- 8.89 Secondly, we consider there is a risk that the EOI obligation (as proposed in the May 2015 BCMR Consultation) would require BT to provide core connectivity in the former EE network on an EOI basis, contrary to its intended purpose which is to require BT to provide terminating segments on an EOI basis. We have therefore decided to amend the SMP condition by adding the 18 former EE core nodes to the list of core nodes in Schedule 4. The effect of this amendment is that the EOI obligation would not apply to circuits between the 18 EE core nodes, the existing BT core nodes and the Competitive Core Nodes.

#### EOI and WDM Services

- 8.90 With regard to Vodafone's query about Condition 4.3, it has been included in the EOI condition because, in some circumstances, CPs may wish to use WDM services with different interfaces to those used by BT. In particular, as we discuss in Section 10, CPs may wish to provide end-to-end services using a combination of their own networks and WDM services from Openreach with OTU interfaces to facilitate interconnection. BT's downstream divisions may be more likely to use WDM services from Openreach to deliver end-to-end services without interconnection and would therefore use WDM services with standard interfaces.
- 8.91 Condition 4.3 is designed to address BT's ability to discriminate by specifying that in the case of WDM services provided to other CPs, that differ from those provided by BT to itself only in relation to the interfaces used, BT is required to:
  - provide such services on the basis of EOI in all respects other than price; and
  - not to discriminate unduly between the prices it charges. This means that the difference in price between the variants of the same product should be no greater than the difference between their long-run incremental costs.<sup>477</sup>
- 8.92 We consider these additional requirements are necessary as the EOI obligation alone is likely to have limited effect because BT may have no need to consume WDM services with OTU interfaces. Moreover, the pricing obligation will incentivise CPs to choose the option which minimises costs overall.

#### Discounts

- 8.93 We have considered our position in relation to various types of discount that BT might offer and whether any changes are required to the no undue discrimination or EOI obligations to address particular types of discounts:
  - Volume discounts: We recognise that volume discounts would very often in practice constitute undue discrimination, since BT's downstream businesses would almost inevitably be the main beneficiary and there is therefore a strong potential for anti-competitive effects. Nevertheless, we do not consider a change in the obligation is required specifically to reflect this as we believe that this point is well understood by BT and CPs.
  - **Geographic discounts**: As discussed in Sections 4 and 5, we have conducted a detailed geographic analysis of each of the retail and wholesale product markets. On the basis of this analysis, we note that for the geographic markets where we have found SMP, the underlying costs and competitive conditions will not be completely homogenous throughout the UK. This suggests that some freedom to charge in a way that reflects more accurately the costs incurred and to respond to the local characteristics of competition that exist in these markets could be efficient. Moreover, given the level of cost differences that may exist and the extent of competition in some areas, BT's ability to compete could be limited if it were required to maintain nationally uniform prices. Hence, geographically differentiated prices may reflect BT responding legitimately to cost differences in the face of competition. Conversely, we note that geographic discounts may pose

<sup>&</sup>lt;sup>477</sup> We note that the incremental cost of the OTU interface is likely to be greater than that of the standard interface.

some risks to competition if BT were to respond to local entry by discounts which targeted the new entrant. We therefore consider that geographic discounts may or may not be unduly discriminatory depending on the circumstances. In the event of an allegation of offering unduly discriminatory geographic discounts, we would judge each alleged breach of the no undue discrimination obligation on a case by case basis. In Annex 34 we consider how geographic discounts should be treated in the charge controls.

- Term discounts: In principle, we consider this form of discount could raise competition concerns. For example, if BT's downstream operations were at an advantage compared to downstream competitors. In principle, the largest beneficiary of term discounts could be BT's downstream operations, as they may see no commercial disadvantage in being contractually tied to BT's wholesale services for a lengthy period of time. If so, it could provide BT with the ability to undercut downstream competitors in ways that they could not match (where those competitors rely on wholesale services from BT, but do not wish to sign up to the discounts). Term discounts also may increase the barriers to entry/growth for upstream competitors to Openreach, if purchasers of wholesale services are tied into longer term contracts (and so increasing the switching costs). There are also circumstances where term discounts can be conducive to competition. Investment in access networks requires significant upfront costs. A longer contract term may therefore reduce barriers to entry for upstream competitors as it allows them to recover the upfront costs over a longer time period. We also note that it is common commercial practice for customers to commit to longer terms in exchange for lower rental charges. Such arrangements can benefit both supplier and customer, particularly in cases where there are significant upfront costs to be recovered. We therefore consider term discounts may or may not be unduly discriminatory depending on the circumstances. In the event of an alleged breach we would judge each alleged breach on a case by case basis.
- 8.94 In Annex 34 we set out our decisions on how term discounts should be taken into account in the charge controls.
- 8.95 With regard to BT's comments, we do not consider it appropriate to prohibit any specific type of discount and we are not making any changes to the no undue discrimination and EOI obligations in relation to discounts. All discounts continue to be subject to these obligations and we would consider whether any particular type of discount was unduly discriminatory on a case-by-case basis.
- 8.96 We do not consider that additional measures are necessary to prevent BT from using discounts to favour its downstream businesses as Vodafone suggests. We consider that the non-discrimination obligations and charge controls provide appropriate protection against this risk. As noted above, BT must ensure that any discounts it offers are not unduly discriminatory. We have also designed the charge controls to limit BT's flexibility to set charges so as to favour its downstream business units unduly.
- 8.97 Finally, we do not consider it necessary to introduce a new 'predation test' in relation to discounts offered by BT, as suggested by CityFibre. We consider that Competition Law provides a well-established framework for addressing any allegations of anti-competitive predatory pricing and no case has been made for an additional test.

#### Legal tests

- 8.98 For the reasons set out above and summarised below, we are satisfied that the conditions (as set out in Annex 6) meet the relevant tests set out in the Act.
- 8.99 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. We set out below our further considerations, reasoning and decisions in relation to each proposal.
- 8.100 Article 8(1) of the 2002 EC Directive on access to, and interconnection of, electronic communications networks and associated facilities (the Access Directive)<sup>478</sup> requires Member States to ensure that national regulatory authorities are empowered to impose certain obligations where an operator is designated as having SMP. These include, under Article 10 of the Access Directive, obligations of non-discrimination. Article 10(1) provides that a national regulatory authority may: "*impose obligations of non-discrimination, in relation to interconnection and/or access*". Article 10(2) further provides:

"[o]bligations of non-discrimination shall ensure, in particular, that the operator applies equivalent conditions in equivalent circumstances to other undertakings providing equivalent services, and provides services and information to others under the same conditions and of the same quality as it provides for its own services, or those of its subsidiaries or partners".

- 8.101 Article 10 of the Access Directive is implemented into UK law by section 87(6)(a) of the Act which gives us a power to impose "a condition requiring the dominant provider not to discriminate unduly against particular persons, or against a particular description of persons, in relation to matters connected with network access to the relevant network or with the availability of the relevant facilities". We consider any conditions imposed pursuant to this power require equivalence as per Article 10(2).
- 8.102 We have also considered our duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the condition is aimed at promoting competition and securing efficient and sustainable competition for the maximum benefits for consumers by preventing BT from leveraging its SMP into downstream markets.
- 8.103 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The conditions are:
  - objectively justifiable in that they provide safeguards to ensure that competitors, and hence consumers, are not disadvantaged by BT discriminating unduly in favour of its own downstream activities or between different competing providers;
  - not unduly discriminatory in that they are proposed only for BT and no other operator has been found to hold a position of SMP in these markets;

<sup>&</sup>lt;sup>478</sup> EC, Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, <u>www.eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:108:0007:0020:EN:PDF</u>.

- proportionate in that they only seek to prevent undue discrimination; and
- transparent in that the conditions are clear in what they are intended to achieve.
- 8.104 For the reasons set out above, we consider that the conditions are appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

#### The BEREC Common Position

8.105 We have taken utmost account of the BEREC Common Position making our decision including BP8, BP10 and BP10a which appear to us to be particularly relevant in this context.<sup>479</sup> We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

#### Interconnection and accommodation services

- 8.106 In order to use the wholesale services that BT provides in these markets CPs also require certain interconnection and accommodation services. We consider that it is necessary to regulate the provision of these ancillary services, because otherwise BT would have an incentive to refuse to supply or to supply in a discriminatory manner, for example by charging excessive prices.
- 8.107 Network access is defined in section 151(3) of the Act and includes interconnection services and/or any services or facilities that would enable another CP to provide electronic communications services or electronic communications networks. We consider that a requirement to provide network access would, therefore, include any ancillary services as may be reasonably necessary for a third party to use the services. Consequently, each of the network access obligations that we have decided to impose and outline in this section for these markets also applies to the provision of interconnection and accommodation services that are reasonably required by CPs when consuming regulated services.
- 8.108 In Section 12 we discuss the specific types of interconnection and accommodation services that we have decided that BT should be required to provide.

#### Transparency and notification requirements

- 8.109 We have decided that BT should be subject to a set of obligations designed to promote transparency, reduce the risk of undue discrimination and ensure that CPs are able to make effective use of the dominant provider's network access. These obligations, which are discussed in more detail below, are:
  - a requirement to publish a Reference Offer;
  - a requirement to notify of changes to charges, terms and conditions in advance; and
  - a requirement to notify of changes to technical information in advance.

<sup>&</sup>lt;sup>479</sup> BoR (12) 126, see footnote 12 above.

## Requirement to publish a Reference Offer

#### BCMR 2013 remedies

8.110 Under the BCMR 2013 remedies, BT was required to publish a Reference Offer (RO) in relation to the provision of network access, setting out (at a minimum) such matters as the terms and conditions for provisioning, technical information, SLAs and SLGs, and availability of co-location. This obligation also prohibited BT from departing from the charges, terms and conditions set out in the RO. It also required BT to comply with any directions Ofcom may make from time to time under the condition.

#### Aim and effect of the regulation

- 8.111 A requirement to publish an RO has two main purposes:
  - to assist transparency for the monitoring of potential anti-competitive behaviour; and
  - to give visibility to the terms and conditions on which other providers will purchase wholesale services.
- 8.112 This helps to ensure stability in markets as, without it, incentives to invest might be undermined and market entry less likely.
- 8.113 The publication of an RO would potentially allow for quicker negotiations, avoid possible disputes and give confidence to those purchasing wholesale services that they are being provided on non-discriminatory terms. Without this, market entry might be deterred to the detriment of the long term development of competition and hence consumers.

#### Proposals set out in the May 2015 BCMR Consultation

- 8.114 We proposed that BT should be required to continue to publish an RO for wholesale network access products in each of these wholesale markets.
- 8.115 We also proposed three changes to the current SMP condition in force:
  - We proposed to remove the requirement for BT to include in its RO an amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP.
  - We proposed to remove the requirement for BT to send copies of its ROs to Ofcom, but added the requirement for BT to publish its ROs on *publicly available* websites, i.e. those that do not require password access.
  - We proposed to add 'the provision of an Initial Contractual Delivery Date' to the list of information BT must include in its ROs. This was to support the proposals to impose minimum performance standards on Openreach in its provision of leased lines services.

#### Stakeholder responses to our proposals

- 8.116 [≫ ]<sup>480</sup> welcomed our specifying that our proposed requirement for BT to publish its ROs on publicly available websites should mean that these websites should not be password protected. It said the RO should be freely available to those considering entering into a market as well as those already in the market.
- 8.117 [≫] also claimed that BT had actively tried to exclude trade associations from having visibility of the products of reference offer negotiations (e.g. minutes of meetings). It said it should be made explicitly clear to BT that all reference offer negotiations should be conducted publicly and transparently to avoid potential allegations of cartel behaviour arising and to ensure that smaller CPs [that might wish to be represented by trade associations] are not excluded from negotiations.
- 8.118 BT<sup>481</sup> asked us to make clear if we are making "grandfathering" provisions for circuits which Openreach has provided or has agreed to provide under a particular agreement on an unregulated basis (i.e. MISBO services in WECLA) but which will be in regulated areas (i.e. very high CISBO services in the LP) from April 2016. It argued that these deals were negotiated with customers in an unregulated environment, so we should allow these circuits to run out on their existing terms without the commercially confidential details of these terms (which only vary from Openreach's published Connectivity Services contract in terms of the prices offered) being published.

#### Our decision

- 8.119 We consider that the requirement to publish ROs imposed in previous markets reviews has been effective in meeting the aims of the regulation detailed above. Therefore, we have decided that BT should be required to publish an RO for wholesale network access products in each of these wholesale markets. We note that no CPs objected to our proposal to maintain the requirement for BT to publish an RO for network access products in each of these wholesale markets and one CP specifically welcomed our proposal to require BT to publish its RO on publicly available websites.
- 8.120 The SMP condition requires the publication of an RO and specifies the information to be included in that RO (set out below) and how the RO should be published. It prohibits the dominant provider from departing from the charges, terms and conditions in the RO and requires it to comply with any directions Ofcom may make from time to time under the condition. The published RO must set out (as a minimum) such matters as:
  - 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.;

 $<sup>^{480}</sup>$  [>] response to the May 2015 BCMR Consultation, page 8.

<sup>&</sup>lt;sup>481</sup> BT's response to the May 2015 BCMR Consultation, page 61.

- contractual terms and conditions, including dispute resolution and contract negotiation/renegotiation arrangements;
- charges, terms and payment procedures;
- service level agreements and service level guarantees;
- to the extent that BT uses the service in a different manner to CPs or uses similar services, BT is required to publish a reference offer in relation to those services; and
- any ordering and provisioning procedures, including the provision of an Initial Contractual Delivery Date.
- 8.121 We consider that imposing a requirement to publish an RO is necessary to achieve these aims and effects in each of these wholesale markets where we have found BT to hold SMP. This remedy complements our decisions to impose network access and non-discrimination obligations on BT to address the competition concerns arising from its SMP in each of these wholesale markets.
- 8.122 The SMP condition differs from the equivalent condition imposed under the BCMR 2013 in the following ways:
  - We have decided to remove the requirement for BT to include in its RO an amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP. We no longer consider that this information is required in order to assist CPs in monitoring potential discriminatory behaviour by BT, or to provide transparency that would allow CPs to make better informed purchasing decisions. This is a change we have already made in other markets, namely the fixed narrowband services markets<sup>482</sup> and the fixed access markets.<sup>483</sup>
  - As BT publishes ROs on its website, we have removed the requirement for BT to send copies of its ROs to Ofcom. Alongside this amendment, we have specified that BT must publish its ROs on *publicly available* websites, i.e. those that do not require password access, to ensure full transparency for other CPs and ourselves.
  - For the reasons set out in Section 13 on Quality of Service we have decided to impose minimum performance standards on Openreach including a requirement regarding the percentage of Ethernet orders which Openreach must complete by the initial contractual delivery date it provides to its customers. We have therefore decided to add a requirement that the provision of an Initial Contractual Delivery

<sup>&</sup>lt;sup>482</sup> Ofcom, *Review of the fixed narrowband services markets: Statement on the markets, market power determinations and remedies*, 26 September 2013,

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final Statement.pdf, paragraphs 5.369, 6.172 and 10.123. <sup>483</sup> Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange* 

<sup>&</sup>lt;sup>483</sup> Ofcom, Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30: Volume 1: Statement on the markets, market power determinations and remedies, 26June 2014, <u>http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume1.pdf</u>, paragraph 10.250

Date to customers should be part of the ordering and provisioning procedures that are included within ROs.

- 8.123 With regard to [≫]'s comments about trade association access to industry meetings, we note that the minutes or other documents associated with meetings between BT and CPs at which wholesale leased line reference offers are discussed, may on occasion be confidential to BT or other CPs. We therefore do not consider it appropriate to require BT to publish or to share such information with industry associations. As discussed above, BT will be subject to an obligation not to discriminate unduly and all participants in such meetings, including BT, are subject to competition law. Moreover, we note that BT will be subject to obligations requiring it to publish its ROs and to notify changes to charges, terms and conditions and changes to technical information.
- 8.124 BT requested clarity regarding the application of the RO requirements to services provided under an agreement on an unregulated basis, which will be within a regulated area/market in the forthcoming review period. Our interpretation is that the reference offer requirements do not apply to services that were contracted on an unregulated basis before the obligations come into force and therefore no special provision is required.

#### Legal tests

- 8.125 For the reasons set out above and summarised below, we are satisfied that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 8.126 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 an access contract. Finally, section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed from time to time.
- 8.127 We consider that the SMP condition satisfies our duties under section 3, and all the Community requirements set out in section 4, of the Act.
- 8.128 The requirement to publish an RO will, in combination with a requirement not to discriminate and/or discriminate unduly, facilitate service interoperability and allow CPs to make informed decisions about future entry into the relevant market. Further, the obligation will enable buyers 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 CPs in the relevant market to monitor any instances of discrimination. Therefore, we consider that the condition in particular furthers the interests of consumers in relevant markets by promoting competition in accordance with section 3 of the Act.
- 8.129 We also consider that the condition meets the Community requirements set out in section 4 of the Act. In particular, the condition promotes competition and encourages the provision of network access and service interoperability for the purpose of securing efficiency and sustainable competition for the maximum benefit for consumers. The publication of an RO will mean that other CPs will have the necessary information readily available.

- 8.130 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it requires that terms and conditions are published in order to encourage competition, provide stability in markets and allow monitoring of anti-competitive behaviour;
  - not unduly discriminatory, in that it is imposed only on BT and no other operator has been found to hold a position of SMP in these markets;
  - proportionate, in that only information that is considered necessary to allow providers to make informed decisions about competing in downstream markets is required to be provided; and
  - transparent, in that it is clear in its intention to ensure that BT publishes details of its service offerings.
- 8.131 Article 9(4) of the Access Directive requires that where network access obligations are imposed, NRAs shall 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.
- 8.132 For the reasons set out above, we consider that the SMP condition we have decided to impose is appropriate to address the competition concerns identified, in accordance with section 87(1) of the Act.

#### The BEREC Common Position

8.133 In forming these proposals we have also taken utmost account of the BEREC Common Position including BP16, BP22 and BP23 which appear to us to be particularly relevant in this context.<sup>484</sup> We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

#### Requirement to notify changes to charges, terms and conditions

#### BCMR 2013 remedies

8.134 BT was required to give advanced notice before making changes to its charges or terms and conditions for the provision of existing or new network access in each of the wholesale leased lines markets.

#### Aim and effect of the regulation

8.135 Notification of changes to charges, terms and conditions at the wholesale level has the joint purpose of assisting transparency for the monitoring of potential anticompetitive behaviour, and giving advance warning of such changes to competing providers who buy 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. Notification of changes therefore helps to ensure stability in markets, without which incentives to invest might be undermined and market entry made more difficult.

<sup>&</sup>lt;sup>484</sup> BoR (12) 126, see footnote 12 above.

- 8.136 A potential disadvantage to change notifications is that they can subdue competition in downstream markets, if CPs follow the SMP operator's prices rather than act dynamically to set competitive prices. However, we do not consider that, on balance, this consideration undermines the rationale for imposing a notification of charges condition.
- 8.137 Other CPs rely on the provision of wholesale access products and services by BT to enable them to compete in downstream leased lines markets. Moreover, significant investment is required by CPs to use wholesale leased line services and they must build more complex networks than for most of the services in other regulated markets. In leased lines markets there is also often a long and complex supply chain of network operators, resellers and systems integrators supporting multiple downstream services. Together these factors mean that changes to wholesale leased line services are likely to have a greater impact on CPs than changes to downstream services in other markets and will also be more complex to assess. Typically this might involve modelling the impact of the new charges on the cost of providing downstream services, securing internal approval for pricing revisions and finally notifying end-users (which may be subject to a minimum notice period, typically 28 days). Without change notifications, there is a risk that CPs would have insufficient time to react to changes to wholesale charges, terms and conditions and could, for instance, be left financially exposed by changes to wholesale prices. We therefore consider that the advantages of notifying charges are likely to outweigh any potential disadvantages.

#### Proposals set out in the May 2015 BCMR Consultation

- 8.138 We proposed BT should continue to be required to notify CPs of changes to its charges, terms and conditions. We refer to these notifications as 'change notices'. We proposed that the following notification periods should apply:
  - 28 days' notice for prices, terms and conditions relating to new service introductions;
  - 28 days' notice for price reductions and associated conditions (for example, conditions applied to special offers); and
  - 90 days' notice for all other changes to prices terms and conditions.

8.139 We also proposed two changes to the BCMR 2013 SMP condition:

- We proposed to remove the requirement for BT to include in its change notices an amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP.
- We proposed to remove the requirement for BT to send copies of change notices to Ofcom.

#### Stakeholder responses to our proposals

8.140 No CPs objected to our proposal to maintain the requirement for BT to notify of changes to its charges, terms and conditions. BT welcomed our proposal to remove the need to send a copy of change notices to Ofcom and the removal of the need to

include the amount applied to each network component with the relevant usage factor.<sup>485</sup>

#### Our decision

- 8.141 We have decided to re-impose the SMP condition on BT to notify of changes to its charges, terms and conditions. We refer to these notifications as 'change notices'. We have decided that the following notification periods should apply:
  - 28 days' notice for prices, terms and conditions relating to new service introductions;
  - 28 days' notice for price reductions and associated conditions (for example, conditions applied to special offers);<sup>486</sup> and
  - 90 days' notice for all other changes to prices, terms and conditions.
- 8.142 As discussed in more detail above, notification of changes to charges, terms and conditions has the joint purpose of assisting transparency for the monitoring of anticompetitive behaviour and giving advance warning of such changes to competing providers, thereby ensuring stability in markets without which incentives to invest might be undermined and market entry made more difficult.
- 8.143 This remedy complements the network access and non-discrimination requirements we are also imposing on BT in these wholesale leased lines markets.
- 8.144 In deciding to retain these notifications periods, we have considered the following relevant factors:
  - In relation to the 90-day period for changes to existing services, the investment required to use wholesale leased line services is significantly greater and requires CPs to build more complex networks than for most of the services in other markets to which we have applied the same notification requirement with a 28-day notice period.
  - ii) Wholesale leased line services support multiple downstream services. This means that changes to wholesale leased line services are likely to have a greater impact on CPs than changes to downstream services and will also be more complex to assess. Typically this might involve modelling the impact of the new charges on the cost of providing downstream services, securing internal approval for a pricing revision and notifying end-users (which may be subject to a minimum notice period, typically 28 days).
  - iii) Too short a notification period would risk that CPs would have insufficient time to react to changes to wholesale terms and could, for instance, be left financially exposed by changes to wholesale prices.
  - iv) There should be no risk of financial exposure for CPs when prices are reduced, so a 28-day notification period is appropriate.

<sup>&</sup>lt;sup>485</sup> BT response to the May 2015 BCMR Consultation, page 61.

<sup>&</sup>lt;sup>486</sup> As we discuss in more detail in Volume II, Section 9, we have waiving this obligation in relation to the starting charge adjustments specified in the charge controls and also in relation to price reductions made by BT during the first month after the charge controls comes into force.

- 8.145 The SMP condition includes the following amendments to the condition imposed in the BCMR 2013:
  - i) We have decided to remove the requirement for BT to include in its change notices an amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP. We no longer consider that this information is required in order to assist CPs in monitoring potential discriminatory behaviour by BT, or to provide transparency that would allow CPs to make better informed purchasing decisions. This is a change we have already made in other markets, namely the fixed narrowband services markets<sup>487</sup> and the fixed access markets.<sup>488</sup>
  - ii) As BT publishes change notices on its website, we have removed the requirement for BT to send copies of change notices to Ofcom.

#### Legal tests

- 8.146 For the reasons set out above and summarised below, we are satisfied that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 8.147 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 change notices.
- 8.148 We consider that the SMP condition satisfies our duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the condition is aimed at promoting competition, and securing efficient and sustainable competition for the maximum benefits for consumers. This is achieved by ensuring that CPs 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.
- 8.149 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP 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 about competing in downstream markets;
  - not unduly discriminatory, as it is imposed only on BT and no other operator has been found to hold a position of SMP in these markets;

<sup>&</sup>lt;sup>487</sup> Ofcom, *Review of the fixed narrowband services markets: Statement on the markets, market power determinations and remedies*, 26 September 2013,

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final Statement.pdf, paragraphs 5.369, 6.172 and 10.123. <sup>488</sup> Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange* 

<sup>&</sup>lt;sup>488</sup> Ofcom, Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30: Volume 1: Statement on the markets, market power determinations and remedies, 26June 2014, <u>http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume1.pdf</u>, paragraph 10.250
- proportionate, as 90 days is considered the minimum period necessary to allow competing providers to plan for changes to existing network access, and 28 days would be sufficient for new network access and price reductions; and
- transparent, in that it is clear in its intention to ensure that BT provides notification of changes to their charges and terms and conditions.
- 8.150 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

# Requirement to publish quality of service information

8.151 BT is currently subject to a requirement to publish such quality of service information that Ofcom may from time to time direct. In view of our decision to impose a new condition concerning quality of service we have decided not to re-impose this condition. Our decision concerning the new quality of service condition is set out in Section 13.

# Requirement to notify of changes to technical information

#### BCMR 2013 remedies

8.152 In the BCMR 2013, we imposed an obligation on BT to publish, in advance, changes to technical information in each of the wholesale leased lines markets.

#### Aim and effect of the regulation

- 8.153 Complementary to the requirement to publish a RO, which includes technical information, the aim of this regulation is to provide advanced notification of changes to technical characteristics. This is to ensure that CPs have sufficient time to respond to changes that may affect them. For example, a CP may need to introduce new equipment, or modify existing equipment or systems, to support a new or changed technical interface. Similarly, a CP may need to make changes to their network in order to support changes in the points of network access or configuration.
- 8.154 We consider this remedy is important in each of the wholesale leased lines markets to ensure that CPs who compete in downstream markets are able to make effective use of existing or, where applicable, new wholesale services provided by BT. Technical information therefore includes new or amended technical characteristics, including information on network configuration, locations of the points of network access and technical standards (including any usage restrictions and other security issues).
- 8.155 The existing condition requires the notification of new technical information within a reasonable period of time but not less than 90 days in advance of providing new wholesale services or amending existing technical terms and conditions.
- 8.156 The requirement to give notification within a reasonable time period may mean that a period of notification in excess of 90 days may also be appropriate in certain circumstances. For example, if BT was to make a major change to its technical terms and conditions, a period of more than the 90 day minimum notification period may be necessary in order to enable competing providers, who purchase effected wholesale services, sufficient time to prepare and support such changes without disruption and detriment to their businesses and customers.

#### Proposals set out in the May 2015 BCMR Consultation

8.157 We proposed to continue to require BT to notify of changes to technical information, not less than 90 days in advance of providing new wholesale services or amending existing technical terms and conditions. We refer to these notifications as 'technical change notices'. We proposed to remove the requirement for BT to send copies of its technical change notices to Ofcom, but to add the requirement for BT to publish these notices on *publicly available* websites, i.e. those that do not require password access.

#### Stakeholder responses to our proposals

8.158 We did not receive any specific stakeholder comments regarding our proposals.

#### Our decision

- 8.159 We consider the requirement to notify technical information imposed as a result of the 2013 Review has been effective in allowing providers sufficient time to prepare for such changes. Therefore, we have decided to re-impose the same requirement in this market review. We refer to these notifications as 'technical change notices'.
- 8.160 The condition requires the notification of new technical information within a reasonable time period, but not less than 90 days in advance of providing new wholesale services or amending existing technical terms and conditions. We consider that 90 days is the minimum time that competing providers need to modify their network to support a new or changed technical interface, or support a new point of access or network configuration. As noted above, longer periods of notification may also be appropriate in certain circumstances.
- 8.161 This SMP condition includes two amendments to the condition currently in force. We have added a requirement for BT to publish any technical change notice on *publicly available* websites, i.e. those that do not require password access, to ensure full transparency for other CPs and ourselves. Given that these notices will be publicly available on BT's website, we have also removed the requirement for BT to additionally send copies of the notices to Ofcom.

#### Legal tests

- 8.162 For the reasons set out above and summarised below, we are satisfied that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 8.163 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 change notices.
- 8.164 We consider that the SMP condition satisfy our duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the condition is aimed at promoting competition and securing efficient and sustainable competition for the maximum benefits for consumers by ensuring that providers have sufficient notification of technical changes to TISBO services to enable them to compete in downstream markets.

- 8.165 Secondly, section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it enables providers to make full and effective use of network access to be able to compete in downstream markets;
  - not unduly discriminatory, as it is imposed on BT and no other operator has been found to hold a position of SMP in these markets;
  - proportionate, in that 90 days is the minimum period that Ofcom considers is necessary to allow competing providers to modify their networks; and
  - transparent, in that it is clear in its intention that BT notify changes to technical information in advance.
- 8.166 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

# **Requirements for cost accounting**

#### BCMR 2013 remedies

8.167 BT is currently subject to cost accounting obligations.

#### Aim and effect of the regulation

- 8.168 Cost accounting obligations require the dominant provider to maintain a cost accounting system (a set of processes and systems) 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 services may be determined. The imposition of cost accounting obligations on dominant providers is an important means of ensuring that:
  - we have the necessary information to support the monitoring of the effectiveness
    of pricing remedies, in particular to ensure that the pricing remedies we impose
    continue to address the competition problems identified and to enable our timely
    intervention should such intervention ultimately be needed;
  - wholesale costs are attributed across the wholesale markets (and the individual services within them) in a consistent manner. This mitigates in particular against the risk of double recovery of costs or that costs might be loaded onto particular products or markets;
  - publication (i.e. reporting) of cost accounting information aids transparency, providing reasonable confidence to stakeholders about compliance with SMP obligations, allowing stakeholders to monitor compliance and more generally enabling stakeholders to make better informed contributions to the development of the regulatory framework; and
  - BT records all the information necessary for the purposes listed above, at the time that relevant transactions occur, on an on-going 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.

# Proposals set out in the May 2015 BCMR Consultation

- 8.169 In the 2014 Regulatory Financial Reporting Statement<sup>489</sup> 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 proforma SMP conditions which would implement the decisions made in that statement. The new SMP conditions were imposed in the Fixed Access and WBA markets following our reviews of those markets in 2014 and we proposed to impose the same SMP conditions in each of the wholesale leased lines markets.
- 8.170 Moreover, we proposed to issue directions under the proposed SMP conditions to give effect to other decisions made in the 2014 Regulatory Reporting Statement about changes to BT's reporting requirements.<sup>490</sup> This was subject to making any necessary changes to reflect our proposals and ultimately decisions in relation to the wholesale leased lines markets.

# Stakeholder responses to our proposals

- 8.171 UKCTA supported the proposed accounting obligations. It said it was vital that stakeholders obtain reliable information about the products they purchase in large quantities. However, it added we should require more granular information around component reporting on the EAD 1Gbit/s service, given its proposed status as the active reference product for a passive alternative.<sup>491</sup>
- 8.172 In its response to the June 2015 LLCC Consultation, BT said that the proposed condition 11.21, which describes the change control notification process, is not clear on the process for post year-end methodology changes.
- 8.173 Vodafone also noted that the proposed condition 11.12 does not expressly require BT to appoint a regulatory auditor.<sup>492</sup>

# Our decision

- 8.174 In the November 2015 LLCC Consultation we considered stakeholders' comments about the regulatory reporting requirements including UKCTA's comments about component reporting for EAD 1Gbit/s services. In light of the comments and on further consideration we proposed additional regulatory reporting requirements including in relation to dark fibre and 1Gbit/s EAD and EAD LA services. We consider responses to the November 2015 LLCC Consultation and set out our final decisions on this matter in Section 16.
- 8.175 We have decided to impose on BT the SMP conditions that flowed from our conclusions in the 2014 Regulatory Financial Reporting Statement. We set out our reasoning and decisions on the specific form of the cost accounting and accounting separation requirements we are imposing on BT in these markets in the 2014

 <sup>489</sup> Ofcom, Regulatory Financial Reporting: Final Statement, 20 May 2014, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bt-transparency/statement/financial-reporting-statement-may14.pdf</u>
 <sup>490</sup> These directions were set out in Appendix 4 to 8 to the 2015 Directions Statement.

<sup>491</sup> See joint UKCTA response to the May 2015 BCMR Consultation, June 2015 LLCC Consultation and June 2015 consultation on our Review of BT's cost attribution methodologies, pages 18-20.

<sup>492</sup> Part B of Vodafone's submission "Errors in Ofcom Draft BCMR Legal Instruments" dated 22 September 2015

<sup>&</sup>lt;sup>490</sup> These directions were set out in Annexes 1 to 8 to the 2015 Directions Statement.

Regulatory Financial Reporting Statement. We consider it appropriate to impose these SMP conditions with some limited revisions in this market review. As explained in 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 this market review we will direct BT as to the specific reporting requirements consistent with the Regulatory Accounting Principles arising from each regulatory decision.<sup>493</sup> We have amended the conditions to reflect our decision not to issue the Regulatory Accounting Guidelines. The conditions we have decided to impose therefore require BT to prepare the RFS in accordance with the SMP conditions, the Regulatory Accounting Principles and the Accounting Methodology Documents.

- 8.176 We have considered BT's suggestion that the condition should be clear that the cutoff date of 31 March does not apply where changes to methodology are specifically requested by the regulatory auditor as decided in the 2014 Regulatory Financial Reporting Statement and reflected that in the condition. However, we have decided not to make the other changes suggested by BT in relation to the steps and deadlines in the process after 31 March. We continue to believe that 31 March must be the cut-off date for any methodology changes to be proposed by BT. It is possible that as a result of the discussions following BT's submission of the change control notification, some further improvements or refinements can be made to the notified proposals. However, such issues need to be considered on a case by case basis. We therefore do not consider that it would be appropriate to specify further steps and deadlines in the conditions.
- 8.177 We have not made any changes to that condition in response to Vodafone's comments because the condition 11.8(iii) which we have decided to impose already requires BT to secure the expression of an audit opinion on the RFS and the reconciliation report.
- 8.178 In addition, in the 2015 Directions Statement<sup>494</sup> we set out the necessary directions to give effect to other decisions made in the 2014 Regulatory Financial Reporting Statement about changes to BT's reporting requirements.<sup>495</sup> The new directions were imposed in the Fixed Access and WBA markets. In line with that approach, we have decided to issue these directions (modified to reflect our decisions in this market review) under the SMP conditions we are imposing in relation to the wholesale leased lines markets. We note that certain reporting requirements contained in some of these directions have already been subject to consultation.<sup>496</sup> We discuss these reporting requirements and associated directions in more detail in Section 16.
- 8.179 The details of the cost accounting requirements are set out in Section 16.

#### Legal tests

8.180 For the reasons set out above and summarised below, we are satisfied that the SMP condition (as set out in Annex 35) meets the various tests set out in the Act.

<sup>&</sup>lt;sup>493</sup> Paragraphs 3.36–3.37 May 2014 Regulatory Reporting Statement.

<sup>&</sup>lt;sup>494</sup> Ofcom, Directions for Regulatory Financial Reporting, 30 March 2015,

http://stakeholders.ofcom.org.uk/binaries/consultations/financial-reporting/statement/statement.pdf These directions were set out in Annexes 1 to 8 to the 2015 Directions Statement.

<sup>&</sup>lt;sup>496</sup> This applies to the directions specifying: (i) the Regulatory Accounting Principles; (ii) transparency requirements; (iii) audit requirements; and (iv) requirements relating to reconciliation report.

- 8.181 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. Cost accounting rules may be made in relation to fair and reasonable charges, charge controls, the recovery of costs and basis of charges obligations. We have decided to impose cost accounting requirements on BT in each of the wholesale leased lines markets in which it has SMP. We consider that this obligation is necessary to ensure the appropriate maintenance of accounts in order to monitor BT's activities with regard to the pricing remedies we are imposing in each of these markets.
- 8.182 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 cost accounting obligations is justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services and to ensure the provision of network access (including supporting ancillary services) and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of 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.
- 8.183 We have considered the Community requirements set out in section 4 of the Act and believe that cost accounting obligations in particular 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, resulting in the maximum benefit for retail consumers.
- 8.184 We consider that the SMP condition meets the criteria set out in section 47(2) of the Act because it is:
  - objectively justifiable, in that it is necessary to ensure the appropriate maintenance and provision of accounts in order to monitor BT's activities with regard to the pricing remedies we propose in each of these markets. 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;
  - non-discriminatory, in that BT is the only CP on which we have decided to impose specific pricing remedies;
  - proportionate, in that only information that is no more than necessary to monitor BT's activities with regard to the pricing remedies is required to be maintained and provided; 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 accounting separation requirements of BT are clearly documented.
- 8.185 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

# **Requirements for accounting separation**

#### BCMR 2013 remedies

8.186 The BCMR 2013 imposed accounting separation obligations on BT.

#### Aim and effect of the regulation

8.187 The accounting separation obligations require BT to account separately for internal and external sales, which allows Ofcom and CPs 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.

#### Proposals set out in the May 2015 BCMR Consultation

8.188 We proposed to impose an accounting separation obligation on BT in each of the wholesale leased lines markets. We proposed that these obligations should reflect the changes we decided to make to our regulatory financial reporting policy as set out in the 2014 Regulatory Financial Reporting Statement as discussed above in relation to the cost accounting remedy.

#### Stakeholder responses to our proposals

8.189 We did not receive any specific stakeholder comments in response to our proposals.

#### Our decision

- 8.190 We have decided that it is appropriate to impose an accounting separation obligation on BT in each of the wholesale leased lines markets in which we have decided that it is has SMP. We consider that this obligation is necessary to monitor BT's activities with regard to its non-discrimination obligations.
- 8.191 The SMP conditions and directions that we refer to in the discussion about the cost accounting obligations above also apply to the accounting separation obligations. We have decided to impose those SMP conditions and directions subject to necessary modifications for the same reasons as those described above.

#### Legal tests

- 8.192 For the reasons set out above and summarised below, we are satisfied that the SMP condition (as set out in Annex 35) meets the various tests set out in the Act.
- 8.193 Sections 87(7) and 87(8) of the Act authorise Ofcom to impose appropriate accounting separation obligations on a dominant provider in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities. That is to say, 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.
- 8.194 We consider that this SMP condition meets our duties under sections 3 and 4 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, ensuring the provision of network access and service interoperability for the

purposes of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of 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.

- 8.195 With regard to the Community requirements set out in section 4 of the Act, we believe that the SMP condition meets the requirements. Specifically, we believe section 4(8) is met, where the obligation has the purpose of securing efficient and sustainable competition in the markets for electronic communications networks and services, by helping to ensure that dominant providers comply with other obligations in particular non-discrimination requirements.
- 8.196 We also consider that this SMP condition meets section 47(2) of the Act which requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. We consider the SMP 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 CP which we have found to have 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 potentially discriminatory behaviour by BT; and
  - transparent, in that it is clear that the intention is to monitor compliance with specific remedies and the particular accounting separation requirements of BT are clearly documented within the SMP condition.
- 8.197 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

# **Price control remedies**

#### BCMR 2013 remedies

8.198 In the BCMR 2013 we imposed a charge control that applied to most of BT's wholesale leased lines services.

#### Aim and effect of the regulation

- 8.199 In a competitive market, the charges for services would be set on the basis of the commercial judgements of individual companies and could be expected to deliver cost reflective prices. However, where a provider has SMP, competition cannot be expected to provide effective constraints and *ex ante* regulation may be desirable to prevent charges from being set at an excessive level. Such intervention could also have as its objective the aim of promoting efficiency and of allowing the development of effective competition in downstream markets.
- 8.200 A price control condition is one such condition aimed at addressing BT's ability and incentive to charge excessive prices. Price control conditions can also be used to

prevent anti-competitively low prices, though other remedies, such as a prohibition on undue discrimination, may be also be used.

- 8.201 In these markets BT has SMP and has an incentive and the ability to charge excessive prices. Excessive prices at the wholesale level could make it difficult for third party CPs to compete at the retail level with BT, and in the long term may result in market exit. Unjustifiably high wholesale charges are also likely to result in high retail prices, i.e. consumers would be paying more for a service than they should expect if wholesale prices were constrained by effective competition.
- 8.202 A price control can take a variety of forms,<sup>497</sup> including, but not limited to, a charge control, a cost orientation obligation and a safeguard cap.
- 8.203 In selecting the form and level of price controls, we seek to balance a number of regulatory objectives. These included, among other things:
  - preventing BT from setting excessive charges;
  - promoting efficient and sustainable competition in the delivery of leased line services; and
  - encouraging investment and innovation.
- 8.204 The weight that we apply to different regulatory objectives in setting a charge varies depending on the particular circumstances and services we are dealing with and the likely concerns arising from the market analysis we have carried out.

#### Proposals set out in the May 2015 BCMR Consultation

- 8.205 We proposed that subject to further detailed consideration in the June 2015 LLCC Consultation concerning the form, scope and level of the charge control, that a CPI+/-X control should apply to the following types of wholesale leased lines services:
  - in the wholesale low bandwidth TISBO market in the UK excluding the Hull area, charges for PPCs;
  - in the wholesale CISBO market in the RoUK excluding the Hull area, charges for Ethernet services at bandwidths up to and including 1Gbit/s;
  - in the wholesale CISBO market in the LP, charges for Ethernet services at bandwidths up to and including 1Gbit/s;
  - the interconnection and accommodation that BT provides in connection with wholesale TISBO and CISBO services in these markets, including services provided in connection with the proposed dark fibre remedy; and
  - ancillary services including Excess Construction Charges (ECCs) and Time Related Charges provided in connection with wholesale TISBO and CISBO services in these markets, including services provided in connection with the proposed dark fibre remedy.

<sup>&</sup>lt;sup>497</sup> As suggested by Recital 20 of the Access Directive.

- 8.206 We proposed that the charge control should make a provision for new services that wholly or substantially substitute existing services in a charge control basket to be added to the basket.
- 8.207 In addition we proposed a CPI-CPI safeguard cap on very high CISBO services (i.e. charges for single service Ethernet services at bandwidths above 1Gbit/s and WDM services) in the wholesale CISBO market in the RoUK excluding the Hull area. We proposed that very high CISBO services in the LP should not be subject to the safeguard cap.
- 8.208 We also proposed that basis of charges conditions should apply to:
  - the differential between BT's charges for EAD and EAD Local Access Ethernet services; and
  - BT's charges for the proposed dark fibre remedy.

# CPI+/-X charge control for TISBO and wholesale Ethernet services at bandwidths up to and including 1Gbit/s and ancillary services

- 8.209 Our proposals concerning this charge control have been subject to further detailed consultation in the June 2015 LLCC Consultation and the November 2015 LLCC Consultation.
- 8.210 Our conclusions, together with our reasons, consultation responses and considerations of those responses, with regard to the detail of the charge control we are imposing, and the reasons why we consider this remedy complies with the relevant legal tests in the Act, are set out in Volume II of this statement.

# Basis of charges condition for the differential between EAD and EAD Local Access

8.211 We have decided not to impose the basis of charges condition for the differential between EAD and EAD Local Access services proposed in the May 2015 BCMR Consultation. We set out our reasons and consideration of the consultation responses in Section 10.

#### Basis of charges condition for the dark fibre remedy

8.212 We have decided to impose a basis of charges condition for the dark fibre remedy. Our conclusions, together with our reasons, our consideration of the consultation responses and the reasons why we consider this remedy complies with the relevant legal tests in the Act are set out in Section 9.

# Stakeholder responses concerning the proposed safeguard cap for very high bandwidth CISBO services

- 8.213 TalkTalk said there is a very strong case for very high CISBO services to be charge controlled. It highlighted that BT's ROCE for 10Gbit/s services is already high at approximately three times BT's cost of capital. Given falling unit costs, it said our proposed safeguard cap would allow returns to rise to even more excessive levels.
- 8.214 TalkTalk considered that the dark fibre remedy would not constrain very high CISBO prices at all during the market review period unless Ofcom imposed an EOI obligation and also required BT to use the dark fibre remedy. Even with such obligations, and

assuming the dark fibre remedy is launched in April 2017 as proposed, TalkTalk considered that it would not constrain very high CISBO prices until the final year of the market review period at best.

8.215 TalkTalk put forward two possible approaches to a charge control for very high CISBO services – a separate charge control basket containing just very high CISBO services or the inclusion of these services in the Ethernet basket.<sup>498</sup>

# Our decision concerning the safeguard cap for very high bandwidth CISBO services

8.216 In view of our decision to implement a dark fibre remedy we consider that a CPI-CPI safeguard cap control, applied to each and every charge, is the most appropriate form of price control for BT's very high CISBO services (i.e. charges for single service Ethernet services at bandwidths above 1Gbit/s and WDM services) in the wholesale CISBO market in the RoUK excluding the Hull area. In view of the current differences in competitive conditions for very high CISBO in the LP, and in anticipation of the dark fibre remedy coming into effect during this control period, we have decided that no price control is needed.

# A safeguard cap for very high CISBO in the Rest of the UK

- 8.217 As we set out in Section 4, BT earns significantly higher margins on very high CISBO services than on medium and high CISBO services. Very high CISBO services currently account for a relatively small share of CISBO sales, possibly as a result of these high margins. The current high charges for these services suggest that we should be concerned about the risk of excessive pricing, and that absent other considerations, a charge control could be an appropriate remedy as TalkTalk suggests.
- 8.218 However, these considerations need to be balanced against the currently greater level of competition for these services. As set out in Section 4, we find that competitors such as Virgin account for a higher share of sales at these bandwidths than for overall CISBO services. While we anticipate that BT's share of very high CISBO will increase as more generic customers (as opposed to high value users) upgrade to very high CISBO, we do not consider there will be effective competition over the review period. The potential ability to earn margins above BT's costs on these services may help competitors who lack BT's economies of scale and scope but nevertheless bring dynamic benefits to end customers. As a result, we consider that the control on prices should be less tight than for other CISBO products.
- 8.219 We expect the dark fibre remedy to be used mainly to provide very high CISBO services. As we have explained in Section 9 we have decided that the dark fibre remedy should be subject to a basis of charges obligation. Our intention is that competition based on the dark fibre remedy should provide the primary constraint on prices for very high CISBO services.
- 8.220 We have required BT to launch its dark fibre service by 1 October 2017, and it is possible that it will take some time to become established. It may therefore not begin to constrain very high CISBO prices until the final year of the market review period. Also we cannot rule out that it will not be successful. If we were to impose no pricing restrictions on very high CISBO services, and if the development of dark fibre were

<sup>&</sup>lt;sup>498</sup> TalkTalk response to the May 2015 BCMR Consultation, paragraphs 8.1 to 8.12.

less successful than we anticipate, then there is a risk that consumers will not be sufficiently protected from the risk of excessive pricing.

- 8.221 We have therefore decided to impose a CPI-CPI safeguard cap on very high CISBO services in the Rest of the UK. With this type of control, the dominant provider's prices are capped in nominal terms i.e. prices for the controlled services may not rise during the charge controlled period. If the dark remedy develops swiftly, such that this constraint is no longer necessary, then this constraint can be lifted by Direction.
- 8.222 We consider that capping prices in nominal terms strikes an appropriate balance between protecting consumers from excessive prices and supporting the development of competition and infrastructure investment. In reaching this decision, we have balanced our objectives of preventing excessive pricing, promoting efficient and sustainable competition and encouraging investment and innovation.

#### A safeguard cap for very high CISBO in the Rest of the UK

- 8.223 We notified our draft statement to the European Commission, BEREC and the national regulatory authorities of other member states in line with the consultation process set out in Article 7 and Article 7a of the Framework Directive. In the Commission's response to our notification, it made two comments, one of which concerned the identification of geographic areas which are suitable for lighter remedies. We summarise and respond to this comment below:
  - In its comments on our draft statement, the Commission asked us to consider whether applying a set of clear criteria to identify areas where lighter touch remedies may be appropriate would lead to a lighter set of remedies not only in the LP area, but also other parts of the UK territory, including the 5 CBDs. It noted that this approach could lead us to find that in areas other than the LP, the imposition of a charge control for VHB services may no longer be appropriate.
  - In light of the Commission's comments, we have set out the factors we consider when identifying areas where lighter touch remedies may be appropriate in 4.456. We have applied this assessment to areas of the UK other than the LP, including the CBDs, and conclude it is not appropriate to impose lighter touch remedies in any area other than the LP. As a result, we continue to consider a safeguard cap on VHB services remains appropriate in all areas of the RoUK for the reasons set out in 8.217 – 8.222 above.

#### A safeguard cap for very high CISBO in the London Periphery

- 8.224 In Section 4 and Annex 5, we set out our consideration of competition for very high CISBO in the LP and stated that we would reflect differences in competitive conditions at some individual high value sites in our remedies. We also note that currently the provision of MISBO services (equivalent to very high CISBO) is not regulated in the WECLA (which closely equates to the CLA and the LP). When considering remedies in the LP, we take into account that some current very high CISBO users already have an effective choice of suppliers.
- 8.225 When dark fibre is available from October 2017, we expect it to be the access remedy of choice for customers upgrading to very high CISBO. This means that we expect prospective very high CISBO customers, (i.e. those with limited choice) to mainly purchase dark fibre over this review period. In view of the presence of competition for very high CISBO at some sites in the LP, and the introduction of the

dark fibre remedy, we consider that it is not proportionate to introduce a new safeguard cap for very high CISBO services in the LP.

# Legal tests relating to the safeguard cap for very high bandwidth CISBO in the RoUK

8.226 In the following paragraphs we set out why we consider that the safeguard cap on very high CISBO services meets the tests of the Act.

#### Powers under sections 87 and 88 of the Act

- 8.227 We are imposing a charge control in the form of a safeguard cap of CPI-CPI to BT as an SMP condition under section 87(9) of the Act with regard to very high CISBO services in the wholesale CISBO market in the Rest of the UK excluding the Hull area.
- 8.228 We consider that the SMP condition satisfies the tests set out in Section 88 of the Act. As a result of our market analysis, in particular our assessment set out above, we consider the relevant risk of adverse effects arising from price distortion in accordance with section 88 is the risk that BT might fix and maintain its prices for very high CISBO services in the CISBO market at an excessively high level.

#### Promoting efficiency

- 8.229 We consider that the setting of the SMP condition is appropriate for the purpose of promoting efficiency. By preventing BT from raising prices for very high CISBO services, the safeguard cap will provide protection against excessive pricing during the period before the dark fibre remedy is established and also afterwards if competition based on the dark fibre remedy fails to constrain prices as anticipated.
- 8.230 Furthermore, in implementing a safeguard cap we have taken into account competition and investment incentives, which we consider would provide dynamic efficiency benefits to consumers.

#### Promoting sustainable competition and conferring the greatest possible benefits on endusers

- 8.231 We consider that the setting of the SMP condition is appropriate to promote sustainable competition and to confer the greatest possible benefits on end-users of public electronic communications services.
- 8.232 A safeguard cap will help promote sustainable competition and ensure benefits to consumers. As the safeguard cap will apply to each and every charge, it will also protect customers of CISBO services who may face less competition.

#### Investment

- 8.233 In setting the safeguard cap of CPI-CPI we have also taken into account the need to ensure BT has the appropriate incentives to invest and innovate.
- 8.234 The requirement under the safeguard cap not to increase prices for very high CISBO services in nominal terms is consistent with the objective of providing BT with incentives to invest and innovate. The expected general trend for very high CISBO services is for continued growth resulting in expected lower unit costs. Therefore, if the safeguard cap is binding, it will provide a fairly conservative path for required

price reductions in real terms.<sup>499</sup> The safeguard cap will also be fixed for the duration of the charge control period, so this will provide BT with incentives to invest and innovate to bring about additional efficiency savings.

#### We have considered the tests under section 47 of the Act

8.235 We consider the tests set out in section 47 of the Act are satisfied.

#### The SMP condition is objectively justifiable

8.236 We consider the SMP condition to be objectively justifiable. In this document, we set out our decision that BT has SMP for CISBO services in the Rest of the UK excluding the Hull area. On this basis, we consider it necessary to impose some form of charge control on BT's services to address the competition problems arising from such SMP. However, in view of the current level of competition and infrastructure investment for very high CISBO services (than lower bandwidth CISBO) and in view of our intention that the dark fibre remedy should provide the primary constraint on prices for very high CISBO during the latter part of the control period, we consider that a less constraining control than for lower bandwidth services, in the form of a safeguard cap is objectively justifiable.

#### The SMP condition does not discriminate unduly

8.237 The safeguard cap will not discriminate unduly against a particular person or particular persons because any CP (including BT itself) can access the services based on charges set up to the maximum permitted by the safeguard cap. The charges are set to ensure a fair return and that charges are level for all customer groups and the safeguard caps apply to each and every very high CISBO service. Further, we consider that the SMP condition does not discriminate unduly against BT as the controls address BT's market position, including its ability and incentive to set excessive charges for these services.

#### The SMP condition is proportionate

- 8.238 We consider that the SMP condition is proportionate as it seeks to achieve a balance between addressing the risk of BT pricing excessively by preventing BT raising prices, but also takes into account the level of competition and infrastructure investment in relation to very high CISBO services. It also takes account of our intention that the dark fibre remedy should provide the primary constraint on very high CISBO prices during the latter part of the control period.
- 8.239 For the reasons set out above, therefore, we consider the SMP condition is:
  - appropriate to achieve the aim of addressing, for very high CISBO services, BT's ability and incentive to raise prices;
  - necessary in that it does not, in our view, impose controls on the prices for very high CISBO services that BT may charge that go beyond what is required to achieve the aim of addressing BT's ability and incentive to raise prices;

<sup>&</sup>lt;sup>499</sup> Given forecast positive price inflation over the charge control period, the CPI-CPI price cap would result in price reductions in real terms

- in our view, the least onerous of the options set out above whilst addressing, for very high CISBO services, BT's ability and incentive to raise prices; and
- such that it does not, in our view, produce adverse effects which are disproportionate to the aim pursued.

#### The SMP condition is transparent

8.240 Finally, for reasons discussed above, we consider the SMP condition is transparent, as its aims and effect are clear.

# We have considered sections 3 and 4 of the Act

- 8.241 We also consider that the SMP condition furthers our duties under sections 3 and 4 of the Act.
- 8.242 For the reasons set out above, we consider that the SMP condition will further the interests of citizens and further the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act. Further, we consider that, in line with section 4 of the Act, a price control obligation in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of network access for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers.
- 8.243 We consider the SMP condition will, together with our other charge controls set out in this statement, secure the availability throughout the United Kingdom of a wide range of electronic communications services.
- 8.244 We have also had regard in implementing the SMP condition, in particular:
  - the desirability of promoting competition in the relevant market;
  - the desirability of encouraging investment and innovation in the relevant market; and
  - the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.
- 8.245 Finally, in performing our duty to further the interests of consumers, we have also had regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money

# We have taken into account the EC Leased Lines Pricing Recommendation

8.246 The Leased Lines Pricing Recommendation relates to pricing aspects of wholesale leased lines part circuits and includes recommended EC Price Ceilings for leased line part circuits to *"inform and guide a national regulatory authority ("NRA") as to how to apply the best current practices in leased lines provision when devising regulatory remedies for leased line markets that are not effectively competitive in their territory".* 

<sup>&</sup>lt;sup>500</sup> Explanatory Memorandum to the Leased Lines Pricing Recommendation, page 6.

- 8.247 We have taken utmost account of the Leased Lines Pricing Recommendation when developing our charge control proposals. The EC Price Ceilings are based on prices for leased lines part circuits from Member States in June 2004. Since then, however, both prices and costs have changed.
- 8.248 Therefore, we consider that the RFS data (as adjusted by Ofcom) is more relevant in setting prices for the next charge control period and that, given the changes in market conditions, the use of the EC Price Ceilings could result in prices that diverge from the efficient cost of provision. By using up-to-date cost accounting data from BT's RFS and other relevant inputs and assumptions, we consider that we have ensured that prices are at an efficient level.

#### We have taken into account the BEREC Common Position

8.249 In formulating the price control discussed above, we have also taken utmost account of the BEREC Common Position including BP30, BP31 and BP32 which appear to us to be particularly relevant in this context.<sup>501</sup> We consider that the controls are consistent with the best practice set out in the BEREC Common Position.

# **Other issues**

8.250 In this sub-section we consider two other issues raised by respondents to the May 2015 BCMR Consultation in relation to remedies – cost orientation and migration.

# **Cost orientation**

#### Vodafone's comments

- 8.251 In its response to the June 2015 LLCC Consultation, Vodafone<sup>502</sup> called for a rethink on cost orientation in light of our Cost Attribution Review (CAR). It said that very significant levels of over-charging have been identified which could have been remedied and discouraged through a cost orientation obligation.
- 8.252 Vodafone argued that cost orientation is a vital safeguard remedy with a different and complementary function to a charge control. It said that a regulated business would be required to comply with a cost orientation obligation at all times and this will reduce any opportunity for over-recovery by deterring future over-charging.

#### Our decision

8.253 As explained above, we are imposing accounting separation and cost accounting SMP conditions on BT in each of the wholesale leased lines markets. These SMP conditions and associated directions implement changes to the regulatory financial reporting framework introduced in the 2014 Regulatory Financial Reporting Statement<sup>503</sup> and subsequent review of BT's cost attribution rules (see below). The regulatory financial reporting framework gives us greater control over how Regulatory Financial Reporting Statements (RFS) are prepared. In particular, it requires BT to ensure that its RFSs are prepared in accordance with the Regulatory Accounting

<sup>&</sup>lt;sup>501</sup> BEREC Common Position.

 <sup>&</sup>lt;sup>502</sup> Vodafone response to the June 2015 LLCC Consultation, pages 8-9.
 <sup>503</sup> Regulatory Financial Reporting, May 2014,

http://stakeholders.ofcom.org.uk/binaries/consultations/bt-transparency/statement/financial-reportingstatement-may14.pdf

Guidelines and the Regulatory Accounting Principles. BT is also required to notify us of changes to its regulatory accounting methodology.

- 8.254 In connection with the introduction of the new regulatory financial reporting framework we have also reviewed BT's existing cost attribution rules against the new Regulatory Accounting Principles. We published an initial consultation in June 2015 and a further consultation in November 2015.<sup>504</sup> Our decisions, published in Annex 28 of this Statement, require BT to make certain changes to its cost attribution rules to align them with the Regulatory Accounting Principles.
- 8.255 We consider that greater scrutiny of the basis of preparation of BT's RFS under the new regulatory financial reporting framework will address the risk of inappropriate cost allocations more effectively and proportionately than a cost orientation obligation.
- 8.256 We have therefore decided we will not impose a cost orientation obligation in wholesale leased lines markets.

# End-of-life service migration arrangements

#### Stakeholders' comments

- 8.257 Vodafone and UKCTA raised concerns about the arrangements provided by BT to facilitate customer migration to replacement services when legacy services are withdrawn. In support of its comments, Vodafone submitted a report commissioned from Towerhouse Consulting (THC) that reviewed BT's incentives and compared the support for migration offered by BT with the support that a CP operating in a competitive market might be expected to offer.<sup>505</sup>
- 8.258 Vodafone and UKCTA considered that BT's current approach to end-of-life service migration is inadequate and falls short of the outcome that would be expected in a competitive market. They argued that these failings arise because of BT's SMP and therefore Ofcom should intervene to address them. 506 507
- 8.259 Vodafone argued that Ofcom should impose new regulatory obligations to require BT to manage migration better. In particular, they claimed that Ofcom should:
  - Impose an obligation for BT to provide 'managed migration services' for all • wholesale leased line services being withdrawn that would be much better than the 'cease and re-provide' approach.
  - Minimise the risk of discrimination by requiring BT to support complex migration scenarios where the replacement service differs from the legacy service, such as the WES to EAD LA migration path required by Vodafone as well as the more straightforward like-for-like migration scenarios which Vodafone considered are more typically required by BT's downstream businesses.

<sup>&</sup>lt;sup>504</sup> Review of BT's cost attribution methodologies: Consultation 12 June 2015. http://stakeholders.ofcom.org.uk/consultations/cost-attribution-review/ Review of BT's cost attribution methodologies: Second consultation 13 November 2015. http://stakeholders.ofcom.org.uk/consultations/BT-cost-attribution-review-second-consultation/

Vodafone response to the May 2015 BCMR Consultation, annex 1.

<sup>&</sup>lt;sup>506</sup> Vodafone response to the May 2015 BCMR Consultation, page 24 & 42.

<sup>&</sup>lt;sup>507</sup> UKCTA response to the May 2015 BCMR Consultation, paragraphs 1.18, 1.23 and 1.24.

- Design charge controls with the presumption that efficiently incurred migration costs would be included in the charge control for new services so that BT would not have to pass on migration costs to CPs directly. The aim being to encourage BT to treat minor product updates such as the WES to EAD transition as a product update rather than a service withdrawal.
- Provide BT with positive incentives to help end-users who face significant costs to adapt internal systems for the replacement service.<sup>508</sup>
- 8.260 Vodafone also highlighted concerns about migration associated with the withdrawal of VLB services given the very large number of services to be migrated. Vodafone considered that BT should be required to manage the migration to new services and absorb the costs.509
- 8.261 THC presented a case study of WES to EAD migration, noting that Openreach's managed migration offering supports only like-for-like migrations (including bandwidth upgrades) typically required by BT's downstream divisions. THC considered this would have a disproportionate impact on other CPs who typically require more complex migration scenarios such as migration from WES to EAD LA.510
- 8.262 UKCTA said that CPs continue to use BT's legacy PPC and WES products because there are barriers to migration. In particular:
  - Migration arrangements the current arrangements are inefficient and put CPs at a competitive disadvantage to BT's downstream businesses who are able to use efficient migration packages that are not suitable for CPs.<sup>511</sup> CPs are forced to use the cease and re-provide approach with the result that:
    - Migration is unnecessarily expensive because cost savings that could be achieved by coordinating activities that are common to the provision and cease processes are not realised. CPs are forced to incur full connection charges, excess construction charges, early termination charges and parallel running costs (rental charges for the old and new services).
    - o CPs have to manage provide and cease activities and in doing so incur additional costs and operational burdens.<sup>512</sup>
  - A lack of suitable replacement products It is not uncommon for customers to be • deterred from migrating because the closest substitute product has a higher bandwidth and higher rental charge. UKCTA believed that BT could do more to ensure that more closely matching alternative products are made available.<sup>513</sup> In a similar vein, THC argued that the choices currently available to VLB leased lines users are not reflective of the outcomes of a competitive market. It argued that in a competitive market, suppliers would offer emulation services for which the cost of using a new service would be too great.

<sup>&</sup>lt;sup>508</sup> Vodafone response to the May 2015 BCMR Consultation, page 8.

<sup>&</sup>lt;sup>509</sup> Vodafone response to the May 2015 BCMR Consultation, page 25.

<sup>&</sup>lt;sup>510</sup> Vodafone response to the May 2015 BCMR Consultation, Annex 1, paragraphs 6.1 to 6.7.

<sup>&</sup>lt;sup>511</sup> In its consultation response, UKCTA referred to migration packages that are not available to other CPs. In response to an enquiry from Ofcom UKCTA has clarified that it meant that the migration packages that are not suitable for other CPs migration requirements.

UKCTA response to the May 2015 Consultation, paragraph 1.22i.

<sup>&</sup>lt;sup>513</sup> UKCTA response to the May 2015 Consultation, paragraphs 1.20 & 1.22i.

- 8.263 UKCTA was particularly concerned about the migration of TI services to CI services in light of Ofcom's plans to deregulate retail TI services and wholesale services at bandwidths above 8Mbit/s. In its view, urgent action is required because of the high costs of such migration.<sup>514</sup> In view of its concerns, UKCTA considered that Ofcom should:
  - require BT to take full responsibility for end-of-life service migration and all of the costs;<sup>515</sup> and
  - ensure that BT provides efficient migration packages and suitable replacement services that take account of customers' requirements in terms of bandwidth, cost, coverage, contract terms and SLAs.<sup>516</sup>

# Our decision

8.264 In light of stakeholders comments we have considered:

- whether BT should be required to offer managed migration packages;
- how migration costs should be recovered;
- Vodafone's concerns about WES to EAD LA migration;
- respondents' concerns about migration associated with VLB service withdrawal; and
- whether BT should be required to offer emulated TI services to replace VLB TI services.

# Whether BT should be required to offer managed migration packages for all services it withdraws

- 8.265 By 'managed migration' we understand Vodafone to mean a package managed by BT to replace a legacy circuit with a new circuit.
- 8.266 In certain circumstances, managed migration packages can provide a useful alternative to the conventional 'cease and re-provide' approach to migration whereby a new circuit is provided alongside the legacy circuit it will ultimately replace.
- 8.267 Managed migration packages are typically offered when migration can be achieved by rearranging an existing circuit i.e. a legacy circuit is partly dismantled and then reconstructed as a different type of circuit. They are most suitable for cases where the legacy and replacement circuits are very similar such as 'technology refreshes' where the end-user interfaces and circuit end-points are unchanged. In such cases the rearrangement can be effected by replacing the terminal equipment at each end of the leased line. Management of the process is an essential component of the rearrangement to ensure that outages are kept to a minimum.

<sup>&</sup>lt;sup>514</sup> UKCTA response to the May 2015 BCMR Consultation, paragraph 1.22ii.

<sup>&</sup>lt;sup>515</sup> UKCTA response to the May 2015 Consultation, paragraph 1.21.

<sup>&</sup>lt;sup>516</sup> UKCTA Response to the May 2015 BCMR Consultation, paragraphs 1.19 & 1.24.

- 8.268 We note that BT currently offers managed migration packages for like-for-like migration from WES, BES and WEES services to EAD. The management element of the package comprises:
  - an equipment audit prior to migration to determine equipment requirements;
  - circuit rearrangement managed by BT; and
  - guaranteed 'rollback' to the original circuit configuration if problems are encountered.
- 8.269 Managed migration may offer shorter lead times and potentially lower costs than the cease and re-provide approach if less work is required, for example if duct and cabling work are not required.
- 8.270 Circuit rearrangement is not, however, suitable for all end of life service migration including, for example, cases where end-users require service interruptions to be kept to an absolute minimum or where end-users require a period of parallel running to commission and test equipment that will be connected to the new circuit.
- 8.271 Moreover, circuit rearrangements are not always more efficient than the cease and re-provide approach. For example:
  - In cases where the configuration of the legacy and replacement services differ significantly it may be simpler to provide a new circuit than to rearrange an existing circuit.
  - The requirement for intervention at multiple points in the circuit and for work to be undertaken outside office hours (when a service interruption is less inconvenient for the end-user) may result in rearrangement being more costly than the cease and re-provide approach.
- 8.272 We therefore consider that the most suitable end-of-life migration arrangement is likely to depend on the particular type of transition involved and on end-users' and CPs' requirements. Consequently there is a risk that a requirement for BT to offer managed migration packages for all leased line services it withdraws, could require BT to offer migration packages that would be less efficient than the cease and reprovide arrangement that is available by default for all services. We have therefore decided not to impose a general obligation on BT to offer managed migration packages.
- 8.273 Similarly, a general obligation on BT to support 'complex migration scenarios' in which the replacement circuit differs from the legacy service would also give rise to the risks discussed above. We have therefore decided not to impose a general obligation on BT to offer managed migration packages for complex migration scenarios.
- 8.274 We consider that end-of-life service migration packages are best developed by BT in dialogue with CPs so that requirements, particularly in relation to complex migration scenarios, can be established. CPs may also use the SoR process to request migration packages. Where managed migration is more efficient than the cease and re-provide approach and there is demand from CPs, BT should offer such packages.
- 8.275 We also note that in each wholesale leased line market, BT is subject to an obligation not to discriminate unduly and must therefore ensure that any differences between

the migration arrangements offered to CPs and those used by its downstream divisions are not unduly discriminatory.

#### Recovery of migration costs

- 8.276 We acknowledge that CPs may prefer to recover migration costs for retail services through on-going charges in order to reduce the risk of prompting their retail customers to re-tender for their services. It does not, however, follow that the same approach should therefore apply to BT's wholesale charges.
- 8.277 We consider that recovering migration costs from on-going charges for replacement services could lead CPs to make inefficient choices about end-of-life service migration as they would not be directly exposed to migration costs. There is also an attendant risk that migration costs may be borne by users who have not migrated from legacy services. These risks also arise and are potentially greater with complex migration scenarios which are likely to incorporate additional elements such as circuit rearrangements.
- 8.278 We also consider that recovering migration costs from replacement services could undermine competition by creating an incentive for CPs to follow the migration path specified by BT rather than considering alternatives such as extending their own network or renting a service from another CP.
- 8.279 Also, importantly, wholesale migration charges do not prevent CPs from taking a commercial decision to recovering those costs from on-going charges for their retail services.
- 8.280 We have therefore decided not to require BT to recover end-of-life migration costs from replacement services.
- The WES to EAD LA migration scenario
- 8.281 The WES to EAD LA migration scenario cited by Vodafone and THC in Vodafone's response to the May 2015 BCMR consultation comprises two activities:
  - a circuit rearrangement comprising an external shift of the B-end of the circuit from a remote location to a Vodafone POP in the serving exchange; and
  - migration from a WES circuit to an EAD LA circuit (involving replacement of the terminal equipment at both ends of the circuit).
- 8.282 We note that Openreach supports this migration scenario, which can be ordered as an external shift (to re-terminate the circuit at the serving exchange), on Time Related Charges (TRCs) terms in conjunction with a product migration for which there is a fixed charge. It appears to us that the managed migration package offered by Openreach for like-for-like WES to EAD migration (as discussed above) may be superior to these arrangements because Openreach takes full responsibility for the migration, offers guaranteed rollback (in the event of problems) and offers a fixed charge.
- 8.283 Given the similarities between the two migration scenarios it appears to us that a similar managed migration package could be developed for the WES to EAD LA migration scenario if Vodafone or another CP were to request it through the SoR process.

#### Migration associated with VLB service withdrawal

- 8.284 We acknowledge that VLB service withdrawal is likely to be a major challenge for CPs and end-users over the next few years given the large number of VLB services currently in operation. However, we do not agree that these challenges either could or should be addressed by requiring BT to take full responsibility for all of the migration and associated costs.
- 8.285 Firstly in relation to the migration arrangements, it is not clear to us that managed migration packages have a major role to play, for several reasons:
  - There are no direct replacements for VLB services and consequently end-users are likely to migrate to a range of alternative services including broadband, EFM, 2Mbit/s TI leased lines, Ethernet leased lines, radio and microwave solutions.
  - Some end-users will need to make significant changes to their equipment since replacement services typically use packet-based transmission protocols rather than the deterministic protocols supported by VLB services. They may therefore require a period of parallel running to commission and test their new equipment.
  - There appears to be little scope for like-for-like migration (where migration is effected by changing the terminal equipment) because:
    - VLB services generally use BT's copper access network whereas replacement services typically use BT's fibre access network;
    - Replacement services are likely to be interconnected at different locations to VLB services. For example sub-2Mbit/s digital services are typically interconnected at TI trunk nodes whereas Ethernet services are more commonly interconnected more locally, e.g. at the service exchange.
- 8.286 BT's previous work on packages to facilitate migration from PPCs and RBS Backhaul to Ethernet also illustrates the difficulties involved in developing viable managed migration packages for TI services. In 2009, as part of a package of developments known as the Openreach Industry Commitments<sup>517</sup>, Openreach investigated options for migrating PPCs and RBS Backhaul circuits to Ethernet by reusing existing fibre connections between customer premises and serving exchange. In February 2012, Openreach discontinued this development after concluding that:
  - reusing the serving exchange to customer fibre segment would be likely to be more costly than the provision of a new Ethernet circuit alongside the PPC (i.e. more expensive than the cease and re-provide approach) because BT's and CPs' technicians would need to be present at both ends of the circuit and the serving exchange to manage the migration;
  - the migration process would be complex and it would be challenging to achieve the 4 hour changeover specified by CPs;

<sup>&</sup>lt;sup>517</sup> In 2009, we agreed to relax some of BT's commitments in its Undertakings relating to the operational support systems separation which had been affected by resource constraints in Openreach's product development teams. In connection with this agreement, Openreach gave a firm commitment to deliver to a package of important systems and product developments that it had agreed with industry. These developments became known as the Openreach Industry Commitments.

- fibre reuse would be limited to the customer premises to local exchange segment as PPCs use shared infrastructure from the serving exchange; and
- this migration solution would have limited applicability as a significant proportion • of PPCs are provided on copper infrastructure.
- 8.287 Following feedback from CPs, Openreach explored an alternative approach involving the use of optical splitters to release a customer premises to serving exchange fibre segment from dual fibre PPCs to facilitate the provision of an EAD service.<sup>518</sup> In April 2013 it discontinued this development citing low engagement by CPs in the 'proof of concept' trial that it had proposed in November 2012.<sup>519</sup>
- 8.288 In light of these considerations, there appears to be limited scope for effecting migration by rearranging existing services as part of a managed migration package. In most cases, cease and re-provide is likely to be the most efficient approach.
- 8.289 Secondly, in relation to cost recovery, the general considerations discussed above about maintaining efficient incentives and competition are also relevant to VLB migration. Moreover, given the wide range of replacement services, it would be difficult to determine which services the migration costs should be allocated to. There would also be an attendant risk that VLB migration costs would be borne by users other than former VLB users. We therefore consider that BT should not be required to recover VLB migration costs from replacement services.
- 8.290 We do, however, consider there is a need for industry coordination to ensure that VLB migration is completed by BT's planned service withdrawal date. For example, given the very large number of VLB circuits, there is clearly a risk that BT's leased line provisioning capacity could be challenged if CPs do not ramp up their migration activities sufficiently early. We welcome BT Wholesale's recent update about its service withdrawal plans and also its offer to discuss migration requirements with CPs.<sup>520</sup>

#### Whether BT should be required to offer emulated VLB TI services

- 8.291 We consider that the alternative services available are likely to suit the needs of the majority of end-users of VLB services. Ultimately, most will migrate either to broadband services, which offer lower prices, or to other leased line services including EFM services, which have higher bandwidths and lower unit costs (price per Mbit/s).
- 8.292 A minority of users have no need for additional bandwidth, yet still require leased line features, so alternative leased line services are less well suited to their needs. We disagree that this outcome is not reflective of a competitive market as THC has suggested. Rather we consider that the options available are reflective of wider technology and mass market trends towards higher bandwidth services.

<sup>&</sup>lt;sup>518</sup> Under this approach, optical splitters would be used to convert the dual fibre local end of a PPC to bidirectional working over a single fibre. <sup>519</sup> BT Openreach website:

http://www.openreach.co.uk/orpg/home/updates/briefings/ethernetservicesbriefings/ethernetservicesb riefingsarticles/eth02213.do 520 BT Wholesale, Product Update October 2015 BT Wholesale PPC and RBS Services,

https://www.btwholesale.com/pages/sc/static/newsandinsights/briefings/PPCs/Product\_Update\_Octob er 2015 BT Wholesale PPC and RBS Services/index.htm

- 8.293 TDM emulation over Ethernet or IP is a well-established technology and is commonly known as 'Pseudo Wire'.<sup>521</sup> Whilst such 'emulated TI services' could potentially offer a suitable technical solution for end-users who still require TI services, we note that BT already offers a suitable alternative service in the form of 2Mbit/s PPCs. Moreover, it is unlikely that an emulated service would be any cheaper than a 2Mbit/s PPC.
- 8.294 We also note that the pricing differential between VLB leased lines and more modern leased lines services is likely to have arisen because the prices of VLB leased lines do not reflect the cost of long-term provision on an on-going basis, including the costs of asset replacement, as the option of replacing the assets is not available. The closure decision is in effect a recognition that the costs of maintaining and operating a separate network to provide VLB services on an on-going basis would be prohibitive, and that it is efficient for VLB users to migrate to alternatives.
- 8.295 We therefore decided not to impose a specific obligation requiring BT to provide emulated TI services as THC has suggested. We note, however, that CPs could use the SoR process to request an emulated VLB TI product.

# **Time Related Charges**

- 8.296 In the May 2015 BCMR Consultation we proposed to impose a charge control on Ethernet Time Related Charges (TRCs). TRCs are fees levied for services such as fault repair and providing or rearranging services where the work is not covered within Openreach's terms of service.<sup>522</sup>
- 8.297 In this section we consider BT's comments about the 'contestability' of Ethernet TRCs and whether they should be included in the charge control.
- 8.298 We set out our decisions concerning other aspects of the charge control for TRCs in Section 8 of Volume II.

# **BT's comments**

- 8.299 BT disagreed with our proposal to impose a charge control on Ethernet TRCs. BT argued that most Ethernet TRCs are highly contestable (i.e. capable of being carried out by non-Openreach engineers) and that BT should therefore be able to charge a commercial rate. To support this view, BT stated that:
  - [≫]% of all Ethernet repair visits are driven by non-Openreach faults, i.e. faults on customers' equipment or at customers' premises;
  - all tests carried out by Openreach Ethernet engineers to clear a non-Openreach fault are 100% replicable by a third party and not proprietary to Openreach; and

<sup>&</sup>lt;sup>521</sup> For example, BT Wholesale has deployed this technology as part of its MEAS solution to deliver TI circuits over Ethernet services for mobile backhaul.

<sup>&</sup>lt;sup>522</sup> Openreach, Price list, Time Related Charges (Including Shifts), https://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=hcaYjIWe gP2u2KS8FTdcOBScuIM1Opem5f8dVePnh8UIMnGHsqdC0vzO163bJmh34D91D7M0q8u%2F%0AII SgtIFAKw%3D%3D (TRC Price List)

- across all EAD faults, only [≫]% of remote diagnostic tests with an initial 'pass' result were closed as an Openreach fault. Remote diagnostic tests can be conducted by BT or CPs prior to an engineer visit.
- 8.300 In addition, BT argued that reducing Ethernet TRCs via a charge control would:
  - remove the incentive for CPs to invest in upgrading their own diagnostics to avoid the TRCs incurred for non-Openreach faults; and
  - incentivise CPs to raise a fault with Openreach rather than employ third party engineering firms. BT said that reputable engineering firms are typically [% ]% more expensive on their hourly rates than Openreach's TRC rates. In addition, CPs know they get a rapid response from Openreach Ethernet response time is 5 hours and BT claims that CPs often have SLAs with their customers about response time.<sup>523</sup>

# Our reasoning and decisions

- 8.301 Although Ethernet TRCs relate to activities that fall outside BT's standard terms of service, they generally relate to activities that are reasonably necessary for CPs to provide downstream services using BT's wholesale leased line products. We therefore expect that the majority of Ethernet TRCs fall within the scope of the network access conditions that we are imposing and should be subject to the TRC charge control. Whether or not any particular TRC falls within the scope of the conditions depends on the conditions under which it is supplied.
- 8.302 The majority of Ethernet TRCs relate to activities on the BT network or equipment that can only be undertaken by BT staff and are therefore not contestable i.e. it is necessary for BT to provide these TRCs. Even activities not relating to BT's network or equipment may not be contestable if there are practical or economic constraints that prevent CPs using their own staff or other suppliers. For example, in the case of fault repair, limitations in diagnostic test functionality may mean that CPs are unable to determine in advance whether an activity relating to BT's network or equipment is likely to be required.
- 8.303 In light of BT's comments we sought information from BT and other CPs to determine whether any Ethernet TRCs may be contestable.
- 8.304 TRCs relating to provisioning activities account for approximately [≫]% of BT's revenues from Ethernet TRCs, while TRCs relating to repair activities account for approximately [≫]%. Given the differences in the activities undertaken we considered the contestability of provisioning and repair TRCs separately.<sup>524</sup>

#### **Provisioning TRCs**

8.305 We obtained information from BT on all Ethernet provisioning TRCs undertaken in February 2015.<sup>525</sup> Our analysis of this information indicated that almost all of the TRCs related to out-of-hours work for circuit provisioning, rearrangements and shifts.

<sup>&</sup>lt;sup>523</sup> BT response to the July 2015 LLCC Consultation, paragraphs 321 to 328.

<sup>&</sup>lt;sup>524</sup> BT response to 11<sup>th</sup> S135, covering letter.

<sup>&</sup>lt;sup>525</sup> BT response to 11<sup>th</sup> S135, questions A1 and A2.

We also obtained confirmation from BT that Openreach engineers do not usually work on equipment belonging to other CPs or end-users.<sup>526</sup>

8.306 As these activities require work on BT's network and equipment, we consider they need to be undertaken by BT staff. We therefore consider that provisioning TRC activities are not contestable and should be subject to the TRC charge control.

# Repair TRCs

- 8.307 In order to investigate the contestability of Ethernet repair TRCs we:
  - obtained information from BT on all Ethernet repair TRCs undertaken in February, March and April 2015;<sup>527</sup>
  - obtained information from BT concerning the accuracy of the diagnostic test functionality of its EAD service;<sup>528</sup>
  - we reviewed BT's product documentation concerning the diagnostic test facilities of its wholesale Ethernet services; and
  - we spoke to two CPs that incur the most repair TRCs to understand their impression of BT's diagnostic tests and the diagnostic capabilities of their own equipment.
- 8.308 We found that TRCs are charged for a range of activities as shown in Table 8.2 below.

Activity type	Proportion of TRCs by revenue
BT service Right When Tested (RWT) <sup>529</sup>	[≫]%
Customer equipment fault <sup>530</sup>	[≫]%
Abortive visit	[≫]%
Customer power	[≫]%
Damage (to BT equipment or cables)	[≫]%
Other activities	[≫]%

#### Table 8.2: Classification of Ethernet repair TRCs

Source: Ofcom analysis of Ethernet repair TRCs Feb to Apr 2015

8.309 We consider that Damage is not contestable as it relates to work on BT network or equipment that needs to be undertaken by BT staff. We consider that Abortive Visit is not contestable as it relates to instances where CPs requested BT to attend end-

<sup>&</sup>lt;sup>526</sup> BT response to 26<sup>th</sup> S135, question A2.

 $<sup>^{527}</sup>$  BT response to 26<sup>th</sup> S135, question A1.

<sup>&</sup>lt;sup>528</sup> BT submission to Ofcom 2 December 2015.

<sup>&</sup>lt;sup>529</sup> Cases where BT's diagnostic tests indicated no fault and the diagnoses were subsequently confirmed by an on-site test by BT staff.

<sup>&</sup>lt;sup>530</sup> As per RWT except that BT staff also observed a fault with CP or end-user equipment when they visited the customer site.

users' sites and work could not be undertaken, typically because there was no access to the premises or the end-users refused permission for BT staff to carry out testing or repair activities.

- 8.310 In the case of Customer Power faults, remote diagnostics will typically not indicate definitively whether the fault is with the end user or BT's equipment. We consider that it would not be unreasonable for CPs to ask BT to investigate such faults (after an initial dialogue with the end-user) as this minimises the risk of a double visit if the fault proves to be in BT's equipment rather than the end-user's power supply. We therefore consider that Customer Power faults are not contestable.
- 8.311 RWT and Customer Equipment TRCs both relate to repairs where no fault was detected with the BT service either with the initial diagnostic test or at the subsequent site visit. We consider these TRCs would be contestable if BT's diagnostic tests are sufficiently accurate for CPs to determine with a high degree of certainty whether the BT service is faulty. With highly accurate remote diagnostics, the most efficient course of action in cases where a BT fault is not indicated would be for the CP to dispatch its own staff to investigate since the fault would most likely reside in the CP or customer equipment connected to the circuit.
- 8.312 In relation to EAD we found that BT and CPs have access to detailed diagnostic test functionality including:
  - non-intrusive tests to obtain details about the port status, power supply status, network power levels and customer interface frame count;
  - intrusive test capabilities including loop back tests plus all of the above; and
  - 'dying gasp' reporting when power to the Network Terminating Equipment (NTE) is disconnected – so the CP has positive confirmation that power has been disconnected or that it has failed.
- 8.313 BT's analysis also demonstrated that BT's initial diagnostic tests for EAD services are sufficiently accurate for CPs to have a high degree of confidence about whether the EAD service is faulty. BT reviewed all EAD faults that required a customer site visit by a BT technician in 2013/14<sup>531</sup> and compared the initial diagnostic test result performed before the site visit with the final diagnostic test result undertaken after the visit. This analysis showed that the initial remote diagnostic tests had an overall accuracy of [≫]%. In just []% of cases, the remote test indicated no fault with the EAD service even though a fault with the EAD service was subsequently found.
- 8.314 In view of these findings, we consider that in cases where BT's diagnostic tests indicate that BT's service is not faulty, the most efficient course of action would be for CPs to dispatch their own technicians to repair the fault. We therefore consider that EAD repair TRCs relating to RWT and Customer Equipment are contestable and it is not necessary for BT to provide these TRCs.
- 8.315 We found that the legacy Ethernet services WES, BES and WEES had more limited diagnostic test capabilities than EAD. We also noted that some of these services are unmanaged (i.e. have no remote diagnostic capability). In view of this, we consider that CPs would not be able to establish whether the circuit is faulty with the same degree of confidence as with EAD and therefore RWT and Customer Equipment

<sup>&</sup>lt;sup>531</sup> A total of [>] faults.

TRCs for these services are not contestable and therefore are reasonably necessary for BT to provide.

8.316 Our conversations with CPs support our conclusion that remote diagnostics for EAD provide a reliable indication of whether the service is faulty and that other Ethernet services have more limited diagnostic capabilities.

#### Conclusions about contestability

- 8.317 In light of our analysis we have concluded that:
  - EAD repair TRCs relating to RWT and Customer Equipment are contestable, fall outside our network access obligation, and therefore should not be subject to the charge control; and
  - all other Ethernet repair TRCs are not contestable and should be subject to the charge control.
- 8.318 Table 8.3 below summarises our conclusions.

#### Table 8.3: Conclusions on contestability of Ethernet repair TRCs

Activity type	Contestability	Subject to the TRC Charge control	
Damage (to BT equipment or cables)	Not contestable	Yes	
Abortive visit	Not contestable	Yes	
Customer power	Not contestable	Yes	
BT service 'Right When Tested (RWT)' <sup>532</sup>	Contestable for EAD	EAD – No Other Ethernet - Yes	
Customer equipment fault <sup>533</sup>	Ethernet services		
Other Ethernet repair TRCs	Not contestable	Yes	

8.319 We estimate that as a result of our decision, TRC revenues of approximately  $\mathfrak{L}[\mathscr{H}]$  to  $\mathfrak{L}[\mathscr{H}]$ , or about  $[\mathscr{H}]$ % of Ethernet repair TRCs will be removed from the scope of the TRC charge control.

<sup>&</sup>lt;sup>532</sup> Cases where BT's diagnostic tests indicated no fault and the diagnoses were subsequently confirmed by an on-site test by BT staff.

<sup>&</sup>lt;sup>533</sup> As per RWT except that BT staff also observed a fault with CP or end-user equipment when they visited the customer site.

# Section 9

# Specific remedy for the CISBO markets – Dark Fibre

# Introduction

- 9.1 In this section we set out the specific remedies relating to the provision of dark fibre, which we have decided to impose on BT in the following wholesale leased line markets:
  - market for Contemporary Interface Symmetric Broadband Origination (CISBO) services in the London Periphery (LP); and
  - market for CISBO services in the Rest of UK (RoUK), which we define as the UK excluding the Central London Area (CLA), the LP and the Hull area).

In this section we refer to these markets together as the CISBO markets.

- 9.2 This follows our assessment in Section 7 that it is appropriate to include dark fibre in the package of remedies we have decided to impose on BT.
- 9.3 The package of remedies we have decided to impose in the CISBO markets in which we find that BT has SMP consists of:
  - the remedies included in this section;
  - the general remedies set out in Section 8;
  - the specific active remedies set out in Section 10;
  - the interconnection and accommodation remedies set out in Section 12; and
  - the Quality of Service remedies set out in Section 13.
- 9.4 The SMP remedies that we have decided to impose are based on the nature of the competition problems we have identified in the CISBO markets, as discussed in Section 7.
- 9.5 Table 9.1 below summarises the dark fibre remedies that we have decided to impose for the CISBO markets.

Markets	Dark fibre remedy	
CISBO in the Rest of UK excluding Hull CISBO in the London Periphery	Specific access obligation	<ul> <li>Provide dark fibre terminating segments upon reasonable request and on fair and reasonable terms, conditions and charges.</li> <li>Provide dark fibre terminating segments, including: <ul> <li>disaggregated access and backhaul segments</li> <li>short range end-to-end segments</li> </ul> </li> </ul>
	Non- discrimination	<ul><li>No undue discrimination</li><li>Equivalence of Inputs</li></ul>
	Reference Offer	Specified minimum requirements for the Reference Offer. Service Level Agreements (SLAs) and Service Level Guarantees (SLGs) to be agreed and finalised as part of industry negotiations regarding product specification.
	Pricing	'Active-minus' by reference to the corresponding 1Gbit/s product and the distributed long run incremental cost (LRIC) of its active elements, complemented by guidance on the calculation of the LRIC of the active elements.
	Implementation	<ul> <li>Publish a draft reference offer by 1 September 2016</li> <li>Publish a final reference offer by 1 December 2016</li> <li>Launch dark fibre access by 1 October 2017 )</li> </ul>
	Transparency as to quality of service	<ul> <li>Key Performance Indicators (KPIs) defined in Direction</li> <li>Reporting requirements to come into effect by 1 April 2018.</li> </ul>

#### Table 9.1: Summary of the dark fibre remedy decision

- 9.6 This section is structured as follows:
  - we set out each proposed remedy in relation to dark fibre from the May 2015 BCMR Consultation; and
  - we summarise stakeholders' responses to each of the proposals, provide our assessment of these and conclude with our decisions in relation to imposing dark fibre in the CISBO markets.

# Requirement to provide access to dark fibre on reasonable request

#### Proposals in the May 2015 BCMR Consultation

#### Scope of the remedy

9.7 We proposed to include a requirement to provide dark fibre in the network access condition for the CISBO markets in the LP and in the RoUK.

- 9.8 We did not consider it appropriate to propose to restrict the use of the remedy to any specific applications or products in the wholesale leased lines markets. We considered that the benefits of dark fibre were likely to be realised across a range of applications and any undue restrictions in product use may reduce the benefits of dark fibre. In particular, limiting the allowed use may prevent Communications Providers (CPs) from maximising the scale and scope of efficiencies of their investment.
- 9.9 To mitigate concerns that a dark fibre remedy might undermine existing infrastructure investments in the competitive core network, we considered it appropriate to apply an upper limit to the distance between the ends of a dark fibre circuit which BT should be required to provide. We considered that this distance limit should allow CPs to use dark fibre in most backhaul applications. Therefore, we proposed a distance limit of 50km, measured on a straight line basis between the circuit ends.
- 9.10 We proposed that the network access condition requiring BT to provide network access on fair and reasonable terms, conditions and charges would apply equally to dark fibre.

# Design of the remedy

- 9.11 We considered that CPs should be able to obtain dark fibre circuits in similar configurations to BT's current range of active services. Therefore, we proposed to require BT to provide dark fibre terminating segments, including:
  - disaggregated access and backhaul segments; and
  - short-range end-to-end segments.
- 9.12 We considered that the technical, operational (provisioning and repair) and commercial aspects of BT's current offer of Ethernet services should provide a benchmark for establishing the arrangements applicable to dark fibre. In particular, we considered that BT's Ethernet Access Direct (EAD) and EAD Local Access (LA) services should provide a benchmark for the purpose of developing dark fibre.
- 9.13 However, we also anticipated that the operation of BT's dark fibre products would differ from EAD services in some respects. For example, some differences in fault repair processes may be necessary since BT would not have the proactive circuit monitoring capabilities that it has with active services. In addition, we also considered that a dark fibre remedy could facilitate new handover arrangements for the termination of access segments. This was because, unlike active services, which are generally terminated in buildings (because of power and environmental requirements), it would be feasible for dark fibre access segments to be terminated in external structures such as joint boxes, where they could, for example, be directly spliced to CPs' own fibre networks.
- 9.14 Depending on the specification of the service required, leased lines require one or two fibres. Therefore, we proposed to require BT to offer both one and two-fibre versions of dark fibre.

#### Interconnection and accommodation services

9.15 We considered that CPs would require interconnection and accommodation services in order to use the dark fibre remedy effectively.

- 9.16 We proposed that the interconnection and accommodation that applied to the active remedies in the CISBO markets should also apply to the dark fibre remedy.
- 9.17 Although we considered that there may be demand for other forms of interconnection, specifically In-Span Handover (ISH) and ISH Extension which are more commonly used in the TISBO market, we recognised that the demand for these types of interconnection is not yet established and did not propose to impose a specific obligation in relation to these types of interconnection. We considered that such requirements are best agreed as part of the implementation process.

# Stakeholders' responses to the May 2015 BCMR Consultation

#### Scope of the remedy

- 9.18 In Section 7, we discuss stakeholders' responses to our proposals to include the requirement to provide dark fibre in the network access condition for the CISBO markets in the LP and in the RoUK.
- 9.19 In Annexes 18, 19, 20, we discuss stakeholders' responses relating to the benefits and risks of imposing a dark fibre remedy.

#### Design of the remedy

9.20 In Annex 22, we discuss stakeholders' responses to the proposed design of the dark fibre remedy.

#### Interconnection and accommodation services

9.21 Vodafone considered that co-location, ancillary services and interconnection services for active equipment (provided by the CP) should be provided in a manner consistent with those for EAD services.<sup>534</sup>

#### **Our final decision**

#### Scope of remedy

- 9.22 In Section 7 we explain that we have decided to include a requirement to provide dark fibre in the network access condition for the CISBO markets in the LP and in the RoUK.
- 9.23 We have decided that it is not appropriate to restrict the use of the dark fibre remedy to particular applications. We consider that placing any undue restrictions on the use of dark fibre may reduce the benefits of the dark fibre remedy. We set out the benefits of dark fibre in Annex 18.
- 9.24 We recognise that restricting the scope of the dark fibre remedy to particular applications may reduce the risks to BT and other infrastructure competitors. However, we consider that our pricing approach to dark fibre, whereby its price is benchmarked to BT's 1Gbit/s EAD product, significantly reduces the scale of the risks to BT and other infrastructure competitors. We explain our decision relating to the approach to pricing dark fibre in Annex 21.

<sup>&</sup>lt;sup>534</sup> Vodafone response to May 2015 BCMR Consultation, Annex 3, page 1.

- 9.25 We explain in Section 4 that we have not found SMP in core conveyance, which is CISBO connectivity between certain buildings in major urban centres throughout the UK, including particular exchanges and data centres. This is because a number of CPs have extended their fibre infrastructure to these buildings and provide core conveyance.
- 9.26 With the current active remedies there are no explicit distance limitations imposed by regulations, but the risk of usage of these for core conveyance is minimised by the product specifications for BT's wholesale services. BT specifies distance limits for most of its Ethernet services and BT's main backhaul product Ethernet Backhaul Direct (EBD) is only available between specified locations.
- 9.27 Dark fibre would be inherently more flexible in terms of circuit lengths and, absent other restrictions, could readily be used to provide core conveyance. In light of this, we have considered whether it would be appropriate to apply distance limits (or other restrictions) to the dark fibre remedy to provide additional clarity about its scope and minimise the risk of dark fibre being used to provide core conveyance.
- 9.28 We consider that a distance limit should be sufficient for a CP to provide a backhaul connection to the nearest competitive core node. In this context, we note that the majority of Access Serving Nodes (ASNs) are within 20km of a core node and that around 86% are within 45km. Therefore, we consider that an upper distance limit of 45km (measured on a straight line basis between the circuit ends) for dark fibre would be sufficient to serve the large majority of backhaul needs. This distance limit corresponds to the distance limit that Openreach sets in relation to its EAD product).
- 9.29 We consider that the distance limit alongside the SMP conditions expressly limiting the scope of the remedy to the wholesale markets we have specified will mitigate the risk of dark fibre being used in the competitive core market. We also consider that it may be reasonable for BT to limit access to reflect the scope of the SMP conditions and that there may be a role for industry discussion to develop workable and robust rules in this regard.
- 9.30 In Section 8 we explain that the network access condition requires BT to provide network access on fair and reasonable terms, conditions and charges. This would apply equally to dark fibre.

# Design of remedy

- 9.31 By requiring BT to provide dark fibre we allow providers to assemble a wide range of inputs in order to compete and promote the incentive to innovate. We consider that an appropriate way to ensure effective competition is to impose an SMP condition on BT requiring it to provide dark fibre terminating segments upon reasonable request on fair and reasonable terms, conditions and charges.
- 9.32 We consider that, in the absence of such a requirement, BT would have an incentive and the ability to refuse access to dark fibre, with the effect of hindering efficiency, innovation, and effective and sustainable competition in the corresponding downstream markets, ultimately against end-users' interests.
- 9.33 We consider that CPs should be able to obtain dark fibre circuits in similar configurations to BT's current range of active services. Therefore, we have decided to require BT to provide dark fibre terminating segments, including:
  - disaggregated access and backhaul segments; and

- short-range end-to-end segments.
- 9.34 In order to achieve our aim we consider it important to provide consistency with the active services to ensure that CPs purchasing dark fibre will not be put at a competitive disadvantage to purchasers of active products in terms of the configurations and applications available with active services, and also in relation to the quality, processes and systems with which BT provides dark fibre.
- 9.35 We consider that the technical, operational and commercial aspects of BT's current offer of Ethernet services (in particular EAD and EAD LA) should provide a benchmark for establishing the arrangements applicable to dark fibre. BT's EAD products provide a range of connectivity options which fulfil CPs access and backhaul requirements, and BT's processes for providing those active products should be capable of adaptation to include the provision of dark fibre.
- 9.36 In Annex 22, we set out and explain our decisions relating to the non-price design aspects of dark fibre remedy. These are summarised in Table 9.2.

Markets	Dark fibre remedy	
	Distance limits	Distance limit of 45km for dark fibre based on the end-to-end radial distance of the circuit.
CISBO in the RoUK	Use of dark fibre for CPs' access network extensions	<ul> <li>BT to provide dark fibre terminating segments of the following types:</li> <li>disaggregated access and backhaul segments; and</li> <li>short range end-to-end segments.</li> </ul>
CISBO in the LP	Handover locations	No specific obligation on BT to terminate dark fibre access segments in joint boxes, manholes and other external structures.
	Arrangements concerning provision of new infrastructure	The same arrangements should apply for both the active and dark fibre remedies and the existing charging arrangements for network extensions in relation to active services would provide the most suitable solution for dark fibre.
	Provisioning and repair processes	The provisioning processes (along with appropriate SLAs and SLGs) should be developed by BT and agreed with industry as part of the implementation process for dark fibre.
	Service migration processes	The requirements for migration processes are best agreed by negotiation between CPs and BT during the implementation process.
	Infrastructure discovery	No specific requirement on BT to provide infrastructure information.

#### Table 9.2: Summary of non-price design aspects of dark fibre

9.37 Depending on the specification of the service to be provided, leased lines require one or two fibres. Therefore, we have decided to require BT to include the option for one or two fibres as per CPs' requirements.

#### Interconnection and accommodation services

- 9.38 We consider that CPs will require interconnection and accommodation services in order to use the dark fibre remedy effectively.
- 9.39 We have decided that the interconnection and accommodation remedies that apply to the active services in the CISBO markets should also apply to the dark fibre remedy. Full details of our decisions in relation to imposing specific obligations for interconnection and accommodation services in the CISBO markets are provided in Section 12.
- 9.40 Although we consider that there may be demand for other forms of interconnection, specifically In-Span Handover (ISH) and ISH Extension which are more commonly used in the TISBO market, we also recognise that the demand for these types of interconnection is not yet established. Therefore, we have decided not to impose a specific obligation in relation to these types of interconnection. We consider that such requirements are best agreed as part of the implementation process.

#### Legal tests

- 9.41 For the reasons set out above, and in Section 7 and summarised below, we are satisfied that the decision to include dark fibre in the network access condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 9.42 Section 87(3) of the Act authorises the setting of an SMP services condition 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.
- 9.43 When considering the imposition of such conditions in a particular case, we must take into account six factors set out in Section 87(4) of the Act, including, *inter alia*:
  - the technical and economic viability of installing and using other facilities, including the viability of other network access products, whether provided by the dominant provider or another person, that would make the proposed network access unnecessary;
  - the feasibility 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); and
  - the need to secure effective competition (including where it appears to us to be appropriate, economically efficient infrastructure based competition) in the long term.
- 9.44 In imposing the general requirement for the provision of network access, we have taken all of the factors in section 87(4) into account.

- 9.45 The definition of access and the way in which we might assess reasonable demands for access are set out in our Access Guidelines.<sup>535</sup> We consider it is appropriate in cases where we have found that a CP has SMP (such as BT in this case) to impose an access obligation on that provider requiring it to meet all reasonable requests for network access within the relevant wholesale market, irrespective of the technology required, on fair and reasonable terms, conditions and charges.
- 9.46 In Section 4 we find that BT has SMP in the CISBO market in the LP and in the CISBO market in the RoUK (excluding Hull). In Section 7, in light of our market assessment and SMP findings we identify the competition concern that in the absence of appropriate *ex ante* regulation, BT would not make access to its networks, services or associated facilities available on terms that would secure efficient investment and innovation, both in the relevant wholesale markets and in the related downstream retail markets.
- 9.47 Therefore, we consider that a requirement for BT to provide specific network access is appropriate. It facilitates competition in downstream markets by enabling CPs to compete without the need to invest in a network, an investment which we consider, on the basis of our market analysis, represents a structural barrier to entry and expansion in the leased lines markets.
- 9.48 Consequently, we consider these requirements are necessary for securing effective competition, including promoting innovation and securing economically efficient infrastructure based competition, in the long term. The requirements for BT only to meet reasonable network access requests also ensures that due account is taken of the technical and economic viability of installing and using other facilities, the feasibility of the imposed network access, and of the investment made by BT initially in providing the network.
- 9.49 We consider that this decision meets our duties under sections 3 and 4 of the Act. We consider that the imposition of a network access obligation promotes competition in relation to the provision of electronic communications networks and services, ensuring the provision of network access and service interoperability for the purposes of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of the obligation would ensure that BT offers the wholesale products required by other CPs to compete effectively in the downstream markets.
- 9.50 With regard to the Community requirements set out in section 4 of the Act, we believe that the imposed condition meets the requirements. Specifically, we believe section 4(8) is met, where the obligation has the purpose of securing efficient and sustainable competition in the markets for electronic communications networks and services, by helping to ensure that other CPs can compete effectively in the downstream retail markets by using wholesale products offered by BT.
- 9.51 Section 47(2) of the Act requires conditions and directions respectively to be objectively justifiable, non-discriminatory, proportionate and transparent. The imposed conditions and directions are:
  - objectively justifiable, in that they facilitate and encourage access to BT's network and therefore promote competition to the benefit of consumers;

<sup>&</sup>lt;sup>535</sup> See *Imposing access obligations under the new EU Directives*, 13 September 2002, available at <a href="http://www.ofcom.org.uk/static/archive/oftel/publications/ind\_guidelines/acce0902.htm">http://www.ofcom.org.uk/static/archive/oftel/publications/ind\_guidelines/acce0902.htm</a>
- not unduly discriminatory, as they are only for BT and no other CP has been found to hold a position of SMP in these markets;
- proportionate, since they are targeted at addressing the market power that we propose BT holds in these markets and do 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 provide access to its networks in order to facilitate effective competition.
- 9.52 For the reasons set out above, we consider that the imposed conditions are appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

#### The BEREC Common Position

9.53 We have taken utmost account of the BEREC Common Position in reaching our decision.<sup>536</sup> In particular, in relation to achieving the objectives of "assurance of access" and of "fair and coherent access pricing" we have referred to paragraphs BP5 and BP36. We consider that our decision is consistent with the best practice set out in the BEREC Common Position.

# Requirement not to discriminate unduly and Equivalence of Inputs (EOI)

- 9.54 A non-discrimination obligation is intended as a complementary remedy to the network access obligation, principally to prevent the dominant provider from discriminating in favour of its own downstream divisions and to ensure that competing providers are placed in an equivalent position. Without such an obligation, the dominant provider is incentivised to provide the requested wholesale network access service on terms and conditions that discriminate in favour of its own downstream divisions.
- 9.55 Non-discrimination can have different forms of implementation. A strict form of nondiscrimination – i.e. a complete prohibition of discrimination – would require the SMP operator to provide exactly the same products and services to all CPs (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. Essentially, the inputs available to all CPs (including the SMP CP's own downstream divisions) would be provided on a truly equivalent basis, an arrangement which has become known as EOI. An EOI obligation removes any degree of discretion accorded to the nature of the conduct. The concept of EOI was first identified in the Strategic Review of Telecoms in 2004/05 as one of our key policy principles to ensure that regulation of the telecommunication markets is effective. Following on from this review, a specific form of EOI was implemented in 2005 by means of the BT Undertakings.

<sup>&</sup>lt;sup>536</sup> BoR (12) 126, *BEREC* common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.1 1.26.pdf

9.56 On the other hand, a less strict implementation of non-discrimination may allow for flexibility and result in a more practical and cost-effective implementation of wholesale inputs in cases where it is economically justified.

#### Proposals in the May 2015 BCMR Consultation

#### <u>E0I</u>

- 9.57 In the May 2015 BCMR Consultation we proposed that network access in the CISBO markets in which BT has SMP should be provided on an EOI basis.<sup>537</sup>
- 9.58 We considered that in the absence of an EOI requirement on dark fibre, BT's SMP in these markets means that it would have both the incentive and the ability to refuse to provide dark fibre access or provide superior dark fibre products to its own downstream divisions compared with those it provides to other CPs, with the effect of hindering effective and sustainable competition in the corresponding downstream markets, ultimately against the interests of end-users.
- 9.59 Therefore, we proposed that BT should provide dark fibre on an EOI basis. However, we did not propose to *require* BT to consume its regulated dark fibre products in providing its active services. This was because we considered it would involve Openreach re-engineering many of its business processes that could lead to disruption in the provision of existing services as well as adding to the overall costs associated with the dark fibre remedy.

#### No undue discrimination

9.60 In addition, we proposed to apply a no-undue-discrimination obligation to dark fibre access since we proposed not to require BT to use dark fibre on an EOI basis as an input into providing its active services.

#### Stakeholders' responses to the May 2015 BCMR Consultation

- 9.61 TalkTalk considered it misleading (and inconsistent with Ofcom's own position in the BCMR and elsewhere) for Ofcom to describe its dark fibre proposals as requiring it to be provided on an EOI basis, since Ofcom's proposals did not include a must-use obligation on BT. In the absence of a must-use obligation, it considered that Ofcom's proposed EOI rules would impose no obligation on BT at all.<sup>538</sup>
- 9.62 TalkTalk considered that Ofcom was wrong to suggest that under its proposals "*CPs can compete on a level playing field*" since this can only be achieved by imposing EOI with must-use obligations. It considered that where BT does not have to use the dark fibre product itself, BT will have strong incentives and the ability to discriminate against competitors by degrading the product quality and to delay improvements to avoid a level playing field. TalkTalk referred to LLU and other wholesale products and suggested that this provided evidence that, until BT is obliged to use a product itself, quality will be poor and there will be no level playing field.<sup>539</sup>

<sup>&</sup>lt;sup>537</sup> The EOI obligation was not proposed to apply to very high CISBO services in the London Periphery.

<sup>&</sup>lt;sup>538</sup> TalkTalk response to May 2015 BCMR Consultation, page 36.

<sup>&</sup>lt;sup>539</sup> TalkTalk response to May 2015 BCMR Consultation, page 37.

- 9.63 TalkTalk disagreed with Ofcom's view that it would be disproportionate to impose a must-use obligation on BT in relation to dark fibre. It considered that whilst BT may incur some cost to consume its dark fibre product rather than use its current internal supply model, this would not be material compared to the substantial benefits.<sup>540</sup> Vodafone also considered that BT should use the dark fibre product on an EOI basis for its active services since the development of the dark fibre product would be far smoother and the result fit for purpose if BT were also required to consume it (for new connections).<sup>541</sup>
- 9.64 TalkTalk argued that provided a majority of BT downstream active products consume the dark fibre product then it should create a strong incentive for BT to deliver a reasonable dark fibre product. On that basis, it considered that EAD, EBD and Wholesale Extension Services (WES) products should consume dark fibre (accounting for over 90% of supply). It considered that the must-use obligation should then apply to all new active products launched by Openreach or other parts of BT after April 2017.
- 9.65 TalkTalk considered that, assuming an April 2017 dark fibre product launch, BT should be obliged to use the dark fibre product for all new downstream product supply by September 2017, and that all existing downstream product supply should use the dark fibre product by April 2018.<sup>542</sup> It derived those dates by considering the timescales required in BT's 2005 Undertakings as benchmarks, alongside other factors that could suggest shorter or slightly longer timescales.<sup>543</sup>
- 9.66 TalkTalk suggested that Ofcom should consider whether any operational measures should apply to BT to reduce discrimination, such as requiring that dark fibre is developed and managed by a separate Openreach unit from the unit which develops and manages Ethernet products. In addition, it requested that Ofcom consider whether a light form of separation is appropriate (e.g. access controls).<sup>544</sup>

#### Our assessment of stakeholders' responses

- 9.67 We accept that, in principle, there is a risk that an EOI obligation without a 'must-use' requirement could result in BT deciding not to consume the regulated dark fibre product as an input into its own active services and thereby reduce the incentives on it to offer a high quality dark fibre product. Such a risk would provide support to impose a 'must-use' requirement for BT to consume the dark fibre product.
- 9.68 However, in assessing whether or not to impose a 'must-use' obligation on BT, we have considered:
  - the potential implementation costs to BT (and Openreach in particular) if a 'mustuse' requirement were imposed;
  - whether BT downstream has an incentive to consume a dark fibre product and what this would mean for achieving the aims of the proposed EOI obligation; and

<sup>&</sup>lt;sup>540</sup> TalkTalk response to May 2015 BCMR Consultation, page 37.

<sup>&</sup>lt;sup>541</sup> Vodafone response to May 2015 BCMR Consultation, page 44.

<sup>&</sup>lt;sup>542</sup> TalkTalk response to May 2015 BCMR Consultation, page 39.

<sup>&</sup>lt;sup>543</sup> TalkTalk response to May 2015 BCMR Consultation, page 38.

<sup>&</sup>lt;sup>544</sup> TalkTalk response to May 2015 BCMR Consultation, page 39.

- the risks to the success of dark fibre in the event that BT did not consume dark fibre given the design of the dark fibre remedy and BT's other regulatory obligations.
- 9.69 If we imposed a 'must-use' requirement on BT in relation to dark fibre, Openreach would need to consume dark fibre as an input into its active services on an EOI basis too. As such, Openreach would consume its own dark fibre on exactly the same basis as other CPs. However, to achieve this, Openreach would need to develop internal commercial arrangements which would require it to purchase dark fibre from itself to be able to supply active services (which it is required to do). In effect, to meet the EOI obligation, Openreach would also be required to alter its organisational structure to separate the part which used dark fibre (as an input into the supply and management of active services) from that which supplied and managed dark fibre.
- 9.70 We consider that requiring these organisational changes within Openreach (by virtue of imposing a 'must-use' requirement for dark fibre) in this context would be costly to implement, reduce its efficiency and ability to effectively meet its other regulatory requirements (such as meeting quality of service standards). In short, we consider that imposing such a requirement would not be proportionate.
- 9.71 Notwithstanding the above, we also consider that, given the benefits of dark fibre that we have identified in this document, and given the other regulatory remedies that we have imposed in relation to the dark fibre remedy (for example, a non-discrimination requirement) BT's downstream divisions will have a strong incentive to use dark fibre.<sup>545</sup> Accordingly, under an EOI obligation, downstream divisions of BT would use the same dark fibre product, on the same terms and using the same processes as other CPs that purchase dark fibre from Openreach.
- 9.72 We recognise that BT downstream may opt not to consume dark fibre and continue using active products only. However, even if BT did not consume dark fibre, we consider that the risk of BT favouring its active services (in terms of price and quality) over dark fibre will be mitigated by the following factors:
  - firstly, in providing dark fibre, BT will be subject to a 'no undue discrimination' obligation to address concerns regarding BT's incentives and ability to discriminate between wholesale customers of its dark fibre and active products (and between customers of different dark fibre products).
  - secondly, given the strong similarity between dark fibre and BT's active services (i.e. dark fibre is based on BT's EAD product less the active components) we would expect that the outcomes of dark fibre in terms of price (subject to our guidance), provisioning lead times and quality would be comparable to BT's active service. Furthermore, we have defined a set of KPIs for dark fibre (along with KPIs for BT's active services). This will provide information that will allow us to compare the dark fibre quality of service with that of BT's active services. Therefore, in the event that there are concerns over the quality of dark fibre relative to BT's active products (that could raise concerns over undue discrimination) these would be detected relatively easily.

<sup>&</sup>lt;sup>545</sup> [×

9.73 Given this, and in light of the disruption and additional costs of requiring Openreach to consume dark fibre in providing its active services that we describe earlier, we consider that imposing an additional 'must use' EOI requirement on Openreach would not be proportionate. For the same reason, we do not consider it proportionate to impose operational measures within Openreach so that dark fibre is developed and managed by a unit in Openreach that is separate to the unit that develops and manages Ethernet products.

#### Our final decision

#### <u>EOI</u>

- 9.74 We consider that in the absence of an EOI requirement on dark fibre, BT's SMP in these markets means that it would have both the incentive and the ability to provide a superior dark fibre products to its own downstream divisions compared with those its provides to other CPs, with the effect of hindering effective and sustainable competition in the corresponding downstream markets, ultimately against the interests of end-users.
- 9.75 Therefore, we have decided that BT should provide dark fibre on the basis of EOI. However, BT will not be *required* to consume a dark fibre product in providing active services.

#### No undue discrimination

- 9.76 We consider there is a risk that an EOI requirement may not be fully effective in preventing BT from behaving in a manner which is unduly discriminatory against third parties, particularly if BT chose to consume one form of access in preference to another. This could distort competition by BT favouring some products over others.
- 9.77 Therefore, we have decided to apply a no undue discrimination obligation to dark fibre in order to prevent anti-competitive differences in pricing, terms, and outcomes of provisioning and relevant repair performance between BT's products (including between dark fibre and active products).
- 9.78 We recognise that the final specification of the dark fibre product has yet to be determined and will be subject to industry negotiations. However, broadly speaking, we would expect that there should be no material differences in the operational and performance outcomes of dark fibre compared to BT's active leased line services.

#### Legal tests

- 9.79 For the reasons set out above and summarised below, we are satisfied that making dark fibre subject to the imposed EOI and no undue discrimination obligations (as set out in Annex 35) in the CISBO markets meets the relevant tests set out in the Act.
- 9.80 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.
- 9.81 We have also considered our duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the condition is aimed at promoting competition and securing efficient and sustainable competition for the

maximum benefits for consumers by preventing BT from leveraging its SMP into downstream markets.

- 9.82 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The imposed conditions are:
  - objectively justifiable in that they provide safeguards to ensure that competitors, and hence consumers, are not disadvantaged by BT discriminating unduly in favour of its own downstream activities or between different competing providers;
  - not unduly discriminatory in that they are only for BT and no other operator has been found to hold a position of SMP in these markets;
  - proportionate in that they only seek to prevent undue discrimination; and
  - transparent in that the conditions are clear in what they are intended to achieve.
- 9.83 For the reasons set out above, we consider that the imposed conditions are appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

#### The BEREC Common Position

9.84 We have taken utmost account of the BEREC Common Position in reaching our decision.<sup>546</sup> In particular, in relation to achieving the objective of a level playing field we have had regard to paragraphs BP8, BP10 and BP10a. We consider that our decision is consistent with the best practice set out in the BEREC Common Position.

# Approach to regulating prices of dark fibre

#### Proposals in the May 2015 BCMR Consultation

#### Charge control

- 9.85 In the May 2015 BCMR Consultation, we explained the risk that BT would charge excessive prices for dark fibre, which would deter its take up. This would lead to distortion in downstream competition because the relative pricing of active and passive remedies will be a key driver of how and where dark fibre is used. It could ultimately lead to higher downstream prices than would be appropriate for the provision of the services.
- 9.86 We therefore proposed that dark fibre should be subject to a charge control.

#### Pricing options

9.87 We considered that there were two main charge control approaches available for pricing dark fibre:

<sup>&</sup>lt;sup>546</sup> BoR (12) 126, *BEREC* common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.1 1.26.pdf

- a cost-based approach this would involve setting charges based on the underlying costs of dark fibre; and
- a value-based (or 'active minus') approach this would involve setting dark fibre access charges equal to the price of the active service (or basket of services) minus the relevant incremental costs attributable to the active service.
- 9.88 We considered that the 'active minus' approach, implemented by subtracting the cost of the active components of the reference product(s) at a high bandwidth (1Gbit/s), provided the best balance of costs and benefits because it would reduce the potential range of negative impacts.
- 9.89 We proposed that the dark fibre price should be based on the 'active minus' approach, with reference to BT's 1Gbit/s wholesale Ethernet active access products (EAD and EAD LA). In addition, we proposed to provide guidance on how we would calculate the value of the 'minus', rather than set this up-front. Our proposed guidance was provided in the June 2015 LLCC Consultation.

#### Calculating the active-minus

9.90 We proposed to implement the 'active minus' approach to pricing by allowing the 'minus' value to change over time with the cost of active elements and by providing guidance on how we would calculate the 'minus' at any given point in the event of a dispute.

#### Stakeholders' responses to the May 2015 BCMR Consultation

#### Charge control

9.91 Stakeholders' responses in relation to our proposal to impose a charge control remedy relating to dark fibre are discussed in Annex 21.

#### Pricing options

9.92 We summarise stakeholders' responses to our proposed approach to regulating the price of dark fibre in Annex 21.

#### Calculating the 'active minus' margin

- 9.93 The Passive Access Group (PAG)<sup>547</sup> and Sky<sup>548</sup> argued that alternative operators will still face considerable uncertainty about the value of LRIC (and therefore dark fibre prices) over time because the input cost data will not be available to CPs and Ofcom does not provide sufficient guidance on how LRIC would be calculated (Sky also argued that this would be exacerbated by the fact that the price will require annual recalculation).
- 9.94 PAG considered this uncertainty over the final margin is likely to lead to complex regulatory disputes, and argued it could deter investment in (and use of) dark fibre. In this regard, PAG (in a report by Frontier) argued that the proposed process for

<sup>&</sup>lt;sup>547</sup> PAG non-confidential response to May 2015 BCMR Consultation. Paragraph 3.4,

<sup>&</sup>lt;sup>548</sup> Sky non-confidential response to May 2015 BCMR and June 2015 LLCC Consultation, paragraphs 8.15 and 8.32

assessing BT's compliance and some of the elements of the proposed guidance risk significant uncertainty as well as too low a margin. In particular, PAG argued that:

- a) the guidance provides significant scope for interpretation, which could provide BT with considerable flexibility in how it calculates LRIC, which it could use to favour a lower margin; and
- b) it is unclear how CPs would be able to assess whether the LRIC estimate arrived at by BT is consistent with the guidance, leading to an increased risk of inefficient disputes just to determine whether BT is compliant with Ofcom's guidance or not.<sup>549</sup>
- 9.95 Colt and [≫] noted the importance of BT's regulatory cost accounting to support this approach. In particular, [≫] argued that an active-minus pricing approach requires substantial trust in the accuracy of BT's regulatory cost accounting, and stated that the work to give more transparency and trust in these figures needs to extend to dark fibre.<sup>550</sup> Similarly, Colt argued that it is important for Ofcom to look very closely at how BT might be able to implement the proposals to its advantage by distorting competition. For example, it argued that attention should be given to the way BT allocates costs related to equipment, as BT will have the incentive to set equipment costs (as well as any costs to be removed from EAD pricing to create active minus) at a very low level just so it is able to set active minus pricing at a higher level.<sup>551</sup>
- 9.96 Stakeholders' responses relating to the proposed guidance for calculating the 'minus' are summarised and discussed in Annex 23.

#### Our assessment and conclusions

#### Charge control

- 9.97 In Annex 21 we explain our concerns that BT could charge excessive prices for dark fibre, which would deter its take up. This may lead to distortion in downstream competition as the relative pricing of active and passive remedies would be a key driver of how and where passive remedies are used, and of the ultimate impact on competition and consumers. In particular, excessive prices for dark fibre could ultimately lead to higher downstream prices than is appropriate for the provision of services to end-users.
- 9.98 We have therefore decided that dark fibre should be subject to a charge control.

#### Pricing options

9.99 We set out our assessment of stakeholders' responses to our proposed approach to regulating the price of dark fibre, and our overall assessment of the possible approaches to pricing dark fibre, in Annex 21.

<sup>&</sup>lt;sup>549</sup> Ofcom's proposals on regulated dark fibre pricing: a report prepared for the Passive Access Group, Frontier Economics, page 19-20. Received as part of the PAG non-confidential response to the May 2015 BCMR and June 2015 LLCC Consultations. <sup>550</sup> [><]

<sup>&</sup>lt;sup>551</sup> Colt non-confidential response to May 2015 BCMR Consultation, page 18-19.

- 9.100 Our view is that an 'active-minus' approach, implemented by subtracting the cost of the active components of the reference product(s) at a high bandwidth (1Gbit/s), provides the best balance of potential costs and benefits.
- 9.101 Therefore, we have decided that the dark fibre price should be based on an 'active minus' approach, whereby the price is set with reference to BT's 1Gbit/s wholesale Ethernet active access products minus the relevant incremental costs attributable to the active service.
- 9.102 We have decided that the 'active minus' approach will apply to each and every dark fibre variant offered (including with Mainlink where relevant), as opposed to being applied to an average charge across all variants. This is discussed further in Annex 23.

#### Calculating the 'active minus' margin

- 9.103 We have considered two options for implementing the active-minus pricing obligation: either calculating and specifying the value of the 'minus' up front; or allowing this value to change over time with the cost of the active elements, and providing guidance on how we would calculate the 'minus' at any given point in the event of a dispute.<sup>552</sup> We have decided to take the latter approach.
- 9.104 We consider that setting the value of the 'minus' as part of the charge control would in effect amount to setting a fixed differential between the passive products and the active products for the period of the charge control. Conversely, guidance would give some flexibility to adjust the differential over time according to changes in the costs of the active elements.
- 9.105 The advantages of directly setting the value of the 'minus' for the next control period would be:
  - providing CPs with certainty as to the price of dark fibre; and
  - avoiding delays associated with resolving disputes between BT and CPs as to the appropriate dark fibre price.
- 9.106 However, recognising that the final specification of the dark fibre product has yet to be determined and will be subject to industry negotiation, we consider that providing guidance offers the following advantages:
  - it provides BT with the ability to assess in detail, based on our guidance, the specific equipment and activity costs that are avoided when it provides dark fibre rather than an active service, based on the dark fibre specification that is determined in light of industry negotiations; and
  - it allows the access charge to respond to changes in the cost of active inputs and any changes in product design or structure over time. This might be particularly relevant to dark fibre since this will be a new product that may require some adjustments after launch to respond to industry requirements.

<sup>&</sup>lt;sup>552</sup> As set out In Annex 23, the dark fibre price will be determined at any point in time by subtracting the relevant active differential (which is based on data from the latest available prior financial year) from the prevailing price of the corresponding active product.

- 9.107 While in principle directly setting the price of the 'minus' for the price control period would be preferable in terms of the stability (and certainty) it would provide, we consider that this is outweighed by the benefits of guidance in terms of flexibility. More specifically, we consider that with a new access product it is likely to be necessary to allow BT and the industry to agree minor adjustments to the product design as part of the industry consultation process before and after product launch. For example, we consider that BT should determine CPs' requirements for handover points, including any requests for interconnection and accommodation, during its implementation processes. Recognising that CPs may have various needs, we do not consider it appropriate to specify these requirements at this stage.
- 9.108 Notwithstanding the above, we consider that our guidance is sufficiently detailed and specific to mitigate the risks of BT having undue flexibility regarding its interpretation of the guidance that results in a dark fibre price being set with too low a margin. Furthermore, as explained in Annex 35, we are requiring BT to report LRIC and FAC information (by component for EAD 1Gbit/s and EAD LA 1Gbit/s) to Ofcom. This information will allow Ofcom to monitor BT's implementation of the dark fibre remedy.
- 9.109 In terms of efficiency incentive properties, it might be argued that, in theory, setting a fixed margin would have stronger incentive properties. In particular, given a fixed margin to cover active cost components, BT would have a profit incentive to reduce its active component costs. This is because BT would not be required to pass through any active cost component savings directly into the dark fibre price. By contrast, in the case of an 'active minus' dark fibre price, cost savings in active components would be passed through to the dark fibre price. However, BT would retain an incentive to minimise input prices, as it would retain any such saving in the form of a higher access price (due to a reduced 'minus' component relative to its downstream active price). For this reason, we consider that guidance would still provide strong incentive properties.
- 9.110 In light of the above discussion, we have decided that the most appropriate form of price control to implement the 'active-minus' pricing approach would be a 'basis of charges' condition, specifying that BT should derive prices for dark fibre from the prices of the reference Ethernet services, with the prices reduced to reflect the LRIC that are avoided by BT when providing that dark fibre instead of the corresponding active service. In addition, to the extent that there are any objectively justifiable differences between dark fibre and the corresponding reference Ethernet service, the dark fibre price should reflect the relevant long-run incremental costs of these differences (as discussed in Annex 23). This condition would apply to both connection and rental charges.

#### Legal tests

- 9.111 For the reasons set out above and in Annex 21 and Annex 23, we are satisfied that the condition that requires charges for dark fibre to be derived from the charge for the corresponding 1Gbit/s EAD service or 1Gbit/s EAD LA service adjusted to reflect the costs BT avoids by providing dark fibre (as set out in Annex 35), as supplemented by our guidance, meets the relevant tests set out in the Act.
- 9.112 We have also explained further in Volume II Section 5 how our modelling approach on the Ethernet products aims to ensure BT is able to recover its costs by uplifting the forecast costs to take into account both the cannibalisation of active circuits by the dark fibre remedy and the implementation and development costs of the dark fibre remedy.

#### Powers under sections 87 and 88 of the Act

- 9.113 We are proposing a price control in the form of a basis of charges condition for BT as an SMP condition under section 87(9) of the Act with regard to dark fibre in the wholesale CISBO market in the RoUK excluding the Hull area and the wholesale CISBO market in the LP.
- 9.114 Section 88 of the Act states that Ofcom should not set an SMP condition falling within section 87(9) except where it appears from the market analysis that there is a relevant risk of adverse effects arising from price distortion and it also appears that the setting of the condition is appropriate for the purposes of:
  - promoting efficiency;
  - promoting sustainable competition; and
  - conferring the greatest possible benefits on the end-users of the public electronic communications services.
- 9.115 In setting charge controls, section 88 also requires that we must take account of the extent of the investment in the matters to which the condition relates of the person to whom the condition is to apply i.e. BT.
- 9.116 A price control can take a variety of forms, including but not limited to a charge control, basis of charges condition and/or safeguard cap.

#### There is a relevant risk of adverse effects arising from price distortion

9.117 As a result of our market analysis, in particular our assessment in Section 7, we consider the relevant risk of adverse effects arising from price distortion in accordance with section 88 is the risk that BT might fix and maintain its prices for dark fibre in the CISBO market in the LP and the CISBO market in the RoUK at an excessively high level.

#### Promoting efficiency

- 9.118 We consider that the setting of the SMP condition is appropriate for the purpose of promoting efficiency.
- 9.119 We consider that the relative prices of dark fibre and active services will determine how and where investments are made by competing CPs, and in particular will be important in determining whether a CP uses dark fibre in preference to using an active leased line service from BT.
- 9.120 As explained in Annex 21, we have considered the pricing approach for dark fibre in relation to the following types of efficiency: allocative efficiency, productive efficiency and dynamic efficiency.
- 9.121 We have decided to price dark fibre on an active minus basis with reference BT's EAD (and EAD LA) 1Gbit/s product (which is a high bandwidth product that makes a higher than average contribution to BT's common cost recovery) for the following reasons:
- 9.122 We consider that, in principle, an active-minus basis promotes efficiency since the price of dark fibre equals the price of BT's active service less the incremental cost of

the active layer. Therefore, the use of dark fibre by a CP (and entry in the active layer) should only occur if the CP has lower incremental cost to BT (productive efficiency) or if the CP can exploit genuine innovation benefits from differentiating its service to end customers (dynamic efficiency).

- 9.123 We consider that adopting an active-minus approach with reference to BT's EAD 1Gbit/s product will allow for a sufficiently high take-up of dark fibre. In our view, this provides the greatest scope for the benefits that we have identified in relation to productive efficiencies (in the form of avoidance of duplicative equipment costs and lower costs from making more of the value chain contestable) and dynamic efficiencies from innovation whilst mitigating the risks that we have identified (and outline below).
- 9.124 We consider that pricing dark fibre on an active-minus basis with reference to BT's EAD 1Gbit/s product (a high bandwidth product) will allow BT the opportunity to preserve some elements of its bandwidth gradient (and demand based pricing) and thereby better supports allocative efficiency than opting for a lower bandwidth (and priced) reference product.
- 9.125 We consider that pricing dark fibre on an active-minus basis with reference to BT EAD 1Gbit/s product should limit the impact on CPs investing in their own infrastructure by preserving more value in the high value part of the leased line market (than would otherwise be the case if a reference product with a lower bandwidth was chosen). Accordingly, we consider that our pricing approach strikes an appropriate balance between dynamic efficiency objectives and other efficiency objectives.

# Promoting sustainable competition and conferring the greatest possible benefits on end-users

9.126 We also consider that the setting of the SMP condition would be appropriate to promote sustainable competition and to confer the greatest possible benefits on end-users of public electronic communications services. A basis of charges condition together with the Ethernet charge controls we are proposing would help promote sustainable competition and ensure benefits to consumers by addressing the risk of excessive pricing. It also supports these aims by promoting efficiency as discussed above.

#### **Investment**

- 9.127 In proposing the basis of charges condition we have also taken into account the need to ensure BT has the appropriate incentives to invest and innovate.
- 9.128 We consider that our pricing approach for dark fibre and how we have taken account of dark fibre in the LLCC provides BT with a 'fair bet' of recovering its costs (including a cost of capital) and therefore provides BT with incentives to invest and innovate.
- 9.129 The basis of charges condition would also be fixed for the duration of the charge control period, so this would provide BT with incentives to invest and innovate to bring about additional efficiency savings.

#### We have considered the tests under section 47 of the Act

9.130 Any SMP condition must also satisfy the tests set out in section 47 of the Act, namely that it must be:

- objectively justifiable in relation to the networks, services or facilities to which it relates;
- not such as to discriminate unduly against particular persons or a particular description of persons;
- proportionate as to what it is intended to achieve; and
- in relation to what it is intended to achieve, transparent.
- 9.131 We consider these tests would be satisfied by our SMP condition.

#### The SMP condition is objectively justifiable

9.132 We consider the SMP condition to be objectively justifiable. In the May 2015 BCMR Consultation, we set out our proposal that BT has SMP for CISBO services in the Rest of the UK excluding the Hull area and for CISBO services in the LP. We also said that we are concerned that in the absence of the charge control, BT is unlikely to be incentivised to reduce its costs and set dark fibre prices at the competitive level. We therefore consider that our approach to pricing of dark fibre would address the risk of excessive pricing or undue discrimination by BT.

#### The SMP condition does not discriminate unduly

9.133 The basis of charges condition would not discriminate unduly against a particular person or particular persons because any CP (including BT itself) can access the dark fibre which is subject to the condition. In any event, Ofcom considers that the SMP condition relating to dark fibre in the LP and the RoUK excluding the Hull area does not discriminate unduly against BT as the condition addresses BT's market position, including its ability and incentive to set excessive charges for these services.

#### The SMP condition is proportionate

- 9.134 We consider that the SMP condition would be proportionate, as it will address the risk of excessive pricing and ensure that BT is able to earn a return on its investment. Also, maintaining a link between prices for dark fibre and the corresponding reference Ethernet services will minimise the risk of negative consequences associated with arbitrage and ensure that usage is focused on applications where there are benefits from innovation.
- 9.135 For the reasons set out above, therefore, we consider the SMP condition is:
  - appropriate to achieve the aim of addressing BT's ability and incentive to charge excessive prices for dark fibre and promoting efficient and sustainable competition;
  - necessary in that it does not, in our view, impose controls on the prices for dark fibre in the LP and the RoUK excluding the Hull area that go beyond what is required to achieve the aim of addressing BT's ability and incentive to charge excessive prices for these services and promoting efficient and sustainable competition;
  - in our view, the least onerous of the options set out above whilst addressing, for dark fibre in the LP and the RoUK excluding the Hull area, BT's ability and

incentive to charge excessive prices and promoting efficient and sustainable competition; and

 such that it does not, in our view, produce adverse effects which are disproportionate to the aim pursued which is to address, for dark fibre in the LP and RoUK excluding the Hull area, BT's ability and incentive to charge excessive prices and promoting efficient and sustainable competition.

#### The SMP condition is transparent

9.136 Finally, for reasons discussed above, we consider the SMP condition would be transparent. Its aims and effect are clear and it has been drafted so as to secure maximum transparency. The text of the SMP condition is published in this consultation. Its intended operation is also aided by our explanation.

#### We have considered sections 3 and 4 of the Act

- 9.137 We also consider that the basis of charges condition furthers our duties under sections 3 and 4 of the Act.
- 9.138 For the reasons set out above, we consider that the basis of charges condition would further the interests of citizens and further the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act. Further, we consider that, in line with section 4 of the Act, a basis of charges obligation in particular 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, resulting in the maximum benefit for retail consumers.
- 9.139 We consider the basis of charges condition would, together with our other charge controls set out in this consultation, secure the availability throughout the United Kingdom of a wide range of electronic communications services.
- 9.140 We have also had regard in implementing the basis of charges condition to, in particular:
  - the desirability of promoting competition in the relevant market;
  - the desirability of encouraging investment and innovation in the relevant market; and
  - the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.
- 9.141 Finally, in performing our duty to further the interests of consumers, we have also had regard in proposing the basis of charges condition, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money.

#### The BEREC Common Position

9.142 In formulating the price control proposals discussed above, we have also taken utmost account of the BEREC Common Position including BP30, BP31 and BP32 which appear to us to be particularly relevant in this context.<sup>553</sup> We consider that our proposals are consistent with the best practice set out in the BEREC Common Position.

# **Minimum requirements for Reference Offer**

- 9.143 A requirement to publish a Reference Offer (RO) has two main purposes:
  - to assist transparency for the monitoring of potential anti-competitive behaviour; and
  - to give visibility to the terms and conditions on which other providers will purchase wholesale services.
- 9.144 This helps to ensure stability in markets as, without it, incentives to invest might be undermined and market entry less likely.

### Proposals in the May 2015 BCMR Consultation

#### Reference Offer

- 9.145 We proposed that BT should be required to publish an RO for dark fibre in the CISBO markets.
- 9.146 We considered an obligation to publish an RO for dark fibre in the CISBO markets where BT was provisionally found to hold SMP complemented our proposals to impose network access in the form of dark fibre and non-discrimination requirements on BT to address the competition concerns arising from their SMP in each of the wholesale markets.
- 9.147 We proposed that the condition requiring the publication of an RO prohibited the BT from departing from the charges, terms and conditions in the RO and required it to comply with any directions Ofcom may make from time to time under the condition. We proposed that the RO for dark fibre must set out (as a minimum) such matters as:
  - 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;

<sup>&</sup>lt;sup>553</sup> BoR (12) 126, BEREC common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.1 1.26.pdf

- contractual terms and conditions, including dispute resolution and contract negotiation/renegotiation arrangements;
- charges, terms and payment procedures;
- SLAs and SLGs; and
- to the extent that BT uses the service in a different manner to CPs or uses similar services, BT is required to publish a RO in relation to those services.
- 9.148 We did not propose to set minimum quality of service standards since a dark fibre product does not yet exist. In particular, we recognised that a further cross-industry discussion was necessary to specify some detailed requirements on the quality of service. At the same time, we also considered that the guiding principle in such negotiations should be that the quality of service arrangements applicable to dark fibre should be consistent with those applicable to Ethernet services where appropriate.
- 9.149 We did not expect that the performance achieved by Openreach in the delivery of active and passive services would be identical and recognised that the industry would need to agree a number of issues, including processes for fault repair. We nevertheless considered that the outcomes should be comparable, in particular to the extent they relate to the provision of the underlying fibre circuits.
- 9.150 In addition, we envisaged that dark fibre should replicate the existing arrangements in relation to the Ethernet services to the extent possible. We recognised that there could be objectively justifiable differences between active and passive products in terms of processes and systems. If this is the case then we would expect BT to identify such differences in a RO. In addition, in support of our proposal to require BT not to discriminate unduly, we would expect BT to provide an objective justification for any differences between dark fibre products and their corresponding active products.

#### Implementation timetable

- 9.151 We recognised that in the event that BT was required to provide dark fibre, BT would not be in a position to do so immediately since it would need to develop appropriate dark fibre products.
- 9.152 Furthermore, we recognised that finalising the specifications of the products would require negotiations between Openreach and CPs and that without intervention those negotiations could become protracted and result in uncertainty. We proposed to address this risk in two ways:
  - Firstly, the OTA2 should facilitate negotiations; and
  - Secondly, we would identify key milestone in the development of the products and to set the dates by which BT would be required to meet them. Our proposed implementation timetable is provided in Table 9.3.

Milestone	Date
Proposed obligations come into effect	Beginning of Month 1 (1 April 2016)
Publication of draft RO	within 4 months (by 1 August 2016)
Publication of final RO	within 7 months (by 1 November 2016)
Launch of dark fibre products	within one year (by 1 April 2017)

#### Table 9.3: Implementation timetable proposed in the May 2015 BCMR Consultation

9.153 Our strong preference was that BT should reach agreement with CPs on any necessary terms of the RO. However, based on experience with implementation of other remedies, we considered that there was a risk that BT and CPs may not be able to reach agreement about the charges and other aspects of dark fibre. If necessary, we proposed that we would consider any matters not agreed during the review period and consult on a direction to settle such matters.

#### Stakeholders' responses to the May 2015 BCMR Consultation

#### Reference Offer

- 9.154 BT did not agree with the specification of the RO proposed by Ofcom. It considered that Ofcom had set out a range of features to be included in the new dark fibre product, the majority of which were consistent with and relevant to the existing technology and processes supporting the current EAD and EAD Local Access product. However, it considered that Ofcom had also set out an additional set of product variants such as new hand over options that are not available in the current EAD portfolio for which Ofcom has overlooked the additional expense, industry negotiation, systems development and operational impact required to deliver those items and for which industry demand is unproven.<sup>554</sup>
- 9.155 Therefore, BT proposed that Ofcom's requirement for a dark fibre product should be in two parts a 'boxless EAD' basic product requirement that should form the basis of the dark fibre RO, plus those additional variants to be negotiated separately with industry, according to demand.<sup>555</sup>
- 9.156 TalkTalk considered that there should be a presumption that for dark fibre:<sup>556</sup>
  - SLAs and SLGs exactly match those for Ethernet products (unless there is a sound reason to depart);
  - The same KPIs are published for dark fibre as those for Ethernet products (which is considered to be even more critical if Ofcom does not require BT to consume dark fibre)

<sup>&</sup>lt;sup>554</sup> BT response to the May 2015 BCMR Consultation, Part A, page 29.

<sup>&</sup>lt;sup>555</sup> BT response to the May 2015 BCMR Consultation, Part A, page 29.

<sup>&</sup>lt;sup>556</sup> TalkTalk response to May 2015 BCMR Consultation, page 39.

- The same quality of service obligations (i.e. minimum service standards) that apply to Ethernet products should apply to dark fibre.
- 9.157 Vodafone proposed that the SLG regime should mirror that of the active 1Gbit/s regime (or renegotiated where dark fibre is sold on a per metre basis).<sup>557</sup>
- 9.158 BT also considered that it is inappropriate for Ofcom to mandate a requirement for the Dark Fibre RO to contain SLAs/SLGs from day 1, but rather it should allow a 'bedding in' period of 6 months from the agreed product launch date. It argued that this would allow BT and industry to monitor performance and agree suitable metrics, and is consistent with the dark fibre KPI reporting requirements where Ofcom proposes that the reporting obligations should not come into force until 6 months after the dark fibre launch date.<sup>558</sup>
- 9.159 CityFibre argued that it is typical for fibre investment to be recovered over multiple year contracts, so a minimum term criterion for dark fibre should be introduced.<sup>559</sup>

#### Implementation timescales

- 9.160 BT considered that the 12 month implementation timescales proposed by Ofcom was unrealistic and failed to recognise the significant operational impacts of introducing a new dark fibre product.<sup>560</sup>
- 9.161 In relation to BT's estimated timescales to implement a new dark fibre product, it made the following points:<sup>561</sup>
  - Based on the current Ethernet systems development capacity, BT has estimated that three full development release cycles will be required. BT considered that to meet Ofcom's proposed timetable it would need to start the design of the dark fibre product six months before the Final Statement was published. BT outlined the system changes that are likely to be required to support a dark fibre product, including:
    - Pre-order tools;
    - o Ordering systems;
    - o Planning and build system changes;
    - Test and diagnostics;
    - o Billing systems;
    - o Modify and migration processes;
    - Cease orders;
    - o Fault works;

<sup>&</sup>lt;sup>557</sup> Vodafone response to May 2015 BCMR Consultation, Annex 3, page 4.

<sup>&</sup>lt;sup>558</sup> BT response to the May 2015 BCMR Consultation, Part A, page 29.

<sup>&</sup>lt;sup>559</sup> CityFibre response to the May 2015 BCMR Consultation, page 7.

<sup>&</sup>lt;sup>560</sup> BT response to the May 2015 BCMR Consultation, Part A, page 36.

<sup>&</sup>lt;sup>561</sup> BT response to the May 2015 BCMR Consultation, Part A, page 38.

- o Planned engineering works/major systems outages; and
- o Fibre capacity management.
- The resource required to deliver the dark fibre product will be in direct competition with the resources developing the current active products and the Ethernet Development Roadmap that has already been agreed with the industry (with obvious repercussions for the active Ethernet improvement programme).
- To introduce the dark fibre product will require around 20,000 planners, engineers and agents to be retrained.
- BT's operational resource planning is linked and totally dependent on robust industry forecasting and the absence of clear industry and demand commitment for dark fibre will cause additional operational issues for BT in trying to provide resource from Day 1.
- 9.162 BT considered that it would be more efficient for industry if a roll out programme was allowed to be negotiated according to industry demand, but set within an 18 month timescale and that this programme could be incorporated into the implementation responsibilities carried out by OTA2. In addition, BT requested that Ofcom introduces a facility in the Final Statement that effectively 'stops the clock' on the implementation timescales should a dispute be raised during the negotiations around the development of the dark fibre product.<sup>562</sup>

#### Our assessment of stakeholders' responses

#### Reference Offer

- 9.163 We discuss BT's concerns regarding our proposal to require BT to provide dark fibre in additional variants, such as new hand over options that are not available in the current EAD portfolio in Annex 22. In Annex 22, we consider that in the event that hand-over arrangements for dark fibre, beyond those required for active services, are requested that these should be taken forward on a 'fair and reasonable' basis only.
- 9.164 In Annex 22 we explain that given the competition problems that we have identified in the relevant markets in this review, our aim is for the dark fibre remedy to enable CPs to provide leased line services in competition with BT, which support innovation, competition and investment in the supply of downstream markets. We therefore consider that it is appropriate and proportionate to require BT to support the 'dark leased line' scenario and to impose a requirement for BT to provide dark fibre terminating segments including:
  - disaggregated access and backhaul segments; and
  - short range end to end segments.
- 9.165 We consider that this requirement will allow CPs to obtain dark fibre terminating segments in comparable configurations to the current range of active services. In this regard we envisage that CPs will be able to obtain dark fibre terminating segments in comparable configurations to the following existing EAD services:

<sup>&</sup>lt;sup>562</sup> BT response to the May 2015 BCMR Consultation, Part A, page 38.

- EAD (with and without Mainlink)
- EAD LA
- EAD resilient option 2
- EAD LA resilient option 2
- EAD enable (with and without Mainlink)
- EAD LA enable
- EAD enable resilient option 2 (with and without Mainlink)
- EAD LA enable resilient option 2
- 9.166 In accordance with our proposals in the May 2015 BCMR Consultation, we do not consider it appropriate to set minimum quality of service standards for the dark fibre product since the final specification of the product does not exist and will be subject to industry negotiations. We also recognise that quality of service, for example in relation to faults and repairs, will be partly dependent on CPs and BT developing the necessary operational processes to allow BT to assess the likely source of the fault and respond in an appropriate manner. Notwithstanding this, we consider that such negotiations should be based on the guiding principle that quality of service arrangements applicable to dark fibre should be consistent with those applicable to Ethernet services as appropriate.
- 9.167 Whilst we consider that the RO should include information relating to SLAs and SLGs, we also recognise that a dark fibre product will require a bedding-in period after launch. This will allow industry to identify and resolve any teething issues that may arise regarding dark fibre. For example, in relation to fault repair in particular, these may relate to issues relating the process by which CPs provide information to BT to allow it to respond to a fault or issues relating to BT's ability to respond to a fault once that information has been received, which had not been identified during the planning process for the implementation of dark fibre.
- 9.168 In light of this, although our guiding principle is that SLAs and SLGs should allow for comparable outcomes to those of BT's active services, we consider it reasonable to allow a bedding-in period of six months (from the launch date of the dark fibre product) before these are finalised in the RO.
- 9.169 In Annex 34, we noted evidence from OCPs which indicated that contract lengths of three years were relatively common for leased line services. Annex 34 also contains evidence that [≫

>]. We also note that, in contrast to active leased lines, dark fibre gives CPs the flexibility to change their customer's bandwidth if their demand changes during any minimum contract term. Therefore, while we do not consider it is proportionate to impose a specific requirement relating to the minimum term for the dark fibre remedy we consider that a minimum-term of up to three-years as part of the Reference Offer would not appear unreasonable. We discuss the practical considerations in relation to dark fibre pricing and compliance (including in the event that BT has a minimum term of up to three years) in Annex 23.

#### Implementation timescales

- 9.170 We did not receive specific comments around the timescales we proposed for BT to publish a draft RO (after 4 months) and then publish a final RO (after 7 months). Furthermore, in following discussions with stakeholders (including the OTA2) since the publication of our May 2015 BCMR Consultation, we consider that these timescales are achievable and broadly in line with the timescales that could be expected for other product launches.
- 9.171 BT was concerned about the timescales proposed for launching a dark fibre product (i.e. by 1 April 2017 and within one year of the publication of our Final Statement). In short, BT has indicated that to launch a dark fibre product within by 1 April 2017, it would need to start making developments to a number of its systems six months ahead of our Final Statement.
- 9.172 We accept that our proposed timescale for launch of the dark fibre product by 1 April 2017 was challenging and would have required BT to begin making systems changes ahead of our Final Statement. We consider this would have been unreasonably difficult for BT given the uncertainty around the final requirements and design of the dark fibre access remedy.
- 9.173 We note that BT is planning on launching the dark fibre product through developments to its EMP system. We consider that BT's EMP system provides a suitable means for delivering the dark fibre product to the market in the long-term. Whilst we recognise that BT might be able to launch a dark fibre product within one-year outside of its EMP system, for example, via manual processes, we consider that these would place limitations on volumes and would harm the customer experience. Furthermore, we would be concerned if our timescales for launching dark fibre did not allow BT a reasonable and sufficient amount of time to design, develop and test the product since this would harm its take-up and benefits.
- 9.174 We recognise that BT is currently implementing changes to its systems as part of its Ethernet Development Roadmap. This includes developing its EMP system to provide functionality for its EAD products. We consider that broadly aligning the development of the EMP system for the purposes of delivering dark fibre access and EAD services would provide synergy and coordination benefits for BT and allow dark fibre to be introduced with lower cost.
- 9.175 We do not accept that BT will need to train 20,000 planners and engineers as a result of the introduction of dark fibre and note that this is inconsistent with evidence provided by BT relating to the development/operational costs for dark fibre in which it indicated that [≫].<sup>563</sup> However, we do consider that a one-year timescale for launching the product is too short for the reasons explained above. We have therefore decided that BT should be required to offer a dark fibre access product by 1 October 2017. We consider that this will give BT a sufficient amount of time to launch a fully developed and tested product in the variants described in paragraph 9.165.
- 9.176 We recognise that the development of the dark fibre product will require negotiation and agreement between BT and other CPs. We consider that the OTA2 will also play a key role in overseeing the negotiations and development of the dark fibre product.

<sup>&</sup>lt;sup>563</sup> BT response to s135 dated 17 February 2016

#### **Our final decision**

#### Reference Offer

- 9.177 We have decided that the RO for dark fibre must set out (as a minimum) such matters as:
  - 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 to be included after a six-month bedding in period (by 1 April 2018).
- 9.178 We will not set minimum quality of service standards since a dark fibre product does not yet exist and will be subject to further cross-industry discussion. However, we consider that the guiding principle in such negotiations should be that the quality of service arrangements applicable to dark fibre should be consistent with those applicable to Ethernet services where appropriate.
- 9.179 We do not expect that the performance achieved by Openreach in the delivery of active and dark fibre will be identical and recognise that the industry will need to agree a number of issues, including processes for fault repair. We nevertheless consider that the outcomes should be comparable, in particular to the extent they relate to the provision of the underlying fibre circuits.
- 9.180 We consider that a six-month bedding-in period is appropriate before SLAs and SLGs are finalised in the RO.
- 9.181 We envisage that dark fibre should replicate the existing arrangements in relation to the Ethernet services to the extent possible. We recognise that there could be objectively justifiable differences between active and dark fibre products in terms of processes and systems. If this is the case then we would expect BT to identify such differences in a RO. In addition, in support of our proposal to require BT not to discriminate unduly, we would expect BT to provide an objective justification for any differences between dark fibre products and its corresponding active products.

#### Implementation timescales

9.182 We have decided on the following timescales for delivering a dark fibre access product.

#### Figure 9.3: Implementation timetable

Milestone	Date
Proposed obligations come into effect	1 May 2016
Publication of draft RO	by 1 September 2016
Publication of final RO	by 1 December 2016
Launch of dark fibre products	by 1 October 2017

#### Legal tests

- 9.183 For the reasons set out above and summarised below, we are satisfied that the imposed condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 9.184 We consider that the imposed condition satisfies our duties under section 3, and all the Community requirements set out in section 4, of the Act.
- 9.185 The requirement to publish a RO will, in combination with a requirement not to discriminate and/or discriminate unduly, facilitate service interoperability and allow CPs to make informed decisions about future entry into the relevant market. Further, the obligation will enable buyers 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 CPs in the relevant market to monitor any instances of discrimination. Therefore, we consider that the condition in particular furthers the interests of consumers in relevant markets by promoting competition in accordance with section 3 of the Act.
- 9.186 We also consider that the condition meets the Community requirements set out in section 4 of the Act. In particular, the condition promotes competition and encourages the provision of network access and service interoperability for the purpose of securing efficiency and sustainable competition for the maximum benefit for consumers. The publication of a RO will mean that other CPs will have the necessary information readily available.
- 9.187 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The imposed condition is:
  - objectively justifiable in that it requires that terms and conditions are published in order to encourage competition, provide stability in markets and allow monitoring of anti-competitive behaviour;
  - not unduly discriminatory in that it is only for BT and no other operator has been found to hold a position of SMP in these markets;
  - proportionate in that only information that is considered necessary to allow providers to make informed decisions about competing in downstream markets is required to be provided; and

- transparent in that it is clear in its intention to ensure that BT publishes details of its service offerings.
- 9.188 Article 9(4) of the Access Directive requires that where network access obligations are imposed, NRAs shall 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.
- 9.189 For the reasons set out above, we consider that the imposed conditions are appropriate to address the competition concerns identified, in accordance with section 87(1) of the Act.

#### The BEREC Common Position

9.190 In reaching our decision we have also taken utmost account of the BEREC Common Position.<sup>564</sup> In particular, in relation to the objective of achieving transparency we have had regard to paragraph BP16. In relation to service quality characteristics (operational aspects) we have had regard to paragraphs 22 and 23. We consider that our decision is consistent with the best practice set out in the BEREC Common Position.

# Transparency as to quality of service

- 9.191 In the May 2015 BCMR Consultation we proposed to issue a direction pursuant to a new SMP condition requiring BT to publish specific quality of service information in relation to the CISBO markets.
- 9.192 In line with our proposals in relation to the CISBO markets, we proposed to direct BT to provide quality of service information in the form of KPIs on dark fibre once it is launched. To ensure that we are able to monitor performance outcomes as between active and passive remedies and to complement our proposed measures to address potential discriminatory behaviour, we proposed a set of service KPIs for dark fibre and these were broadly consistent with those for Ethernet services.
- 9.193 We considered that BT should make the KPIs for dark fibre available in the same format and on the same terms as the KPIs for Ethernet services unless specified otherwise. In this respect, we did not propose to require that the dark fibre KPI values be split by region or that they should be published by BT on a publically available website.
- 9.194 We proposed that the reporting obligations come into force six months following the dark fibre launch date.

#### Stakeholders' responses to the May 2015 BCMR Consultation

9.195 BT did not object to the publication of KPIs to enable Ofcom and CPs to monitor performance of the dark fibre product. However, it considered that specifying the KPIs for the dark fibre product at this point of time was premature since the dark fibre

<sup>&</sup>lt;sup>564</sup> BoR (12) 126, *BEREC* common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.1 1.26.pdf

product (based on BT's estimated timescales) would not be available for 18 months and its specification would need to be agreed by industry. Therefore, BT suggested that KPIs should be developed following specification of the dark fibre product. BT noted that the proposed Quality of Service SMP condition would enable Ofcom to modify the KPI direction within a relatively short period of time as soon as the dark fibre product has been specified.<sup>565</sup>

9.196 BT considered that the reporting obligations should not come into force immediately following launch, but after a suitable period of time to ensure that provision and repair processes have been bedded-in and the product is being used by CPs. BT considered that it would have a better view of this once the implementation work is more advanced.<sup>566</sup>

#### Our assessment and conclusions

- 9.197 We consider that it is important for BT to publish quality of service information relating to dark fibre in the form of KPIs. Such information is needed to ensure that we are able to monitor performance outcomes as between active and passive remedies and to complement our measures to address potential discriminatory behaviour. Such information is also likely to play a role for CPs and BT in relation to SLAs and SLGs.
- 9.198 We consider that those KPIs should be broadly consistent with those related to BT's Ethernet services.
- 9.199 We also recognise that the dark fibre product has yet to be specified and the final specification will be subject to industry negotiations. Furthermore, the outcome of those negotiations regarding the final specification of the dark fibre product may have a bearing on the specific KPIs that are required (and that industry may agree that some differences in KPIs are appropriate to reflect the underlying differences between the dark fibre product and BT's Ethernet services).
- 9.200 That said, we consider that the KPIs we included in the Proposed Direction in the May 2015 BCMR Consultation, and have included in Direction (Schedule 3) in this Statement, will be relevant to monitoring the performance of a dark fibre product (regardless of the precise details of the final specification). In the event that industry negotiations regarding the specification of the dark fibre product result in additional KPIs being agreed (or indeed fewer KPIs or amendments to KPIs being agreed) then we could seek to implement this through a modification to the KPI Direction.
- 9.201 We have decided that reporting obligations should come into force six months from the dark fibre launch date (i.e. by 1 April 2018). We note that this decision allows for a bedding-in period which is consistent with the timing for SLAs and SLGs to be finalised and included in the RO.

#### Legal tests

9.202 We have set out in Section 13 our reasons as to why we consider the imposed SMP services condition regarding quality of service meets the relevant tests set out in the Act.

<sup>&</sup>lt;sup>565</sup> BT response to May 2015 BCMR Consultation, Part A, page 39.

<sup>&</sup>lt;sup>566</sup> BT response to May 2015 BCMR Consultation, Part A, page 39.

- 9.203 For the reasons set out below, we are further satisfied that the imposed KPI Direction (as notified and set out in Annex 35) meets the relevant tests set out in the Act.
- 9.204 We consider that the imposed KPI Direction we are making in the wholesale CISBO market excluding the CLA and Hull Area, meets our duties in the Act including our general duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the imposed direction 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.
- 9.205 Section 49 of the Act requires that we must be satisfied that our imposed directions are objectively justifiable, non-discriminatory, proportionate and transparent. We consider that the KPI Direction is:
  - objectively justifiable in that it aims to provide transparency as to the quality of service performance by BT which we consider, in light of our review of the dominant provider's past performance, is justifiable in terms of a necessary entitlement to CPs in relation to the provision of network access (in particular Openreach's performance in the speed and certainty in its provision of dark fibre to CPs). We also consider that such transparency requirements are justified as a necessary element in our aim of preventing undue discrimination in the provision of service and to ensure that BT offers adequate quality of service;
  - not unduly discriminatory, as it is imposed on BT only and no other operator has been found to hold a position of SMP in these markets;
  - proportionate because it only requires BT to publish the minimum information we consider is required to effectively monitor BT's quality of service performance; and
  - transparent in that it is clear in its intention that BT is required to publish quality of service information.
- 9.206 For the reasons set out above, we consider that the imposed KPI Direction is appropriate to address the concerns we have identified and in line with section 87 of the Act.

#### The BEREC Common Position

- 9.207 In reaching our decision we have also taken utmost account of the BEREC Common Position, in particular the contents of BP24 in relation to the objective of achieving a reasonable quality of access products.<sup>567</sup>
- 9.208 We therefore consider that our proposals are consistent with the best practice set out in the BEREC Common Position.

<sup>&</sup>lt;sup>567</sup> BoR (12) 126, BEREC common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.1 1.26.pdf

# Section 10

# Specific remedies for the CISBO markets – active remedies

# Introduction

- 10.1 In this section we set out the specific active remedies that we have decided to impose on BT in the following markets:
  - the wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) in the London Periphery (LP); and
  - the wholesale market for CISBO in the Rest of the UK (RoUK) excluding the Hull area.
- 10.2 Unless otherwise stated, we refer to these markets collectively as the CISBO markets.
- 10.3 These remedies are in addition to the general remedies for these markets discussed in Section 8, the dark fibre remedy discussed in Section 9 and the quality of service remedies discussed in Section 13.

# Summary of our decisions

10.4 Based on our analysis of developments since the 2013 Review and views expressed by stakeholders, including in response to the April 2014 CFI, the May 2015 BCMR Consultation, the June 2015 LLCC consultation and expected developments over the course of the review period of three years, we have decided to impose specific network access obligations on BT in the wholesale CISBO markets as summarised in Table 10.1 below.

Wholesale market	Remedies
	Requirement to provide specific types of Ethernet service
Wholesale CISBO in the RoUK excluding the Hull area	<ul> <li>Disaggregated Ethernet access and backhaul segments</li> </ul>
	Short range end-to-end Ethernet services
Wholesale CISBO in the London Periphery	Requirement to provide specific types of WDM service
	End-to-end WDM services
	Backhaul services

#### Table 10.1: Summary of specific active remedies for BT by wholesale market

10.5 We have decided not to impose the basis of charges condition for EAD services that we proposed in the May 2015 BCMR Consultation.

- 10.6 We consider remedies are necessary to address the competition problems summarised in Section 7, in particular concern that:
  - in the absence of appropriate *ex ante* regulation, BT would not make access to its networks, services or associated facilities available on terms that would secure efficient investment and innovation, both in the relevant wholesale markets and in the related downstream retail markets.
  - in the absence of appropriate *ex ante* regulation, BT would favour its downstream retail businesses to the detriment of its competitors in the relevant retail markets (including by price or non-price discrimination).
  - in the absence of appropriate *ex ante* regulation, there is a relevant risk of adverse effects arising from BT fixing and maintaining some or all prices at an excessively high level or imposing a price squeeze.
- 10.7 We consider that these remedies achieve our statutory duties and satisfy the relevant legal tests. In reaching these decisions, we have also taken account of our regulatory experience from previous market reviews, recent developments in these markets, views expressed by stakeholders during our consultation process, and expected developments over the course of the review period of three years.

# Structure of this section

- 10.8 We first set out our decision to impose specific network access obligations on BT in relation to wholesale Ethernet and WDM services in the wholesale CISBO markets and describe the amendments we have made to the associated definitions of Trunk Segments and Trunk Aggregation Nodes to reflect our decision to define a larger competitive core market. We then address the following issues in relation to the CISBO markets:
  - We consider whether we should apply transitional measures before removing regulation of the Central London Area and the expanded CI core market.
  - We provide guidance concerning the classification of circuits that cross the boundaries between the CISBO markets.
  - Support for WDM interconnection we consider the extent to which CPs can
    interconnect WDM terminating segments and whether there is a need for
    additional remedies to facilitate WDM interconnection.
  - Ethernet pricing differentials we examine the pricing of EAD and EAD Local Access (EAD LA) services in light of different patterns of use of these services by BT and CPs. We consider whether we should impose a basis of charges for EAD services in light of these considerations.
  - Excess Construction Charges (ECCs) we review the impact of the amended charging structure for ECCs that BT introduced in May 2014 and have also considered stakeholders' comments about cost recovery.
  - Project Services we undertake analysis of Openreach's Project Services project coordination and management service in light of concerns raised by stakeholders in response to the April 2014 CFI.

# Assessment of appropriate remedies

#### Requirement to provide specific types of network access

#### BCMR 2013 remedies

- 10.9 In the BCMR 2013 we imposed the following specific network access obligations in relation to wholesale Ethernet and WDM services on BT:
  - a requirement to provide disaggregated wholesale Ethernet access and backhaul segments;
  - a requirement to provide short range end-to-end wholesale Ethernet services;
  - a requirement to provide end-to-end wholesale WDM services; and
  - a requirement to provide wholesale WDM backhaul segments.

#### Aim and effect of the regulation

10.10 Obligations to provide specific types of network access are intended as a complementary remedy to the general network access obligation. They require an SMP operator to provide specific types of network access that are widely used by CPs. In the absence of regulation, the SMP provider could have an incentive to withdraw or to no longer supply such products. CPs have developed their business models around the availability of these products. It would be disruptive to CPs and would reduce competition if they were no longer available.

#### Proposals set out in the May 2015 BCMR Consultation

- 10.11 In the May 2015 BCMR Consultation we proposed that BT should be subject to an obligation requiring it to provide the following types of wholesale services:
  - a requirement to provide disaggregated wholesale Ethernet access and backhaul segments;
  - a requirement to provide short range end-to-end wholesale Ethernet services;
  - a requirement to provide end-to-end wholesale WDM services; and
  - a requirement to provide wholesale WDM backhaul segments.
- 10.12 These conditions explicitly exclude Trunk Segments.

#### Amendments to CISBO Trunk Segment and Trunk Aggregation Node definitions

10.13 In the May 2015 BCMR Consultation we reviewed the definition of the boundary between the trunk segments and terminating segments, and proposed to define a larger competitive CI core market. This boundary is currently delineated by a set of core node groupings known as TANs, each comprising one or more BT exchanges. Circuits between nodes in different TANs are defined as trunk segments and fall outside the wholesale CISBO markets, and consequently BT is not required to provide wholesale leased lines between such nodes.

- 10.14 Under the revised market definition we proposed to define a larger CI core market by adding additional nodes to the existing TANs. Specifically we proposed to add additional BT exchanges and competitive data centres.
- 10.15 We proposed to revise the parts of the SMP conditions which define TANs and Trunk Segments to reflect the revised market definition.

#### Stakeholder responses to our proposals

- 10.16 Hyperoptic supported the requirements to provide specific forms of network access. It said it could accept the enlarged definition of TANs and the addition of competitive BT exchanges and data centres. <sup>568</sup>
- 10.17 Sohonet<sup>569</sup> and  $[\times]^{570}$  also agreed with the active remedies proposed.
- 10.18 BT welcomed Ofcom's "Clarifications and corrections to the Business Connectivity Market Review Consultation of 15 May 2015"<sup>571</sup> which clarified that EFM-based CISBO services are not subject to SMP regulation. It said EFM uses Openreach copper loops (MPF) with the addition of electronics in the exchange and customer premises to provide Ethernet connectivity. It added the service is not unlike broadband which similarly consumes Openreach copper loops and so could easily be implemented by any CP and, in particular, by CPs who use LLU at BT's exchanges. BT said the availably of LLU is an appropriate remedy.<sup>572</sup>

#### Our decisions

- 10.19 The specific network access obligations for CISBO markets are intended as a complementary remedy to the general network access obligation. They require BT to provide specific types of network access that are widely used by CPs. In the absence of regulation, BT could have an incentive to withdraw or to no longer supply these products. CPs have developed their business models around the availability of these products. It would be disruptive to CPs and would reduce competition if they were no longer available.
- 10.20 We have decided that BT should be subject to an obligation requiring it to provide the following types of wholesale services:
  - a requirement to provide disaggregated wholesale Ethernet access and backhaul segments;
  - a requirement to provide short range end-to-end wholesale Ethernet services;
  - a requirement to provide end-to-end wholesale WDM services; and
  - a requirement to provide wholesale WDM backhaul segments.
- 10.21 The obligations to provide disaggregated Ethernet access and backhaul segments are intended to facilitate competition in backhaul by allowing CPs to aggregate

<sup>&</sup>lt;sup>568</sup> See Hyperoptic response to the May 2015 BCMR Consultation, pages 14-15.

<sup>&</sup>lt;sup>569</sup> See Sohonet Limited response to the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>570</sup> See [ $\times$ ] response to the May 2015 BCMR Consultation, page 10.

<sup>&</sup>lt;sup>571</sup> http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/clarifications/

<sup>&</sup>lt;sup>572</sup> BT response to the May 2015 BCMR Consultation, paragraphs 7.16 and 7.17.

different types of traffic at BT local exchanges or other POPs. Short range end-to-end services provide a more efficient solution for short range services than constructing services using terminating segments.

- 10.22 The obligations to provide Ethernet and WDM backhaul are also intended to facilitate competition in downstream broadband, telephony and mobile markets for which these services are an important input.
- 10.23 The SMP condition requiring the provision of specific forms of network access explicitly excludes Trunk Segments. As we discuss below, we have decided to amend the definition of Trunk Segments and TANs in the conditions to reflect the revised market definition which defines a larger competitive CI core market.
- 10.24 We confirm that we are not imposing any regulation that would require BT to offer a wholesale EFM service. We consider that the existing requirement on BT to provide MPF lines in the Wholesale Local Access market, together with the continued availability of regulated products suitable for LLU backhaul, would allow CPs to compete using EFM.
- 10.25 As we explain below, we are not imposing any additional specific obligations in relation to WDM interconnection.

#### Amendments to CISBO Trunk Segment and Trunk Aggregation Node definitions

- 10.26 As explained in Section 4 and Annex 15, we have amended our definition of the boundary between the trunk segments and terminating segments in light of further analysis and responses to the May 2015 BCMR Consultation. This boundary is currently delineated by a set of core node groupings known as TANs, each comprising one or more BT exchanges. Circuits between nodes in different TANs are defined as trunk segments and fall outside the wholesale CISBO markets, and consequently BT is not required to provide wholesale leased lines between such nodes.
- 10.27 We have decided to define the CISBO markets on the basis that there is a larger competitive CI core market by adding additional nodes to the existing TANs. Specifically we have added 34 New Competitive Exchanges (NCEs) and 64 competitive data centres. As explained in Annex 15, we have updated our analysis and revised our list of NCEs and competitive data centres. We have decided not to group the final additional NCEs with existing TANs or with other NCEs. However, as we explain in Annex 15, we have decided it would not be appropriate to 'ungroup' the existing TAN groupings.
- 10.28 In light of these decisions we have revised the parts of the SMP conditions which define TANs and Trunk Segments to reflect the revised market definitions.
- 10.29 We are making the following changes to the definitions:
  - We have defined a new Term 'Competitive Core Nodes' to reflect the addition of data centres to the core boundary nodes.
  - We have added the NCEs to the list of TANs in Schedule 6 of our legal instrument. The rationale for the grouping of nodes into TAN groups is discussed in Annex 15. In summary, we have decided not to group any of the additional NCEs but we have retained the groupings of existing TANs.

- We have defined a new term 'Data Centre Core Nodes' for the new data centre core nodes and added a new Schedule 5 to the legal instrument listing these data centres.
- We have revised the definition of Trunk Segments to refer to the newly defined Competitive Core Nodes.
- 10.30 These definitions are referenced by two SMP conditions in order to provide clarity about circuit routing rules:
  - Condition 2 specific forms of network access, which specifies the requirement to provide Ethernet access, backhaul and short range end-to-end services as discussed above; and
  - Condition 4 equivalence of inputs basis, which we discuss in more detail in Section 8.
- 10.31 The revised conditions are set out in full in Annex 35.

#### Legal tests

- 10.32 Section 87(3) of the Act authorises the setting of a SMP services condition requiring the dominant provider to provide such network access as we may, from time to time, direct.
- 10.33 When considering the imposition of such conditions in a particular case, we must take into account six factors set out in Section 87(4) of the Act, including:
  - the technical and economic viability of installing and using other facilities, including the viability of other network access products, whether provided by the dominant provider or another person, that would make the required network access unnecessary;
  - the feasibility of the proposed network access; and
  - the need to secure effective competition, including where it appears to us to be appropriate, economically efficient infrastructure based competition, in the long term.
- 10.34 In imposing the specific network access obligations above, we have taken all these six factors into account.
- 10.35 The definition of access and the way in which we might assess reasonable demands for access are set out in the Access Guidelines. As discussed in our SMP assessment there are considerable sunk costs associated with building networks to provide leased lines services. We consider it unlikely to be economically viable or efficient to build competing access networks on a sufficient scale to provide an effective constraint on BT's SMP.
- 10.36 Therefore we have decided that requirements to provide specific network access products are appropriate. They facilitate competition in downstream markets by enabling CPs to compete without the need to invest in a national network, an investment which we considered, on the basis of our market analysis, represented a structural barrier to entry and expansion in the CISBO markets. Consequently, we

consider these requirements to be necessary for securing effective competition, including economically efficient infrastructure based competition in the long term.

- 10.37 In addition to taking account the six factors in section 87(4) of the Act, we consider that these network access obligations:
  - further the interests of citizens in relation to communications matters and further the interests of consumers in the CISBO markets by promoting competition, in accordance with our general duty under section 3(1) of the Act; and
  - seek to achieve the objective of securing the availability throughout the UK of a wide range of electronic communication services, in accordance with our duty under section 3(2) of the Act.
- 10.38 In imposing these network access obligations, in accordance with our duty under section 3(4) of the Act, we also have regard to:
  - the desirability of promoting competition in relevant markets;
  - the desirability of encouraging investment and innovation in relevant markets; and
  - the desirability of encouraging the availability and use of high speed data transfer services throughout the United Kingdom.
- 10.39 We also consider that the network access obligations accord with the six European Community requirements for regulation, in particular by:
  - promoting competition in the provision of electronic communications networks and services, associated facilities and the supply of directories; and
  - encouraging the provision of network access and service interoperability, namely securing efficient and sustainable competition, efficient investment and innovation, and the maximum benefit for customers of CPs.
- 10.40 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. We consider that the SMP conditions are:
  - objectively justifiable, in that they facilitate and encourage access to BT's network and therefore promote competition to the benefit of consumers;
  - not unduly discriminatory, as they are imposed only on BT and no other operator has been found to hold a position of SMP in this market;
  - proportionate, since they are targeted at addressing the market power that we have found BT holds in the CISBO markets and does not require it to provide access if it is not technically feasible or reasonable;
  - transparent, in that they are clear in their intention to ensure that BT provides access to its networks in order to facilitate effective competition.
- 10.41 For all the reasons set out above, we consider that the specific network access conditions are appropriate to address the competition concerns identified in accordance with section 87(1) of the Act.

#### The BEREC Common Position

- 10.42 We have also taken utmost account of the BEREC Common Position<sup>573</sup> including BP1 to BP3a which appear to be particularly relevant in this context.
- 10.43 We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

#### Transitional measures for the Central London Area (CLA) and CI core markets

#### Proposals set out in the May 2015 BCMR Consultation

- 10.44 In the May 2015 BCMR Consultation we considered whether it would be appropriate to provide a period of notice to the parties affected by our proposal to withdraw wholesale regulation in the CLA and to define additional Competitive Core Nodes.
- 10.45 Our initial view was that a period of notice was not necessary in this case. We therefore proposed that the SMP conditions that currently apply to these services should be revoked on publication of our final statement concluding this review.

#### Stakeholder responses to our proposals

10.46 GTC agreed with our proposal that transitional measures were not necessary in relation to the revoking of regulations that currently apply in the Central London Area and in the expanded CI core market.<sup>574</sup>

#### Our decision

- 10.47 In line with Article 16(3) of the Framework Directive and section 84(4) of the Act, we are revoking SMP conditions where we considered that the relevant markets are now competitive. Specifically, we are revoking regulations that currently apply to wholesale CISBO services in the CLA. The expansion of the CI core market will also remove regulations from Competitive Core Nodes which currently fall within the wholesale CISBO markets.
- 10.48 Article 16(3) of the Framework Directive states that where Ofcom revokes SMP conditions, it should provide an appropriate period of notice to parties affected by such a withdrawal. The ERG Remedies Position (paragraph 5.6.2) provides further guidance.
- 10.49 We have concluded that a period of notice is not necessary in this case. Given our finding that the markets that we are deregulating are effectively competitive, we consider that BT would have an incentive to continue to supply these services on commercial terms. Moreover, BT's wholesale contracts for the supply of these services provide additional protection for CPs, and for example specify a minimum contract period, a 12-month notice period for service withdrawal and a 3-month notice period for price increases.

<sup>&</sup>lt;sup>573</sup> BoR (12) 126, *BEREC* common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.1 1.26.pdf.

<sup>&</sup>lt;sup>574</sup> See GTC response to the May 2015 BCMR Consultation, page 13.

#### Classification of circuits that cross boundaries between the CISBO markets

#### Proposals set out in the May 2015 BCMR Consultation

10.50 In the May 2015 BCMR Consultation, we proposed guidance on the classification of circuits that cross the boundaries between our proposed geographic markets for CISBO services.

#### Stakeholder responses to our proposals

10.51 GTC agreed with our proposed classification of circuits that cross boundaries between CISBO markets.<sup>575</sup>

#### Our decision

- 10.52 We have decided that wholesale CISBO circuits should be classified in respect of the CLA, LP and RoUK geographic markets in the following manner, according to the location and nature of each of the end points of the circuit:
  - Wholesale end-to-end services (i.e. circuits between two end-user sites) These services should be classified as inside the CLA only if both end-users sites are in the CLA. If both ends are within the LP area they should be classified as being within the LP, and those having both ends in the RoUK should be classified as RoUK. An end-to-end service with one end in the CLA and the other in the LP should be classified as an LP circuit. Circuits with one end in the RoUK and the other end in either the LP or the CLA should be classified as RoUK circuits.
  - Other circuits (i.e. circuits between an end-user's site and a network node or between network nodes) These circuits should be classified as being in the geographic market corresponding to the location of the end-user's site or, in the case of backhaul circuits, corresponding to the location of the remote end of the backhaul circuit.
- 10.53 We consider that the approach outlined above is consistent with the competitive conditions found in the CLA, LP and RoUK markets. For example, we consider that CPs should be able to establish network nodes within the CLA and serve sites within the CLA from such nodes, hence our proposal that circuits between an end-user's site within the CLA and a network node outside the CLA should be classified as inside the CLA.

#### Support for WDM interconnection

#### Proposals set out in the May 2015 BCMR Consultation

- 10.54 In the May 2015 BCMR Consultation we reviewed developments in WDM interconnection since the BCMR 2013 and considered whether we should introduce new obligations to support WDM interconnection.
- 10.55 In light of our analysis we proposed not to introduce any new specific network access obligations to complement the obligation for BT to supply end-to-end wholesale WDM services discussed above.

<sup>&</sup>lt;sup>575</sup> See GTC response to the May 2015 BCMR Consultation, page 13.

#### Stakeholders' responses to our proposals

10.56 We did not receive any comments regarding our proposed approach to maintain the existing network access obligations and WDM interconnection.

#### Our decision

- 10.57 Interconnection plays an important role in wholesale leased lines markets, enabling CPs to connect terminating segments rented from BT to their own networks in order to provide end-to-end downstream services. Whilst CPs are able to interconnect BT's wholesale Ethernet services with their own networks to build end-to-end retail services, they have not done so to a material extent with BT's wholesale WDM services. This is both because interconnection of WDM services could be costly and because available technology has not, until recently, allowed CPs to assure reliability of the resulting service to the level often required by the end-user. Given these limitations, CPs generally either rent end-to-end wholesale WDM services from BT in cases where they are not able to provide end-to-end services on their own networks or use dark fibre leased from other suppliers.
- 10.58 There have been two developments in relation to WDM interconnection in recent vears:
  - Firstly, Openreach introduced Optical Transport Unit (OTU) interface options for • its OSA and OSEA WDM products.<sup>576</sup> These provide additional support for interconnection by facilitating end-to-end monitoring of interconnected circuits.577
  - Secondly, in April 2014 Openreach introduced a 'friendly alien wavelength' interface option for the Ciena 6500 variant of its OSEA product. This provides additional support for interconnection by facilitating direct optical interconnection without any intermediate equipment. Currently this option is available for 40Gbit/s and 100Gbit/s wavelengths and CPs must also use Ciena 6500 WDM equipment.578
- 10.59 Openreach's OTU interfaces have been available since the 2013 Review and have not led to a significant increase in WDM interconnection. We consider it is too early to assess whether friendly alien wavelengths may provide a more effective method of connection but we consider that usage is likely to be limited in the short term at least as demand for 40Gbit/s and 100Gbit/s wavelengths is currently small. In addition, the requirement for CPs to use equipment supplied by the same vendor as BT might further limit usage.
- 10.60 We consider it important that BT should continue to offer WDM interconnection options such as OTU and friendly alien wavelengths. However, in view of the discussion above, it is unclear how well they will facilitate CPs' ability to interconnect WDM services.
- 10.61 The dark fibre remedy we are imposing in the CISBO markets will allow CPs to deploy their own end-to-end WDM services without WDM interconnection as they will be able to construct fibre circuits using terminating segments rented from BT and

<sup>&</sup>lt;sup>576</sup> Openreach introduced OTU interface options for the OSEA WDM product in April 2011 and the OSA WDM product in January 2012. <sup>577</sup> We provide a description of the OTU interface standards in Annex 11.

<sup>&</sup>lt;sup>578</sup> We provide a more detailed description of the 'friendly alien wavelength' option in Annex 11.
their own core networks. However, the dark fibre remedy will take some time to implement and in the meantime, CPs will continue to depend on wholesale WDM services rented from BT.

10.62 In light of the considerations set out above, we have decided to maintain the existing specific network access obligations relating to WDM services which require BT to supply end-to-end wholesale WDM services (thereby allowing CPs to offer these services without interconnection) and to provide WDM backhaul. These WDM obligations, and the other specific network access obligations that we are imposing on BT in the CISBO markets, are set out below.

#### Basis of charges condition for EAD services

#### Proposals set out in the May 2015 BCMR Consultation

10.63 In the May 2015 BCMR Consultation we proposed to impose a 'basis of charges' condition, requiring the rental and connection charges of EAD to be set by reference to the rental and connection charges for EAD LA, adjusted to reflect the difference in the Long Run Incremental Costs (LRIC) of EAD.

#### Aim and effect of regulation

- 10.64 Where significant differences emerge in the usage of regulated products, there is a potential for BT to discriminate in favour of its own operations by setting prices so as to favour the services it consumes proportionately more than its competitors.
- 10.65 In the May 2015 BCMR Consultation we found that although EAD and EAD LA are available to all CPs on an EOI basis, BT uses proportionately more EAD LA than other CPs, suggesting it is better suited to BT's requirements than other CPs'. We also observed the substantial pricing differentials between the two variants of the EAD service for similar circuit configurations and that BT's returns for EAD where significantly higher than for EAD LA.
- 10.66 We noted that EAD LA is only available for circuits with one end terminating at Access Serving Node (ASN) exchanges, whereas EAD and EAD Extended Reach (EAD ER) may be used to connect any two locations (including BT exchanges) subject to circuit distance limits.
- 10.67 In view of these findings we had two concerns. Firstly, that CPs may face higher costs than BT because they consume proportionately more EAD than BT, and secondly that CPs will be incentivised to make network design choices that are not efficient, e.g. to locate POPs in BT's ASNs when other locations would be more efficient or equally as efficient.
- 10.68 The aim of the proposed basis of charges condition was to ensure that differences in EAD and EAD LA reflect differences in their LRICs. This would mean that the choice between the two products would be productively efficient as it would be based on differences in the underlying costs of provision. Setting the price differentials equal to the incremental cost differential means that purchasers face incentives to use the service which minimises total costs. In addition, the amount of common costs recovered per circuit should be the same for a given bandwidth of circuit.
- 10.69 We also considered that setting the price difference between EAD LA and EAD equal to LRIC would reduce the risk of excessive pricing or undue discrimination by BT and

address the risk that BT recovers more common costs from non-Local Access variants, which are proportionally more important to its competitors.

#### Stakeholder responses to our proposals

- 10.70 BT objected to the proposed condition in its responses to the May 2015 BCMR Consultation<sup>579</sup> and the June 2015 LLCC Consultation.<sup>580</sup>
- 10.71 BT said that the risk of Openreach discriminating in favour of BT's downstream businesses is very limited for several reasons:
  - Our analysis of consumption patterns focused on the installed base. The difference between internal and external consumption of EAD and EAD LA is narrowing, and on a forward looking basis, will narrow further as external CPs make increasing use of EAD LA circuits.
  - Different patterns of usage may be observed even amongst BT's downstream businesses with some using more EAD than EAD LA.
  - EAD LA is available from any fibre enabled local exchange, not just ASN exchanges as stated by Ofcom. So Ofcom's concern that EAD LA may be better suited to BT's needs than other CPs is unfounded.
  - An external CP [≫] had more PoPs at BT exchanges than BT's downstream businesses and is therefore better able to take advantage of EAD LA than BT.
- 10.72 BT noted that some of the pricing information quoted in the consultation was incorrect. It also claimed we had discarded wider information on costs, which shows that the cost structure for EAD is significantly different to that of EAD LA. BT presented its own analysis of current and future costs and returns for 100Mbit/s and 1Gbit/s EAD and EAD LA services which, in its view, indicated that there was no justification for a basis of charges condition, which would distort pricing more than it helps protect consumers. This analysis indicated that if the basis of charges condition was applied in conjunction with the Ethernet charge control proposed in the June 2015 LLCC Consultation, it would create significant distortions in returns. Returns for EAD LA would be [≫] than for EAD by the final year of the charge control (2018/19), and EAD returns for 100Mbit/s may [≫

≫].

- 10.73 BT also argued that our proposals were disproportionate, requiring adjustments to EAD rental prices which make up [≫]% of the overall revenue reduction in the charge control period. It said this would undermine the flexibility we normally build into charge controls to allow BT to respond to market demands and to ensure that it earns reasonable returns on EAD.
- 10.74 Vodafone did not support the proposals. It stated that while it understood the rationale, the proposal ignored the investments made by CPs. Vodafone argued that

<sup>&</sup>lt;sup>579</sup> BT response to the May 2015 BCMR Consultation, pages 62-63.

<sup>&</sup>lt;sup>580</sup> BT response to the June 2015 LLCC Consultation, Annex C - EAD Standard to EAD Local Access Differential.

since the last review CPs have invested in points of presence at BT exchanges in order to use EAD LA and this investment remains to be recouped. It called for a full impact analysis, taking account of the likely shift in BT pricing, the impact on already sunk investments and the likelihood of enabling further investments.<sup>581</sup>

- 10.75 Vodafone also said we should focus on the ratio of EAD and EAD LA circuits being provisioned, rather than the proportion of circuits in situ. For new connections, EAD LA makes up [ $\gg$ ]% of circuits on Vodafone's order book, and Vodafone expected it to rise to [ $\gg$ ]%.<sup>582</sup>
- 10.76 Vodafone proposed that we should either withdraw the proposed condition or apply a 'glide path' so that the condition would only apply in full from March 2019 in order to give CPs time to recover their investments.
- 10.77 Vodafone also proposed that, as an alternative, Ofcom could adopt measures to address the advantage that BT has over other CPs in terms of its geographic reach. Ofcom could either limit the number of BT exchanges at which EAD LA is available or specify that CPs with presence at a specified number of BT exchanges based on CPs' current 'footprint' would qualify for the lowest cost inputs (in effect they would be able to purchase EAD services at EAD LA prices).
- 10.78 In a further submission, Vodafone highlighted the long-lead time for investment in local exchange presence, which requires the creation/upgrading of exchange space and the installation of appropriately sized backhaul capacity. It added that the standard charge control and market forces will drive down the differential between EAD and EAD LA over the course of the charge control period, such that proactive action by Ofcom is not necessary.<sup>583</sup>
- 10.79 Hyperoptic did not support the proposal. It argued that as wholesale Ethernet services are available on an EOI basis CPs can choose the services that best suit their needs. Therefore, differences in usage patterns do not indicate discrimination by BT. There is no particular reason to assume that a choice of circuits is not efficient, nor that regulating the price differential would change the efficiency of the resulting competitive marketplace. However, for CPs without their own national core network efficient pricing for use of the BT topology best serves competition, both for consumer pricing and product development. <sup>584</sup>
- 10.80 Virgin supported our proposals, observing that the current regulations permit BT to make price changes that favour BT Group (which takes proportionately more LA variant products) over major rivals such as Virgin (which predominantly uses standard variant circuits). While it welcomed the proposal as a means of eliminating the risk of gaming, it said the approach should not be limited to EAD services, and should be extended to legacy services which remain significant in terms of volume. It pointed out that, in 2014, BT price cuts were concentrated on WES Local Access (WES LA) products rather than the non-Local Access WES variant.<sup>585</sup>
- 10.81 TalkTalk welcomed our proposals, claiming the current price structure clearly demonstrates BT's incentive and ability to exploit the flexibility it is given within

<sup>&</sup>lt;sup>581</sup> See Vodafone response to the May 2015 BCMR Consultation, pages 45-47.

<sup>&</sup>lt;sup>582</sup> See Vodafone response to the May 2015 BCMR Consultation, pages 46.

<sup>&</sup>lt;sup>583</sup> See Vodafone response to May 2015 BCMR Consultation, November 2015 Supplemental 1.

<sup>&</sup>lt;sup>584</sup> See Hyperoptic response to the May 2015 BCMR Consultation, page 14.

<sup>&</sup>lt;sup>585</sup> See Virgin response to the May 2015 BCMR Consultation, pages 45-46.

baskets to discriminate against competitors. It added that there was no reason for the change to take 12 months to implement as this allows BT to reap the rewards of anticompetitive behaviour after it has been identified. Instead, the new requirement should be implemented on 1 April 2016.<sup>586</sup>

10.82 GTC supported our proposals, noting that it always utilises EAD rather than EAD LA due to connection points typically being in different exchange serving areas.<sup>587</sup>

#### Our decision

#### EAD LA availability

- 10.83 The main difference between EAD and EAD LA is that EAD LA is only available for circuits connecting an end-user site to the serving BT exchange whereas EAD and EAD ER may be used to connect any two locations (including BT exchanges) subject to circuit distance limits.
- 10.84 BT has clarified that EAD LA is available from all BT exchanges not just the exchanges that BT designates as ASNs (as we stated in the May 2015 BCMR Consultation). This difference is significant for our analysis as it means that EAD and EAD LA have different circuit configurations and there are no situations where CPs have to purchase a more expensive EAD circuit to obtain a circuit configuration comparable to EAD LA simply because an exchange has not been designated as an ASN by Openreach. In particular, CPs that have PoPs in BT exchanges other than those designated as ASNs, may also use EAD LA for connections to sites in the serving exchange areas and do not therefore have to use EAD circuits.
- 10.85 This finding has lessened our concern that the product definition and pricing structure of the EAD variants will incentivise CPs to make network design choices that are not efficient, e.g. to locate POPs in BT's ASNs when other locations would be more efficient or equally as efficient.

#### Pricing differential

10.86 In the May 2015 BCMR Consultation we reported that there was a substantial pricing differential between the two variants of EAD. In light of our understanding of the availability of EAD LA (as discussed above) we reported that as a result of this differential, CPs who do not use ASNs as aggregation points pay higher charges for comparable circuit configurations. Table 10.3 in the May 2015 BCMR consultation contained a minor error in referencing the 2014/15 rental charges, rather than 2015/16 rental charges as indicated, leading us to slightly overestimate the minimum differential at £1264 per year rather than £1200. For completeness Table 10.2 below shows the correct charges.<sup>588</sup>

<sup>&</sup>lt;sup>586</sup> See TalkTalk response to the May 2015 BCMR Consultation, page 69.

<sup>&</sup>lt;sup>587</sup> See GTC response to the May 2015 BCMR Consultation, page 13.

<sup>&</sup>lt;sup>588</sup> We have also corrected the main link charge for 2013/14 which is £372 (not £37.20 as stated in the May 2015 BCMR Consultation).

#### Table 10.2: EAD and EAD Local Access 1Gbit/s charges<sup>589</sup>

Annual charges (excluding VAT)	EAD	EAD Local Access
Connection charge	£2,100	£2,050
Rental charge (1 year contract)	£4,200	£3,000
Rental charge (5 year contract)	£4,152	£2,952
Main link charge (per km)	£372	Not applicable

Source: Ofcom summary of Openreach EAD price list

10.87 As noted above we now understand that the EAD and EAD LA have different configurations.

#### Returns

10.88 Table 10.3 below shows how BT's mark-ups over FAC for EAD and EAD LA circuits. For 10Mbit/s and 100Mbit/s services, which make up the great majority of circuits, the difference in mark-up are relatively small and have reduced from 2013/14. Indeed, we note that in 2014/15, EAD 100Mbit/s had a lower mark-up than EAD LA 100Mbit/s. However, BT's returns for 1Gbit/s EAD in 2014/15 were substantially higher than for EAD LA.

	EAD LA 10Mbit/s	EAD Other 10Mbit/s	EAD LA 100Mbit/s	EAD other 100Mbit/s	EAD LA 1Gbit/s	EAD other 1Gbit/s
Average price 2014/15	£2,385	£3,214	£2,203	£3,032	£4,967	£7,182
FAC 2014/15	£1,968	£2,905	£2,021	£3,044	£2,237	£3,588
Mark-up over FAC 2014/15	£418	£309	£182	-£12	£2,730	£3,594
Mark-up over FAC 2013/14 <sup>590</sup>	£730	£874	£192	£267	£2,824	£4,725

#### Table 10.3: Comparison of prices and costs of EAD and EAD LA

Prices and costs annualised per-circuit, based on connection and rental over 3 year term, external sales. EAD Other includes EAD and EAD Extended Reach. Source: Ofcom summary of section 8.7, BT 2014/15 RFS

10.89 In 2015/16, BT made significant price cuts to its EAD and EAD LA 1Gbit/s services to comply with the charge control. From 1 April 2015, BT's annual rental for EAD 1Gbit/s was £4,200, compared with an annual rental of £3,000 for the EAD LA 1Gbit/s.<sup>591</sup> We do not have FAC data for the comparable period, and note that the comparison above includes EAD ER as well as EAD, but nonetheless, we have

<sup>&</sup>lt;sup>589</sup> Prices applicable from 1 April 2015.

<sup>&</sup>lt;sup>590</sup> The mark-up over FAC 2013/14 figures are based on restated 2013/14 costs included in BT's 2014/15 RFS. These figures therefore differ from the mark-up over FAC 2013/14 figures included in Table 10.4 of the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>591</sup> Connection charges for the two products were similar at £2,100 for EAD and £2,050 for EAD LA.

reason to believe that these price reductions are likely to have significantly reduced the differential returns between these two services.

10.90 The charge control we are imposing will require BT to make significant price reductions for services that fall within the Ethernet basket, including EAD and EAD LA. To the extent that returns on EAD 1Gbit/s are higher than for EAD LA 1Gbit/s, we consider that BT will have an incentive to concentrate its price reductions on EAD. We therefore consider it likely that the differential in the pricing of these services will narrow still further over the market review period, even in the absence of a basis of charges condition.

#### Consumption patterns

10.91 As we noted in the May 2015 BCMR Consultation, although EAD LA is available to all CPs on an EOI basis, BT currently uses proportionately more EAD LA than the average usage figures of non-BT CPs. Table 10.4 compares the proportions of EAD LA rentals and connections (as a share of total EAD) for internal and external CPs in 2013/14 and 2014/15.

#### Table 10.4: Summary of internal and external CISBO circuit rentals and connections

EAD LA as % of Total EAD	2013/14	2014/15
Internal rentals	65%	64%
External rentals	42%	48%
Internal connections	67%	70%
External connections	55%	58%

Source: Ofcom summary of sections 8.7 to 8.9, 2013/14 BT RFS and sections 8.7 to 8.9, 2014/15 BT RFS. Total EAD includes EAD, EAD ER and EAD LA. Figures shown include both WECLA and non-WECLA markets.

- 10.92 This data supports the point made by BT and Vodafone that the difference between internal and external consumption of EAD LA has narrowed. This is mainly because external consumption of EAD LA rose sharply in 2014/15 from 42% to 48% of all EAD rentals. We also note that the majority of external EAD connections are now EAD LA, which reflects the investment made by some external CPs in their presence in BT exchanges.
- 10.93 We also agree with BT and Vodafone that the difference between external and internal consumption of EAD LA is likely to narrow further in the review period. In this regard we note that:
  - Vodafone expected EAD LA to increase as a proportion of its new connections from [≫]% to [≫]%;
  - in its response to the June 2015 LLCC Consultation, BT predicted that, in 2015/2016, consumption of EAD LA would rise to [≫]% of all external circuit

connections (not just EAD) narrowing the gap with the [ $\gg$ ]% of all internal circuits which will be EAD LA<sup>592</sup>;

- BT also predicted that all other things being equal, the gap would continue to narrow and that by 2017/18 EAD LA would constitute [≫]% of all external types and [≫ ]% of internal EAD circuits (of all variants); and
- Our volume forecasts suggest that the convergence in external/internal consumption of EAD LA will continue during the review period. We forecast that external EAD LA rentals as a share of all EAD rentals will reach [≫]% in 2018/19, just short of the estimated internal figure of [≫ ]%.
- 10.94 Table 10.5 shows, there is significant variation in the proportion of EAD LA circuits used by individual external CPs, most likely reflecting differences in size, geographic reach and investment strategies as respondents have suggested. EAD LA consumption is proportionately higher amongst the larger CPs with presence in BT's exchanges and an external CP [≫] consumes a significantly higher proportion of EAD LA than BT. Some smaller CPs have also purchased a significant proportion of EAD LA, suggesting that they are also able to make the necessary investments to establish presence at BT exchanges to use EAD LA. There is also significant variation in the proportion of EAD LA circuits used by BT's downstream businesses for example, [≫] consumes significantly more EAD standard circuits ([≫]% of all circuits consumed) than EAD LA ([≫]%).

<sup>&</sup>lt;sup>592</sup> This compares with our finding in the May 2015 BCMR consultation that only 25% of all external circuits in 2013/14 were EAD LA, significantly lower than the 42% of internal circuits that were EAD LA.

СР	EAD LA	EAD Other (EAD and EAD Extended Reach)	EAD LA as a % of all EAD	
Vodafone	[≫]	[≫]	[≫]	
Sky	[≫]	[≻]	[≫]	
TalkTalk	[≫]	[≫]	[≫]	
Virgin	[≫]	[≫]	[≫]	
BT managed External CPs <sup>593</sup>	[≫]	[≫]	[≫]	
Other external CPs	[≫]	[≫]	[≫]	
Sub-Total – all external CPs	[≫]	[≫]	[≻]	
вт	[≫]	[≫]	[≻]	
Total	[≫]	[×]	[×]	

#### Table 10.5: EAD LA as % of all EAD by CP

Source: BT response to 21st s135 LLCC (Confidential). Non-CLA Rental Volumes at 31/3/15

#### Investment in presence at exchanges

10.95 We acknowledge the point made by Vodafone that some CPs may have expanded their presence at BT exchanges, in the expectation that the pricing differential between EAD and EAD LA would be maintained. If we were to proceed with introducing a basis of charges condition, we consider that there may be a case for phasing it in over the market review period to reduce the risk that these investments may be undermined.

#### Reduced competition concerns

- 10.96 This evidence and analysis above has reduced our concerns arising from the product definition and the pricing differential that led us to propose the basis of charges condition. In particular:
  - Our revised understanding of EAD LA availability, significantly alleviates our concern that CPs may be incentivised to make inefficient choices about the location of their POPs or the circuit types they use.
  - The convergence of external and internal consumption patterns in 2014/15 and the expected further narrowing of the gap during the review period, has reduced our concern that non-BT CPs will face higher costs than BT because they use proportionately more EAD than EAD LA.
  - The convergence of consumption patterns and the fact that some of BT's largest competitors are able to use EAD LA proportionately as much as, or more than,

<sup>&</sup>lt;sup>593</sup> External CP's account managed by other BT lines of business.

BT will in our view reduce BT's incentive to set prices in a discriminatory manner so as to favour its own downstream businesses.

- The differential in BT's returns for 1Gbit/s EAD and EAD LA has narrowed in 2015/16 and we expect it to continue to narrow over the market review period as a result of the Ethernet charge control. In 2014/15 there was already little difference in the mark-ups for 100Mbit/s circuits, which are expected to form the majority of new connections over the review period.
- 10.97 In light of the considerations outlined above, we have decided it would not be proportionate to impose the proposed basis of charges condition. BT will continue to be subject to EOI and non-discrimination obligations discussed in Section 8 and the EAD and EAD LA products will be subject to the charge control discussed in Volume II.

#### Virgin's comments about WES and WES LA

10.98 We have decided it would not be appropriate to apply a basis of charges condition to regulate the price differential between WES and WES LA (as proposed by Virgin). Although WES rental volumes remain high, they are falling and these products are no longer available for new connections. So there is no risk that the terms of service or pricing might incentivise CPs to make inefficient choices about the location of new PoPs. In addition, the annual rental charge for WES was reduced on 1 August 2015, so it is now lower than the equivalent charge for WES LA.

#### Vodafone's alternative proposals

- 10.99 In imposing remedies on BT in the CISBO markets, our approach is designed to promote effective competition in downstream markets by specifying forms of access to promote economically efficient infrastructure-based competition. Specifically, our aim in requiring BT to provide disaggregated access and backhaul is to provide incentives for CPs to invest in alternative backhaul infrastructure to BT's.<sup>594</sup>
- 10.100 Vodafone's alternative proposals are designed to address a perceived advantage that BT has in terms of geographic reach over other CPs. Although the two proposals differ in detail, both would limit the number of exchanges at which disaggregated products (such as EAD LA) would be available in effect, the economic boundary for effective and sustainable investment in alternative infrastructure to BT's.
- 10.101 We do not consider that it would be appropriate for us to determine such a boundary. The CISBO markets are growing and, as discussed above, CPs are increasingly making use of the most disaggregated input EAD LA. If we were to intervene in the manner that Vodafone has proposed we would risk curtailing competing investment at an arbitrary level.
- 10.102 We consider that the appropriate economic boundary should be determined by CPs' economic considerations rather than by regulatory intervention. We have therefore decided not to intervene in the manner that Vodafone has proposed.

<sup>&</sup>lt;sup>594</sup> This approach is consistent with the BEREC Common Position. See, in this respect, **BP3** and **BP3a** and footnote 5 to **BP3a**.

#### **Excess Construction Charges**

#### Proposals set out in the May 2015 BCMR Consultation

- 10.103 Excess Construction Charges (ECCs) are levied by BT to recover the costs of customer-specific network construction work in association with a new connection. ECCs cover activities such as a site survey, the installation of new duct, new blown fibre and drilling through walls.<sup>595</sup> ECCs are charged in addition to normal connection charges.
- 10.104 BT made changes to the charging arrangements for additional construction work on 1 June 2014. New provisions of EAD services were exempted from the first £2,800 of ECCs. This was funded by increasing the standard connection charge for all EAD orders by £548. Following a consultation, we issued Directions in our May 2014 Statement<sup>596</sup> amending the current charge control to enable BT to make this change. Most CPs supported our decision to allow BT to introduce the new charging arrangements.
- 10.105 BT's main rationale for the change in charging policy was to simplify part of the provisioning process. It was anticipated that removing the requirement to seek end-customer approval for an ECC charge (from the majority of connections which previously incurred the charge) could lead to a reduction in average lead times and fewer cancellations of EAD orders.
- 10.106 Taking account of responses to the April 2014 CFI and information from BT, we considered the impact of the new charging arrangements. We noted evidence of a significant reduction in 'deemed consent' delays associated with ECCs, and said this might be expected to either reduce lead times or to bring more of the residual provisioning delays within BT's responsibilities to pay compensation for delays under the SLG requirements. We explained that we considered that it was unlikely that the new arrangements would have a material detrimental impact on competition.
- 10.107 In the June 2015 LLCC Consultation we proposed that BT should be given flexibility to change the balancing charge of £548, but not the threshold charge which exempts the first £2,800 of new provisions of EAD services, throughout the control period to ensure cost recovery and revenue neutrality. We also proposed new controls for ECCs in the June 2015 LLCC Consultation.

#### Stakeholders' responses to our proposals

- 10.108 GTC said it was comfortable with our assessment of how ECCs are applied and the positive changes introduced in 2014.<sup>597</sup>
- 10.109 BT agreed that it should be able to retain the flexibility to offer (or withdraw) a £2,800 exemption from ECCs and to alter the level of the associated balancing charge on all

<sup>&</sup>lt;sup>595</sup> Only those elements that are unique to a single end-user site are chargeable as ECCs. Construction work that forms part of Openreach's common network (i.e. can serve more than one end-user site) falls outside the scope of ECCs. ECCs are also incurred if the customer requests a method of delivery which is not Openreach's first choice or if an additional circuit is required for resilience purposes.

<sup>&</sup>lt;sup>596</sup> Ofcom, Excess Construction Charges for Openreach Ethernet Access Direct – Directions affecting the operation of the Leased Lines Charge Control, 16 May 2014.

http://stakeholders.ofcom.org.uk/consultations/excess-construction-charges/, Annex 1. <sup>597</sup> See GTC response to the May 2015 BCMR Consultation, page 13.

EAD connections. However, it argued that it should also have flexibility to alter the exemption level from £2,800 to reflect changes in ECC costs or circuit demand. <sup>598</sup>

#### Our decision

10.110 We continue to consider that allowing BT the flexibility to offer an exemption from a share of ECCs, funded by a balancing charge on all EAD connections, is unlikely to have a material detrimental impact on competition. We explain our decisions on the charge controls for ECCs in Volume II. As is explained in Volume II, we have decided that BT should be given flexibility to continue to offer an ECC exemption and we have allowed BT to change the balancing charge of £548, but not the threshold charge which exempts the first £2,800 of new provisions of EAD services.

#### **Project services**

#### Proposals set out in the May 2015 BCMR Consultation

- 10.111 Project Services is a project coordination and management service offered by Openreach to CPs and which it provides on an EOI basis.
- 10.112 In view of concerns expressed by some CPs (in their responses to the April 2014 CFI) that demand for Project Services was being driven by the poor quality of the standard provisioning service, we obtained information from Openreach, including details of the services supplied, customer case studies and internal processes. The data collected did not suggest that Openreach's provisioning performance is superior where the CP pays for Project Services.
- 10.113 In the May 2015 BCMR Consultation, we proposed that our primary focus should be on the quality of Openreach's standard provisioning process which is relevant to all CPs and end-customers, rather than taking a prescriptive approach to regulating Project Services. We therefore did not propose to implement specific remedies for Project Services.
- 10.114 We considered that even absent concerns about the quality of Openreach's standard provisioning processes, some CPs with large orders would have a residual need for additional project management services. Moreover, we considered that CPs would not be able to fully replicate Project Services as they do not have access to the Openreach systems and personnel that Project Services is able to draw on. We therefore considered that Project Services should be regarded as a provisioning option when purchased in connection with wholesale leased lines services.
- 10.115 Hence we proposed that Project Services falls within the scope of the SMP conditions applicable in the wholesale leased lines markets, including a requirement not to discriminate unduly and an obligation to provide the service on an EOI basis. We noted that a charge control would not be particularly effective for Project Services given the bespoke nature of the service and we did not propose a charge control for Project Services.

#### Stakeholders' responses to our proposals

10.116 BT said it welcomed our view that a prescriptive approach to regulating Project Services is unnecessary and that a charge control for the service is not required. It

<sup>&</sup>lt;sup>598</sup> See BT's response to the May 2015 BCMR Consultation, page 62.

added we should also acknowledge that some "project services offerings" could be fully replicable by CPs and that, in such cases, regulation should not apply.<sup>599</sup>

- 10.117 Hyperoptic agreed we should not implement a specific remedy for Project Services. It added, however, that order information is both lacking and not forthcoming which requires CPs to constantly 'nag' Openreach for information and to progress orders along to the next stage. It said the requirement on BT to provide information should form part of the usual product specifications, and said it has some confidence that the Quality of Service (QoS) remedies proposed should help order progression.<sup>600</sup>
- 10.118 Virgin said we should ensure that our proposed changes to improve Openreach's QoS are effective in eliminating the need to rely on 'add-on' services, such as Project Services, as a way of mitigating provisioning failures.<sup>601</sup>
- 10.119 Vodafone claimed that the Equality of Access Board (EAB) has taken a contrary position to Ofcom in suggesting Openreach's improved service to BT's downstream divisions is a direct result of the use of Project Services. It said a detailed analysis is needed of what Project Services has actually provided and how it has improved performance.
- 10.120 Vodafone urged Ofcom to carry out a full investigation into the effect of Project Services on the market and, in particular, to identify any areas where discrimination may occur. It added that it might be necessary for Openreach to provide all of its QoS KPI's separately for circuits where Project Services is used in order to expose the underlying performance of products and processes.<sup>602</sup>
- 10.121 Vodafone said that CPs sometimes felt the need to purchase Project Services as one of the limited range of tools available, in a market where poor service has become the norm. It added that Ofcom should intervene to both control the price of Project Services and to reduce the barriers facing CPs to replicate the offering using their own project resourcing.<sup>603</sup>

#### Our decisions

- 10.122 In view of the concerns raised in responses to the April 2014 CFI we have undertaken analysis of Project Services. We have reviewed Ethernet provisioning performance and as noted above we have obtained information from Openreach including details of the services supplied, customer case studies and internal processes.
- 10.123 We also sought further information from Openreach and the Equality of Access Office (EAO) to assess whether potential risks of discrimination associated with Project Services are appropriately managed. The EAB Annual Report 2014 stated that its 'extensive investigation and analysis' found no significant indications of non-compliance with the EOI Undertakings. The EAO has subsequently confirmed that its investigation had found no evidence that staff within Openreach had unduly influenced their colleagues working on provisioning to expedite orders. BT's general product descriptions make clear that Project Services is not an expedite service and

<sup>&</sup>lt;sup>599</sup> See BT's response to the May 2015 BCMR Consultation, page 61.

<sup>&</sup>lt;sup>600</sup> See Hyperoptic's response to the May 2015 BCMR Consultation, page 15.

<sup>&</sup>lt;sup>601</sup> Virgin's response to the May 2015 BCMR Consultation, page 46.

<sup>&</sup>lt;sup>602</sup> Vodafone's response to the May 2015 BCMR Consultation, page 67.

<sup>&</sup>lt;sup>603</sup> Vodafone's response to the June 2015 LLCC Consultation, page 17.

is not a means of fast tracking standard order processes or to place orders on behalf of the CP.

- 10.124 We acknowledge that in its 2015 Annual Report<sup>604</sup>, the EAB considered that greater use of Project Services was partly responsible for an observed differential in performance between BT's downstream divisions (who are the largest purchasers of Project Services) and other CPs for the year ending March 2015. Our own analysis of provisioning performance from 2011 to 2014 (see paragraphs A12.77 to A12.83) observed some differences in various aspects of performance but we did not find any evidence that orders placed via Project Services receive favourable treatment.
- 10.125 However, our findings on Project Services need to be viewed in context. Orders placed with Project Services are on average likely to be more complex to provision than standard orders. We also understand that many orders are subject to coordinated delivery across a number of sites. Therefore, evidence of similar or slightly worse performance does not necessarily rule out the possibility that such orders are expedited or receive relatively higher quality of service in other aspects of the provisioning process such as certainty of the delivery date. Importantly, we do not have sufficient information to estimate the counterfactual performance for a given order had it not been provisioned under Project Services.
- 10.126 Whilst we understand respondents' concerns about discriminatory conduct, we note that Project Services is available on an EOI basis and, as noted above, has been subject to extensive investigation and analysis by the EAO. We therefore consider that the central concern about Project Services is in the context of the problems with Openreach's provisioning quality of service. In our view it would not be acceptable for Project Services to be developed or positioned as an essential service which CPs need to purchase to get their orders prioritised and/or expedited while provisioning performance for standard orders deteriorates.
- 10.127 A key focus of this review has been on improving the quality of Openreach's standard provisioning process, which is relevant to all CPs and end-customers. The objective of our QoS remedies our final decisions are set out in Section 13 is to ensure that CPs have confidence in the standard order process and are less likely to consider they are obliged to buy Project Services to secure a satisfactory service. We have decided this should be our priority rather than taking a prescriptive approach to our regulation of Project Services.
- 10.128 Even if the standard order process is satisfactory, some end-customers and CPs with large orders may have a residual need for a project management service, which is not relevant to other end-customers and CPs seeking individual connections. We therefore see the rationale for Project Services being offered and priced as an optional 'add-on' for a subset of orders, rather than the costs being absorbed within the charges that apply to all new connections.
- 10.129 Some CPs may offer similar generic project management/coordination services as part of their proposition to end-customers with large orders. We welcome Openreach's 'Clarity Update Trial' which is testing new procedures that will provide CPs with more detailed and up-to-date information with order progress. This should provide CPs with information which is currently easily accessible to Project Services

<sup>&</sup>lt;sup>604</sup> BT Group plc, *Equality of Access Board Annual Report 2015*, <u>http://www.btplc.com/Thegroup/Ourcompany/Theboard/Boardcommittees/EqualityofAccessBoard/Pub</u> <u>lications/EAB\_Annual\_Report\_2015.pdf</u>, page 20.

staff (as employees of Openreach), potentially enhancing CPs ability to offer updates and alternative project co-ordination services to end-customers.

- 10.130 However, we still do not consider that other CPs would be able to fully replicate the Project Services proposition since they do not have access to the Openreach systems and personnel that Project Services staff are able to draw on. We therefore consider that Project Services is a provisioning option when purchased in connection with a regulated wholesale leased line service rather than a downstream activity. It is therefore subject to the SMP conditions applicable in the wholesale leased lines markets. With regard to the concerns raised by Hyperoptic and Vodafone about the transparency of Project Services, we note that the SMP conditions require BT to publish a reference offer and to provide Project Services on an EOI basis.
- 10.131 In view of the findings of our analysis of provisioning performance, we have decided not to introduce additional KPIs for Project Services. As discussed above, our analysis has not found any evidence that orders placed with Project Services receive favourable treatment and it would be difficult to determine whether any observed differences are due to Project Services or differences in the mix of orders placed via Project Services and other orders.
- 10.132 Given the bespoke nature of Project Services requirements and orders which is charged on the basis of day rates of project management staff we do not consider that a charge control for would be particularly effective.
- 10.133 We have therefore decided that we will not introduce new specific remedies for Project Services. However, the SMP general remedies (other than a price control) that we are applying to leased lines markets will apply to Project Services.

# Section 11

# Specific remedy for the TISBO market

# Introduction

11.1 In this section we set out the specific remedy that we have decided to impose on BT in the wholesale market for Traditional Interface Symmetric Broadband Origination (TISBO) in the UK excluding the Hull area at bandwidths up to and including 8Mbit/s (the TISBO market). This remedy is in addition to the general remedies for the TISBO market as discussed in Section 8.

# Summary of our decisions

- 11.2 In summary, we have decided to re-impose the Partial Private Circuits (PPC) Direction in the TISBO market with the following amendments:
  - In light of BT's intention to withdraw very low bandwidth PPCs in the next few years, we have amended the PPC Direction to permit BT to withdraw sub 2Mbit/s PPCs, subject to it giving existing customers a year's notice.
  - In view of the much reduced demand for new connections, we have amended the PPC Direction to remove the forecasting requirements.
- 11.3 We consider the PPC Direction is necessary to address the competition problems summarised in Section 7, in particular: the risk of refusal to supply, price discrimination and non-price discrimination.
- 11.4 We consider that these remedies fulfil our statutory duties and satisfy the relevant legal tests. In setting these remedies we have also taken account of our regulatory experience from the two previous market reviews, recent developments in these markets, views expressed by stakeholders in response to the April 2014 CFI and the May 2015 BCMR Consultation, as well as expected developments over the course of the review period of three years.

# Assessment of appropriate remedies

#### **BCMR 2013 remedies**

11.5 The PPC Direction was first introduced in 2002. It currently requires BT to provide PPC terminating segments in each of the three TISBO wholesale markets in the UK (excluding the Hull area) defined in the 2013 Review.<sup>605</sup> In the low bandwidth TISBO market in the UK (excluding the Hull area) it also requires BT to provide Radio Base Station (RBS) backhaul traditional interface circuits at bandwidths up to and including 2Mbit/s to mobile operators.

<sup>&</sup>lt;sup>605</sup> These markets are the wholesale market for low bandwidth TISBO in the UK excluding the Hull area at bandwidths up to and including 8Mbit/s, the wholesale market for medium bandwidth TISBO in the UK excluding the Hull area and the WECLA at bandwidths above 8Mbit/s and up to and including 45Mbit/s, and the wholesale market for high bandwidth TISBO in the UK excluding the Hull area and the WECLA at bandwidth TISBO in the UK excluding the Hull area and the WECLA at bandwidth TISBO.

- 11.6 The PPC Direction specifies detailed requirements for the provision and repair of PPCs and RBS backhaul including:
  - migration arrangements (for migration of retail private circuits to PPCs);
  - forecasting arrangements for capacity ordering; and
  - Service Level Agreements (SLAs) including provision and repair performance targets and service level guarantee (SLG) payments.

#### Withdrawal of very low bandwidth TI services

- 11.7 BT has announced that over the next few years it intends to withdraw certain very low bandwidth (VLB) retail leased lines and the corresponding wholesale inputs (sub 2Mbit/s PPCs). BT's current plans are to withdraw these VLB retail services as well as sub 2Mbit/s PPCs by March 2020.
- 11.8 Alongside this statement we have published a statement setting out our decision to withdraw retail regulation for BT's retail VLB leased line services; and our plans to mitigate the potential risk associated with service withdrawal to critical national infrastructure services that use very low bandwidth leased lines.<sup>606</sup>

#### Trunk market changes and replicability

11.9 In Section 5 and Annex 14 of the statement, we explain that we are amending the definition of TI terminating segments to include segments previously defined as regional trunk segments. It is important that this change and any subsequent pricing revisions that BT may choose to make do not undermine CPs' ability to commercially replicate BT's retail leased lines using PPCs. We would expect BT to maintain cost allocation arrangements established in 2009 in support of our work on Replicability.<sup>607</sup> In particular, BT should continue to ensure that its cost allocation systems treat internal and external circuits in the same way, for example by allocating costs to PPCs and BT's downstream services on a circuit volume basis to ensure that differences in circuit routings do not translate into a commercial disadvantage for CPs.

#### **PPC Direction**

11.10 As mentioned above, the PPC Direction specifies requirements for the provision and repair of PPCs and RBS backhaul.

#### Proposals set out in the May 2015 BCMR Consultation

- 11.11 We proposed to reapply the PPC Direction to the TISBO market and to retain the SLA/SLG provisions.
- 11.12 PPCs and RBS Backhaul account for the vast majority of terminating segments in this market and we expected this to continue to be the case given the legacy nature of the market and the gradual transition to CISBO services. Consequently we

<sup>&</sup>lt;sup>606</sup> See Business Connectivity Market Review: Very low bandwidth leased lines, Statement, 28 April 2016, <u>http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/</u>

<sup>&</sup>lt;sup>607</sup> http://stakeholders.ofcom.org.uk/binaries/consultations/low\_bandwidth/summary/condoc.pdf

considered that PPCs and RBS Backhaul remain the relevant products for fostering competition in downstream TI markets.

11.13 As noted above, BT is planning to withdraw sub 2Mbit/s PPCs over the next few years. As these are legacy services that are approaching the end of their life, we considered that it would be inappropriate for wholesale regulation to artificially extend the availability of these services. Consequently we proposed to amend the PPC Direction to facilitate the withdrawal of sub 2Mbit/s PPCs and RBS Backhaul. The effect of the amendment would be to disapply the requirement for BT to supply sub 2Mbit/s PPCs and RBS Backhaul, on condition that BT gives at least one year's notice of withdrawal. The PPC Direction would continue to apply to PPCs and RBS Backhaul at higher bandwidths (up to and including 8Mbit/s). We considered that this complemented our proposal to withdraw regulation from the retail Very Low Bandwidth TI market.<sup>608</sup>

#### Aim and effect of regulation

- 11.14 Section 45(10)(a) of the Act authorises the giving of directions with respect to matters to which an SMP condition relates. The PPC Direction is intended as a complementary remedy to the network access obligation. It augments the network access obligation by requiring BT to provide PPC terminating segments and RBS Backhaul services and is designed to ensure that they are provided in a non-discriminatory manner and with a level of performance that meets CPs' requirements. The SLG provisions of the PPC Direction are designed to incentivise BT to ensure that performance meets the specified targets and also to compensate CPs when performance does not meet the targets.
- 11.15 In the absence of the PPC Direction we consider that BT would have the incentive and the ability to refuse access at the wholesale level or to offer it on terms that would not meet CPs' requirements. This would favour BT's own retail operations with the effect of hindering sustainable competition in the corresponding downstream markets, ultimately against end users' interests.

#### Stakeholder responses to our proposals

- 11.16 In their responses to the May 2015 BCMR Consultation, four stakeholders commented on the proposed PPC Direction and our TISBO remedies proposals more generally.
- 11.17 BT disagreed with our proposal to identify the TISBO market and to impose remedies. Given the similarities with the higher bandwidth TISBO services BT was disappointed that we did not also consider whether the low bandwidth services met the Three Criteria Test for a market susceptible to *ex ante* regulation. BT considered that in view of the declining service volumes and the availability of direct substitutes, that the Three Criteria Test is not fulfilled and therefore the market is not appropriate for *ex ante* regulation. It argued that "there is no reason to suppose that further regulation will facilitate effective competition for TI services for the benefit of end users in the long term".<sup>609</sup>

<sup>&</sup>lt;sup>608</sup> Ofcom, Business Connectivity Market Review: Very Low Bandwidth Leased Lines, Consultation, http://stakeholders.ofcom.org.uk/binaries/consultations/very-lowbandwidth/summary/VLB\_TI\_retail\_market.pdf

<sup>&</sup>lt;sup>609</sup> Paragraphs 7.1 and 7.2, BT response to the May 2015 BCMR Consultation

- 11.18 BT also considered that the PPC Direction is unnecessary because all of the provisions of the PPC Direction are written into BT's contracts with CPs. BT cannot change the contracts without CPs' consent and where contract changes cannot be agreed with CPs there is the option to refer a dispute to Ofcom under Section 185 of the Communications Act 2003. BT also said that re-imposing the PPC Direction would delay or impede changes to the PPC contract that would be mutually beneficial for BT and CPs. As an example, BT cited that, due to declining order volumes, it no longer requires demand forecasts. BT asked that, at a minimum, we remove the forecasting provisions from the PPC Direction (paragraphs 11 to 20).<sup>610</sup>
- 11.19 Three respondents raised concerns about the withdrawal of wholesale sub 2Mbit/s services:
  - The JRC (responding on behalf of energy utilities) said that migration from sub 2Mbit/s is being impeded by poor Ethernet provisioning performance and that Ofcom should seek assurances from BT that it will maintain sub 2Mbit/s services until migration is complete.<sup>611</sup>
  - Airwave asked us to amend the PPC Direction to increase the notice period for withdrawing sub 2Mbit/s PPCs from 1 year to 2 years. Airwave said that replacing a Kilostream circuit in remote areas with a self-provided microwave circuit can take up to 2 years and therefore that notice of less than 2 years could impact the service Airwave provides to the emergency services.<sup>612</sup>
  - Vodafone said that BT had revised the date for withdrawal of sub 2Mbit/s services so many times that customers no longer treat the announced dates as credible. It requested that Ofcom require BT provide a definitive date with 3 years notice.<sup>613</sup>
- 11.20 Vodafone also suggested two further amendments to the PPC Direction:
  - to remove the exemption for matters beyond BT's reasonable control from the PPC SLG obligations in order to align the PPC Direction with the Ethernet SLA direction;<sup>614</sup> and
  - to amend paragraph 21 of the PPC Direction to clarify that the requirement for BT to obtain a CP's consent to extend the Committed Delivery Date for PPC and network infrastructure orders is not intended to constrain CPs by requiring them not to unreasonably withhold their consent.<sup>615</sup>
- 11.21 In response to the November 2015 LLCC Consultation, Vodafone expressed its concerns about quality of service standards for PPCs. Firstly, it stated that the procedure for fault diagnosis has changed and it no longer has free or ready access to self-service tools and relevant personnel. Secondly, it asserted that BT's repair reporting is based on BT's own validation rules that exclude "time spent working on a fault without access to the customer site even though many faults can be fixed

<sup>&</sup>lt;sup>610</sup> Paragraphs 7.35 to 7.37, BT response to the May 2015 BCMR Consultation

<sup>&</sup>lt;sup>611</sup> Page 2, The JRC response to the May 2015 BCMR Consultation

<sup>&</sup>lt;sup>612</sup> Response to Q11, Airwave response to the May 2015 BCMR Consultation

<sup>&</sup>lt;sup>613</sup> Pages 47 and 48, Vodafone response to the May 2015 BCMR Consultation

<sup>&</sup>lt;sup>614</sup> Page 9, Vodafone, Errors in Ofcom Draft Legal Instruments, September 2015

<sup>&</sup>lt;sup>615</sup> Page 10, Vodafone, Errors in Ofcom Draft Legal Instruments, September 2015

without site access and despite the fact that 24/7 site access is not a contractual requirement".  $^{\rm 616}$ 

#### Our decision

- 11.22 We discuss BT's comments concerning our market definition and SMP assessment in Section 5 including BT's comments about whether the TISBO market should be identified. In summary, we have concluded that it is appropriate to identify the TISBO market as a market susceptible to *ex ante* regulation.
- 11.23 In relation to remedies, we consider that it is appropriate to impose wholesale remedies in this market. Whilst we acknowledge that service volumes are falling rapidly and that there is a gradual transition to CISBO and other services, CPs are likely to require significant volumes of PPCs and RBS Backhaul services throughout this market review period of three years and beyond.<sup>617</sup> We therefore consider it appropriate to retain the PPC Direction and the general remedies discussed in Section 8. We consider that absent these obligations BT would have the incentive and the ability to refuse access at the wholesale level or to offer terms that would not meet CPs' requirements. We believe that this could allow BT to favour its own retail operations with the effect of distorting competition in the corresponding downstream markets until such a time as end users have migrated to alternative services.
- 11.24 In relation to BT's comments about the need for the PPC Direction, we acknowledge that BT's contracts with CPs afford some protection. However, we consider there is a risk that BT's market power would allow it to require CPs to accept changes to these contracts. Given that the PPC Direction specifies minimum requirements for the provision of PPCs and RBS Backhaul circuits, we consider that it is appropriate to reimpose the PPC Direction to ensure that these services are fit for purpose. BT has advised Ofcom, and industry (by issuance of a side letter) that it no longer requires forecasts for PPCs due to the low demand for new circuits. In view of this we have removed these obligations from the PPC Direction. If in future there is industry agreement to change other aspects of PPC and RBS Backhaul services specified in the PPC Direction, we could consider consulting on an amendment to the PPC Direction ahead of the next market review, if appropriate.
- 11.25 We understand that CPs and end-users, particularly those operating essential services, need adequate notice of the withdrawal of sub 2Mbit/s services. In this respect, we note that in October 2015 BT Wholesale announced that it would withdraw sub 2Mbit/s PPCs and RBS Backhaul services in March 2020.<sup>618</sup> In our view, this announcement provides the necessary clarity to CPs about BT's intentions and provides sufficient notice to arrange migration to alternative services. In view of this announcement we have decided not to amend our proposal in relation to the notice period and to impose the requirement for BT to provide a minimum one year notice period as a backstop. In our statement on Very Low Bandwidth (VLB) services we set out our decision to withdraw retail regulation for BT's VLB retail services and

 <sup>&</sup>lt;sup>616</sup> Page 11, Vodafone, Response to Ofcom's Consultation, December 2015
 <sup>617</sup> See Section 5, paragraph 5.19

<sup>010</sup> 

https://www.btwholesale.com/pages/sc/static/newsandinsights/briefings/PPCs/Product\_Update\_Octob er\_2015\_BT\_Wholesale\_PPC\_and\_RBS\_Services/index.htm

our plans to mitigate the potential risk associated with retail VLB and wholesale sub 2Mbit/s PPC service withdrawal to critical national infrastructure services.<sup>619</sup>

- 11.26 We have considered Vodafone's suggested amendments to the PPC Direction. We have amended paragraph 21 to make clearer that the obligation for BT to obtain a CP's consent to extend the Committed Delivery Date does not constrain the CP in any way. We have decided not to remove the exemption for matters beyond BT's reasonable control of the PPC Direction as we consider it reasonable that BT should not be required to pay SLGs in cases where an SLA is breached due to matters beyond BT's reasonable control.<sup>620</sup>
- 11.27 To the points Vodafone made in response to the LLCC re-consultation regarding PPC quality of service, we consider these issues to be best addressed through industry negotiation in the first instance.

#### Legal tests

- 11.28 We are satisfied that the PPC Direction (as set out in Annex 35) meets the relevant tests set out in the Act.
- 11.29 Section 87(3) of the Act authorises the setting of an SMP services condition requiring the dominant provider to provide such network access as Ofcom may, from time to time, direct. Section 45(10)(a) of the Act authorises the giving of directions with respect to matters to which an SMP condition relates. These provisions 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.
- 11.30 In imposing the PPC Direction, we have also taken account of the factors set out in Section 87(4) of the Act. In particular, the economic viability of CPs building alternative access networks (they are unlikely to do so, given the costs involved and the transition from TI to CI technologies), and the feasibility of BT providing PPCs (demonstrated by their very widespread existing provision). We consider the proposed direction will continue to help secure effective competition in the long term.
- 11.31 We have also considered our duties under section 3 and the Community requirements set out in section 4 of the Act. In particular, imposing the PPC Direction is aimed at encouraging network access and thereby promoting and securing efficient and sustainable competition and the maximum benefit of customers of communications providers. It will continue to enable CPs to compete effectively with BT in downstream leased lines markets. We consider that these services will remain an important element of this market over the forward looking period of this review.
- 11.32 We therefore consider that the PPC Direction is consistent with our duties in sections 3 and 4 of the Act.

<sup>&</sup>lt;sup>619</sup> <u>http://stakeholders.ofcom.org.uk/binaries/consultations/very-low-bandwidth/summary/VLB\_TI\_retail\_market.pdf</u>

<sup>&</sup>lt;sup>620</sup> We note that when we originally introduced the Ethernet SLG Direction in 2008, we acknowledged that BT's contacts for SLGs would need to include exemptions for matters beyond its reasonable control. See paragraph 3.48, Service Level Guarantees: Incentivising Performance, March 2008. http://stakeholders.ofcom.org.uk/binaries/consultations/slg/statement/statement.pdf

- 11.33 Section 49(2) of the Act requires directions given under SMP conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. The PPC Direction is:
  - objectively justifiable in that it relates to the need to ensure that competition operates ultimately to the benefit of consumers. PPCs are aimed at ensuring competition in the provision of leased lines services. Removing the requirements in the PPC Direction could result in BT withdrawing PPCs or otherwise changing them to the detriment of the existing level of downstream competition (limiting the extent to which regulatory intervention addresses BT's SMP);
  - not unduly discriminatory, as the PPC Direction aims to address BT's market power in the market of the UK (excluding the Hull area), in which we consider that only BT has SMP; and
  - proportionate, in that the requirements contained in the PPC Direction are necessary, but no greater than necessary, to promote efficient and sustainable competition for the maximum benefit of customers of communications providers, also taking account of the fact that BT already supplies these services; and
  - transparent, as it is clear in its intention to require BT to provide PPCs and RBS Backhaul circuits to CPs.

#### Other points raised in consultation responses

11.34 This section covers other topics relating to remedies for the TISBO market raised by respondents to the May 2015 BCMR Consultation.

#### Stakeholder responses to our proposals

- 11.35 BT noted that as a result of a change in our approach to market definition we had included analogue and SDSL services in the TISBO market and sought clarification that it is not required to provide wholesale versions of these services.<sup>621</sup>
- 11.36 BT noted that the list of Trunk Aggregation Nodes (TANs) referred only to the CISBO markets. BT suggested that for clarity, we should make three amendments to the legal instruments for the TISBO market: to list the TI TANs and add related definitions of national trunk segments and regional trunk segments.<sup>622</sup>

#### Our decision

11.37 We discuss our approach to market definition in more detail in section 5. Although we have included analogue and SDSL services in the TISBO market for market definition purposes, it is not our intention that BT should be required to provide wholesale versions of these services. BT has already withdrawn its SDSL services (which have largely been superseded by EFM services) and has announced the withdrawal of analogue services. Given the legacy nature of these services there is very little prospect of demand for wholesale services emerging and we therefore consider that it would be disproportionate for BT to be required to provide wholesale analogue or SDSL services. We consider that the existing requirement on BT to provide MPF lines in the Wholesale Local Access market, together with the continued availability

<sup>&</sup>lt;sup>621</sup> Paragraphs 7.14 and 7.18, BT response to the May 2015 BCMR Consultation

<sup>&</sup>lt;sup>622</sup> Paragraph 7.34, BT response to the May 2015 BCMR Consultation

of regulated products suitable for LLU backhaul, would allow CPs to compete using EFM. We have modified the legal instruments set out in Annex 35 to exclude these services from the scope of the remedies.

11.38 We listed the CISBO TANs in the legal instruments because the nodes and the associated definitions are directly referenced by the specific remedies we are imposing. This is not the case with the TISBO TANs and we have therefore decided not to make the amendments to the legal instruments suggested by BT.

## Section 12

# Remedies – interconnection and accommodation services

# Introduction

- 12.1 In this section we set out our decisions to impose specific obligations for interconnection and accommodation services.
- 12.2 CPs require certain ancillary services from BT in order to use the wholesale products that BT is required to provide in the TISBO and CISBO markets. The ancillary services, which include interconnection and accommodation services, are needed in order for CPs to interconnect their networks with BT's. We therefore consider it necessary to regulate provision of interconnection and accommodation services in order to address BT's SMP in the relevant wholesale markets.
- 12.3 In Section 8 we set out our general remedies for the TISBO and CISBO wholesale markets and explained that these remedies would also apply to the interconnection and accommodation services that BT provides in connection with wholesale services. Consequently BT would be required to meet reasonable requests for interconnection and accommodation services under the general network access obligation that we are imposing for each of these markets.
- 12.4 A Point of Connection (POC) or a Point of Handover is the point at which another CP's network interconnects with BT's network. A description of interconnection and accommodation products offered by BT can be found in Annex 11.

# Summary of our decisions

12.5 Table 12.1 summarises the interconnection and accommodation services remedies for BT by wholesale market.

Wholesale market	Accommodation and interconnection remedies			
Low bandwidth TISBO in the UK excluding the Hull area	<ul> <li>Requirement to provide accommodation services</li> <li>Requirement to provide the following interconnection services         <ul> <li>In Span Handover (ISH)</li> <li>In Span Handover Extension (ISH extension)</li> <li>Customer Sited Handover (CSH)</li> </ul> </li> <li>Price control – discussed in Volume II</li> </ul>			
CISBO in the LP and CISBO in the RoUK	<ul> <li>Requirement to provide accommodation services</li> <li>Requirement to provide the following interconnection services         <ul> <li>Customer Sited Handover (CSH)</li> <li>In Building Handover (IBH)</li> </ul> </li> <li>Price control – discussed in Volume II</li> </ul>			

# Table 12.1: Summary of interconnection and accommodation remedies we are imposing on BT by wholesale market

12.6 As we explained in Section 9, the interconnection and accommodation obligations listed above for the wholesale CISBO markets will also apply to the Dark Fibre Access remedy we are imposing on BT.

# Assessment of appropriate remedies

#### Interconnection obligations

#### BCMR 2013 remedies

- 12.7 In the low bandwidth TISBO market in the UK (excluding the Hull area) BT was subject to an obligation to provide network access including the following specific interconnection services:
  - Customer Sited Handover (CSH): BT provides a POC at the site of the interconnecting CP. This requires BT to extend its network and provide a link/equipment.
  - In Span Handover (ISH): Both BT and the interconnecting CP build out their respective networks to a passive handover point located between the premises. The handover point is adjacent to the BT exchange and therefore most of the build is the responsibility of the interconnecting CP.
  - In Span Handover extension (ISH Extension): Similar to ISH, except the handover point is located further from BT's exchange but still within the serving area of that exchange.
  - In Building Handover (IBH): A POC at co-location space rented by a CP in a BT exchange in support of disaggregated services.

- 12.8 In the AISBO markets and MISBO market as defined in the 2013 Review BT was subject to an obligation to provide network access including the following specific interconnection services:
  - Customer Sited Handover (CSH): There are two types of AISBO CSH with aggregation and without aggregation. In the case of the former, BT currently supplies Bulk Transport Link (BTL) which aggregates multiple EBD services for delivery over a single interconnection link to the CP's site. BT extends its network to a POC at the CP's site. In the case of the latter, BT terminates individual circuits at the CP's site without aggregation. This method is commonly used for WES and EAD circuits.
  - In Building Handover (IBH): BT provides a POC at co-location space rented by a CP in a BT exchange. This connection is without aggregation.
- 12.9 These interconnection products were also subject to price controls with the exception of IBH and AISBO CSH without aggregation.<sup>623</sup>

#### Aim and effect of the regulation

- 12.10 In the absence of regulation, BT would have an incentive not to supply some or all interconnection services or to charge excessive prices, particularly as it does not require these services in order to provide its own downstream retail services. As CPs must purchase interconnection services to use BT regulated products, this would have the same effect as refusal to supply or excessive pricing for the main wholesale products that BT supplies. We therefore consider it necessary to require BT to provide interconnection services and to apply price controls.
- 12.11 We have established specific requirements for different types of interconnection in order to facilitate different forms of competition. CSH facilitates new market entry by allowing CPs to interconnect without having to incur the significant costs of extending their networks to BT exchanges. ISH (including the ISH extension variant) is necessary to ensure CPs have the option of extending their networks to interconnect closer to BT exchanges. This provides an incentive for CPs to extend their infrastructure. IBH facilitates the use of disaggregated access services and facilitates competition by allowing CPs with a POP within a BT exchange to expand the range of services that they provide, potentially benefiting from economies of scale and scope by providing business connectivity services, in addition to Local Loop Unbundling (LLU) based broadband and telephony services.

#### Proposals set out in the May 2015 BCMR Consultation

- 12.12 In the May 2015 BCMR Consultation, we proposed to require BT to provide specified interconnection services in the relevant wholesale markets. In the wholesale market for low bandwidth TISBO<sup>624</sup> in the UK (excluding the Hull area), at bandwidths up to and including 8Mbit/s, we proposed to require BT to provide:
  - ISH;
  - ISH extension;

<sup>&</sup>lt;sup>623</sup> There are no chargeable items for these two types of interconnection.

<sup>&</sup>lt;sup>624</sup> These obligations also currently apply to medium and high bandwidth TISBO in the UK (excluding the Hull area and the WECLA).

- CSH; and
- IBH.
- 12.13 In the wholesale markets for CISBO in the London Periphery (LP) area; and for CISBO in the Rest of the UK (RoUK); we proposed to require BT to provide:
  - CSH; and
  - IBH.
- 12.14 As we explain in Section 9, we also considered that CPs would be likely to require the interconnection services listed above in connection with the Dark Fibre Access remedy and therefore proposed that the obligations should also apply to Dark Fibre Access.
- 12.15 We also proposed that with the exception of IBH and CSH without aggregation, for which there are no chargeable items, these services should be subject to price controls.

#### Ethernet interconnection developments

- 12.16 We also reviewed developments concerning new interconnection options requested by CPs that Openreach was considering at the time of the 2013 Review. These requests were for an ISH interconnection option for Ethernet and for an aggregation capability known as 'High Density Handover' to make IBH and ISH interconnection more efficient than handing over each circuit individually. In the 2013 Review we urged Openreach to bring product development to a conclusion as soon as reasonably possible.
- 12.17 In the May 2015 BCMR Consultation we noted that the relevant requests had been in the SoR process for over three years and the propositions evolved over time. In autumn 2014 Openreach closed the requests on the basis that there was no evidence of commercial demand on which it could make a case for the development of an aggregated interconnection option for Ethernet.
- 12.18 We noted that in 2016 Openreach plans to introduce a second supplier of equipment for EAD services. We considered that as this equipment is more compact it might therefore reduce pressure for space/power in exchanges. We also noted that BT has asked CPs about their interest in the development of aggregation solutions using functionality supported by the second supplier's equipment.
- 12.19 In light of these developments we decided not to propose any specific requirements in relation to these developments.

#### Stakeholder responses to our proposals

12.20 [≫] supported our proposed interconnection obligations. It said the IBH requirement is a critical consideration in the "toolkit to allow us to service our customers how we need to". <sup>625</sup>

 $<sup>^{625}</sup>$  See [ $\times$ ] response to the May 2015 BCMR Consultation, page 10.

- 12.21 Vodafone agreed that BT should provide the interconnection and accommodation services that CPs need in order to take-up BT regulated products. It added that, given the services used by CPs are not used by BT, there is a considerable risk that they are subject to terms and conditions that may harm competition.<sup>626</sup>
- 12.22 BT said it does not offer IBH for PPCs and has not received a Statement of Requirements (SoR) request for such a product. It said it would be unreasonable to require BT to develop such a product given the rapid decline in volumes of PPCs. <sup>627</sup>

#### Our decision

- 12.23 We note that Vodafone and [≫]<sup>628</sup> both highlighted that interconnection obligations are necessary in order for CPs to make use of BT regulated products and thus increase competition in downstream markets.
- 12.24 We continue to consider that BT has an incentive and the ability not to supply some or all of these services or to charge excessive prices, particularly as it does not require interconnection services in order to provide its own downstream retail services. As CPs must purchase these services to use regulated products, this would have the same effect as refusal to supply, or excessive pricing for, the main wholesale products. The absence of interconnection obligations could thus undermine the effectiveness of other remedies in the relevant markets.
- 12.25 Our proposal that BT should be required to provide IBH in the low bandwidth TISBO market related to the disaggregated TISBO products TI Access Bearer and TI Backhaul Bearer provided by Openreach. It was not our intention that BT should develop a new IBH product for PPCs. We have, however, decided not to impose an IBH obligation in the low bandwidth TISBO market in view of the fact that Openreach does not currently supply disaggregated TISBO products at bandwidths that fall within the scope of this market and is unlikely to do so.<sup>629</sup>
- 12.26 We have therefore decided to require BT to provide interconnection services in the relevant wholesale markets and also to apply price controls to those services. In the wholesale market for low bandwidth TISBO in the UK excluding the Hull area, at bandwidths up to and including 8Mbit/s, we require BT to provide:
  - ISH;
  - ISH extension; and
  - CSH.
- 12.27 In the wholesale markets for CISBO in the LP area; and for CISBO in the RoUK; we require BT to provide:
  - CSH; and
  - IBH.

<sup>&</sup>lt;sup>626</sup> See Vodafone response to the May 2015 BCMR Consultation, pages 49.

<sup>&</sup>lt;sup>627</sup> See BT response to the May 2015 BCMR Consultation, paragraph 7.38, page 58.

<sup>&</sup>lt;sup>628</sup> See [ $\gg$ ] response to the May 2015 BCMR Consultation, page 10.

<sup>&</sup>lt;sup>629</sup> The lowest bandwidth disaggregated TISBO product offered by Openreach is 155Mbit/s (STM-1).

- 12.28 In light of the developments discussed above we have decided not to impose specific requirements in relation to the Ethernet ISH and High Density Handover developments. However, as explained in Section 8, BT will continue to be subject to an obligation to meet reasonable requests for new forms of network access including interconnection services.
- 12.29 As explained in Section 9, we consider that CPs will require interconnection services in order to make use of the dark fibre remedy that we are imposing for the wholesale CISBO markets. We are therefore applying the obligations on BT to provide interconnection services to dark fibre in these markets.
- 12.30 We set out our detailed decisions on charge controls for interconnection services in Volume II of this Statement.

#### **Accommodation services**

#### BCMR 2013 remedies

- 12.31 BT was subject to an obligation to provide accommodation services in the following wholesale markets in:
  - the low bandwidth TISBO market<sup>630</sup> in the UK (excluding the Hull area);
  - the low bandwidth AISBO and the MISBO markets in the UK (excluding the Hull area and the WECLA); and
  - the low bandwidth AISBO market in the WECLA.
- 12.32 For each of these markets BT was subject to an obligation to allocate accommodation space on the basis of equivalence of inputs (EOI) and was subject to price controls for accommodation services.
- 12.33 BT provides two types of regulated accommodation services: Co-mingling and Access Locate (for a detailed description of these products see Annex 11). Co-mingling is exclusively provided in support of LLU, whilst Access Locate provides accommodation for the majority of other access services supplied by BT, including Ethernet leased lines.
- 12.34 BT also provides a 'tie-cable' product in support of accommodation services called Cablelink. Cablelink has both internal and external variants. The internal variant allows a CP to connect two remote licensed areas of the BT exchange building (i.e. two separate areas in which the CP has installed its equipment). The external variant allows a CP's external fibre cable located immediately outside a BT exchange to be connected to a CP's licensed area within BT's local exchanges.
- 12.35 Cablelink is not a handover product as such as it is a passive product that does not interconnect BT equipment to the CP's equipment for the purposes of carrying TISBO or AISBO traffic. However, we consider that it is an essential element of the accommodation services that BT provides given that it allows a CP to connect its POP within the BT exchange with its fibre outside the exchange.

<sup>&</sup>lt;sup>630</sup> These obligations also currently apply to medium and high bandwidth TISBO in the UK (excluding the Hull area and the WECLA).

#### Aim and effect of the regulation

- 12.36 The availability of accommodation in BT exchanges is an important enabler of competition in leased lines markets. It allows CPs to make use of disaggregated products such as EAD Local Access and facilitates competition in downstream markets.
- 12.37 Space and power in BT's exchanges is limited, and in the absence of regulation BT would have the incentive and ability to discriminate in favour of its own needs in allocating such space and power.
- 12.38 In 2008, in a variation to the BT Undertakings<sup>631</sup> BT committed to assign space and power on a 'First-Come-First-Served' (FCFS) basis but did not require it to consume the same accommodation products that are used by CPs. The rationale for this approach was based on the scale of deployment of equipment by BT. BT's requirements are likely to be different to those of other CPs so that BT's downstream divisions are likely to use different accommodation products from those used by other CPs, even if those divisions were required to obtain these products from Openreach.
- 12.39 At the time of the variation, we took the view that it is appropriate that provisioning activities, such as the provision of ironwork and power in BT owned buildings, should be carried out by a single provider as management of an exchange where multiple CPs are all carrying out their own works would be complex and inefficient.

#### Proposals set out in the May 2015 BCMR Consultation

- 12.40 In the May 2015 BCMR Consultation, we proposed an obligation for BT to provide accommodation services in the relevant wholesale markets:
  - wholesale market for low bandwidth TISBO in the UK excluding the Hull area, at bandwidths up to and including 8Mbit/s;
  - wholesale market for CISBO in the LP area; and
  - wholesale market for CISBO in the RoUK.
- 12.41 For each of the markets above, we proposed BT should be subject to an obligation to allocate accommodation space on the basis of EOI and to price controls for accommodation services including Cablelink.
- 12.42 We proposed that Cablelink should be included within the scope of new minimum performance standards for provisioning. We also proposed that BT should be required to produce Key Performance Indicators (KPIs) for Cablelink provision.

<sup>&</sup>lt;sup>631</sup> Variations to BT's Undertakings under the Enterprise Act 2002 in respect of BT's NGN, Space and Power and OSS separation

http://stakeholders.ofcom.org.uk/binaries/consultations/variations\_bt/statement/statement071008.pdf

#### Stakeholder responses to our proposals

- 12.43 Virgin Media said that Cablelink is a vital product to non-BT CPs, and that issues associated with provisioning and QoS can be masked due to its relatively low volumes and low cost. It therefore welcomed our proposals on QoS.<sup>632</sup>
- 12.44 Vodafone proposed a set of SLAs on BT for the entire accommodation ordering process; "*biting SLGs*" for failure to meet initial contractual delivery dates (iCDD) for internal and external Cablelink provisioning services; and a requirement on BT to proactively upgrade exchanges for accommodation services. Vodafone also proposed that accommodation services should be subject to minimum service standards and the publication of KPIs.<sup>633</sup>
- 12.45 In a separate submission on the draft BCMR legal instruments, Vodafone said the draft SMP conditions do not explain the nature of BT's obligations once space is exhausted, after it has been allocated on a FCFS basis. It said this was a mistake because it gives BT no incentive to ensure operational buildings have enough space to meet reasonable requests for accommodation services or to address situations where available spaces are exhausted. <sup>634</sup>
- 12.46 GTC agreed with the proposal that BT should still be required to provide accommodation services relevant to the CISBO wholesale market. It said it was interested in potentially utilising the Access Locate product in the future, so it is supportive of any performance enhancement that can be made in this area. <sup>635</sup>

#### Our decision

- 12.47 We agree with Virgin Media and Vodafone that Cablelink is an important element of BT's accommodation services. The KPIs for Cablelink will provide transparency and assist monitoring of BT's performance in the provisioning of Cablelink which could otherwise be masked by the higher volumes of other Ethernet products. We explain our decisions on QoS requirements for Cablelink and other products including our approach to initial contractual delivery dates (iCDD) in Section 13.
- 12.48 As we noted in the May 2015 BCMR Consultation, a SoR request<sup>636</sup> was submitted in June 2013 for a new variant of external Cablelink to connect MNO cell sites on the rooftops or grounds of BT exchanges to external OCP networks. In industry discussions, Openreach stated it was assessing this as a commercial product rather than one driven by regulation. In April 2015 Openreach concluded that it could not see an economic case to progress the requirement, due to insufficient evidence of volume demand at a price needed to provide a positive return on the potential costs of an Openreach product development. However, it acknowledged the case for a connectivity product from CPs' equipment within the Multi-User Area of the BT exchange and MNO sites on the rooftops/grounds of exchanges. Openreach subsequently authorised the commercial case for development of this new form of

<sup>&</sup>lt;sup>632</sup> See Virgin Media response to the May 2015 BCMR Consultation, page 46.

<sup>&</sup>lt;sup>633</sup> See Vodafone response to the May 2015 BCMR Consultation, page 50.

<sup>&</sup>lt;sup>634</sup> See Vodafone/Towerhouse LLP – Errors in Ofcom Draft BCMR Legal Instruments, page 2.

<sup>&</sup>lt;sup>635</sup> See GTC response to the May 2015 BCMR Consultation, paragraph 12.1, page 13.

<sup>&</sup>lt;sup>636</sup> Openreach online SoR Management Tool, SoR 8401.

external Cablelink and in February 2016 it issued a briefing regarding the launch of an Ethernet (Cell Sites) Cablelink product.<sup>637</sup>

- 12.49 We do not consider that it would be proportionate to impose an obligation requiring BT to proactively prepare accommodation space as Vodafone suggests. Such an approach is unlikely to be efficient, because uncertainty about future demand could lead BT to prepare accommodation space that may never be used. We also think it would be difficult to impose fixed timescales for delivery of accommodation given the wide variability of the work required to prepare accommodation.
- 12.50 At this stage, we consider that industry engagement is a more proportionate and flexible approach to address accommodation issues. In this regard we note that the Office of the Telecommunications Adjudicator (OTA2) established a Plan & Build Forum in 2011 to investigate solutions to the shortage of space in some BT exchanges. The role of the OTA2 forum now called the Infrastructure Services Forum is to review operational performance in the provision of access to exchange space, power, cable infrastructure (tie cables) and Main Distribution Frames. This forum provides an opportunity for the industry to improve processes for better managing, and making available new, accommodation space. We understand that it has developed an online inventory of available space in exchanges, which gives CPs good visibility of capacity challenges. We also note that BT has developed its accommodation products such as Flexible Comingling Products to allow CPs to make more efficient use of exchange space.<sup>638</sup>
- 12.51 We continue to consider that BT has an incentive and the ability not to supply some or all of these services or to charge excessive prices. As CPs must purchase these services to use regulated products, this would have the same effect as refusal to supply, or excessive pricing for, the main wholesale products. The absence of requirements in relation to accommodation services could thus undermine the effectiveness of other remedies in the relevant markets.
- 12.52 We think that allocation of accommodation on an EOI basis, in conjunction with a set of charge-controlled accommodation products that meet CPs needs, addresses the competition issue in a proportionate manner.
- 12.53 Given the importance of accommodation to CPs it is essential that space and power continue to be allocated on a FCFS basis. For this reason, we have set appropriate SMP conditions to require that allocation of space and power is undertaken by BT on an EOI basis.
- 12.54 We have therefore decided to require BT to provide accommodation services in the relevant wholesale markets:
  - wholesale market for low bandwidth TISBO in the UK (excluding the Hull area), at bandwidths up to and including 8Mbit/s;
  - wholesale market for CISBO in the LP area; and

<sup>637</sup> See

https://www.openreach.co.uk/orpg/home/updates/briefings/ethernetservicesbriefings/ethernetservices briefingsarticles/eth01116.do

<sup>&</sup>lt;sup>638</sup> Openreach, FCP-Modify information pack, 15<sup>th</sup> April 2013 https://www.openreach.co.uk/orpg/home/products/llu/comingling/comingling.do

- wholesale market for CISBO in the RoUK.
- 12.55 For each of the markets above, we have decided BT should be subject to an obligation to allocate accommodation space on the basis of EOI and to price controls for accommodation services including Cablelink.
- 12.56 As explained in Section 13, we have decided that Cablelink should be included within the scope of new minimum performance standards for provisioning. BT will also be required to produce KPIs for Cablelink provision.
- 12.57 As we discussed in Section 9, we consider that CPs will require accommodation services in order to make use of the dark fibre remedy that we imposing in the wholesale CISBO markets. We have therefore decided that the obligation to provide accommodation services in these markets should also apply to dark fibre.
- 12.58 We set out our detailed decisions on charge controls for accommodation services in Volume II of this Statement.

#### Legal tests

- 12.59 Section 87(3) of the Act authorises the setting of SMP 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.
- 12.60 Section 87(3) includes reference to conditions requiring relevant facilities to be made available. Network access is also defined in sections 151(3) and (4) of the Act so as to include interconnection services and/or any services or facilities that would enable another CP to provide electronic communications services or electronic communication networks. We consider that a requirement to provide network access would, therefore, include any ancillary services as may be reasonably necessary for a Third Party to use the services.
- 12.61 We are satisfied that the obligations (set out in Annex 35) requiring BT to provide interconnection and accommodation services in the relevant wholesale markets meet the various tests set out in the Act.
- 12.62 First, we have considered our duties under section 3 and all the Community requirements set out in section 4 of the Act. In particular, the obligations are aimed at promoting competition by ensuring that CPs are supplied with interconnection and accommodation services that they require in order to use the wholesale services BT supplies effectively, including those services provided pursuant to the remedies in this review.
- 12.63 Second, sections 47 and 49 require conditions and directions respectively to be objectively justifiable, non-discriminatory, proportionate and transparent. The conditions and directions are:
  - objectively justifiable, in that they facilitate and encourage access to BT's network and therefore promote competition to the benefit of consumers;

- not unduly discriminatory, as they are proposed only for BT and no other operator has been found to hold a position of SMP in these markets;
- proportionate, in that they prevent BT from exploiting its SMP by withdrawing these interconnection and accommodation services; and
- transparent, in that the conditions are clear in their intention to ensure that BT provides access to its networks in order to facilitate effective competition.

#### The BEREC Common Position

- 12.64 We have also taken utmost account of the BEREC Common Position<sup>639</sup> including BP7, BP7a and BP20 which appear to us to be particularly relevant in this context.
- 12.65 We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

<sup>&</sup>lt;sup>639</sup> BoR (12) 126, BEREC common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.1 1.26.pdf

### Section 13

# Remedies – quality of service

# Introduction

- 13.1 In this section we set out the quality of service SMP remedies we have decided to impose on BT in the following leased lines markets:
  - the wholesale market for low bandwidth Traditional Interface Symmetric Broadband Origination (TISBO) in the UK excluding the Hull area, at bandwidths up to and including 8Mbit/s;
  - the wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) in the London Periphery area; and
  - the wholesale market for CISBO in the UK excluding the Central London Area (CLA), the London Periphery area and the Hull area.
- 13.2 The quality of service remedies we have decided to impose are based on the competition problems we have identified in our market analysis, in particular, our SMP assessment, in which we have found that BT has SMP in the above wholesale markets. We set out these competition problems in Section 7.
- 13.3 Of particular relevance to our consideration and subsequent decisions concerning quality of service is our concern that, in the absence of appropriate *ex ante* regulation, there is a risk that poor quality of service offered by BT in the provision and repair of wholesale services will impact detrimentally on all downstream providers of leased lines, including BT's downstream businesses, and ultimately to the detriment of end users.
- 13.4 Our decisions as to the appropriate *ex ante* regulation to remedy our above concern is based on our assessment, detailed in this section and Annex 12, of the quality of service provided by Openreach in the supply of regulated network access in the relevant markets, in particular, the provision of wholesale Ethernet services to downstream CPs including BT businesses. This assessment takes into account, amongst other things, stakeholders' responses to our provisional assessment and proposals for quality of service remedies which we set out in our May 2015 BCMR Consultation.<sup>640</sup>
- 13.5 In our assessment we found that, since concluding our last review (set out in our March 2013 BCMR Statement<sup>641</sup>), Openreach's service performance in the provision of Ethernet services has deteriorated materially and is inadequate in several respects. We have therefore concluded that additional regulatory measures are

<sup>&</sup>lt;sup>640</sup> Ofcom, *Business Connectivity Market Review, Review of competition in the provision of leased lines,* Consultation, 15 May 2015, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> <u>2015/summary/BCMR\_Sections.pdf</u> and Annexes <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> <u>2015/annexes/BCMR\_Annexes\_Non\_Confidential.pdf</u>.

<sup>&</sup>lt;sup>641</sup> Ofcom, Business Connectivity Market Review, Review of retail leased lines, wholesale symmetric broadband origination and wholesale trunk segments, Statement, 28 March 2013, http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/.

required to address Openreach's incentives to meet levels of guality of service that will deliver significant improvements in Ethernet service provisioning for downstream providers and customers.

- 13.6 We consider that the remedies we set out in this section and have decided to impose achieve our statutory duties and satisfy the relevant legal tests.
- 13.7 In reaching these decisions, we have also taken account of:
  - our regulatory experience from the two previous market reviews;
  - recent developments in these markets based, in particular, on:
    - o extensive information provided by Openreach and its customers on quality of service:
    - views expressed by stakeholders in response to the April 2014 BCMR CFI<sup>642</sup> and the May 2015 BCMR Consultation<sup>643</sup>; and
    - $\circ$  the views of end users in response to research which we have published (the BDRC Quality of Service Report<sup>644</sup>).
  - and, expected developments over the course of the review period of three years • including our initial conclusions from the Strategic Review of Digital Communications. 645

# Summary of decisions

- 13.8 To complement our decisions to impose requirements on BT to provide network access, provide certain wholesale leased lines on an equivalence of inputs (EOI) basis and to publish a Reference Offer which includes service level agreements (SLAs) and service level guarantees (SLGs)<sup>646</sup>, the package of ex ante quality of service remedies we have decided to impose on BT in the wholesale markets can be summarised as follows:
  - a) A new quality of service SMP condition which requires BT to comply with any quality of service requirement we may direct in relation to network access provided by BT pursuant to the general and specific network access obligations we have imposed;

<sup>&</sup>lt;sup>642</sup> Ofcom, Business Connectivity Market Review, Timetable and initial call for inputs, Consultation, 1 April 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity-marketreview/summary/Business-Connectivity-Market-Review.pdf. Responses to this consultation are published at http://stakeholders.ofcom.org.uk/consultations/business-connectivity-market-

review/?showResponses=true. <sup>643</sup> Responses to the May 2015 BCMR Consultation are published at http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/?showResponses=true.

<sup>&</sup>lt;sup>644</sup> BDRC Continental, Ofcom Quality of Service: Ethernet Leased Lines 2014, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>2015/</sup>annexes/QoS\_report\_27th\_April.pdf. 645 Ofcom, Making communications work for everyone: Initial conclusions from the Strategic Review of Digital Communications, Statement, 23 February 2016,

http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf <sup>646</sup> As set out in Sections 8 and 10.

- b) Pursuant to the above quality of service SMP condition, a direction which requires BT to comply with minimum quality of service standards in relation to:
- orders for wholesale Ethernet services completed on or before the initial Contractual Delivery Date (CDD) provided by Openreach to its customers as shown in Table 13.1;

 Table 13.1: Minimum standards for Ethernet orders completed on or before the initial

 CDD

		New minimum standard			
	Current performance (2015)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)	
% of orders completed on or before initial CDD	71%	80%	85%	90%	

ii) the average time between order validation and the initial CDD given by Openreach to its customers for the provision of wholesale Ethernet services as shown in Table 13.2;

#### Table 13.2: Requirements on the maximum average period for setting the initial CDD

Period	Maximum mean period for the initial CDD
2016/17	No more than 61 working days
2017/18	No more than 55 working days
2018/19	No more than 55 working days

iii) the time taken from Ethernet order validation to order completion as shown in Table 13.3; and

#### Table 13.3: Minimum standards for the time to provide of Ethernet orders

			New minimum standard (Working days excludes customer caused delays)		
	2011 performance	Current performance (2015)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)
Mean time to provide across orders	40 working days	48 working days	No more than 46 working days	No more than 40 working days	As Year 2
Lower percentile limit	40% of provisions delivered in 29 working days	40% of provisions delivered in 25 working days	At least 40% of provisions delivered in 30 working days or less	At least 40% of provisions delivered in 29 working days or less	As Year 2
Upper percentile limit	3% of provisions delivered in more than 118 working days	3% of provisions delivered in more than 211 working days	No more than 3% of provisions delivered in more than 159 working days	No more than 3% of provisions delivered in more than 118 working days	As Year 2
iv) service restoration within the Ethernet fault repair SLA of 5 hours as shown in Table 13.4.

			New minimum standard		
	2011 performance	2014 performance	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)
% faults repaired within 5 hours	93.1%	94.4% (Jan'14 to Jul'14)	At least 94% of faults repaired within 5 hours	As Year 1	As Year 1

#### Table 13.4: Minimum standards for Ethernet fault repair

- c) Also pursuant to the above quality of service SMP condition, a direction which requires BT to provide specified quality of service Key Performance Indicators (KPIs); and
- d) Pursuant to the general network access SMP condition we are imposing on BT, a direction concerning the SLGs BT must provide for in its terms and conditions for the provision of Ethernet services. This re-imposes the existing SLG direction which was first imposed following our decisions regarding SLGs in 2008.<sup>647</sup> We expect to review what regulatory arrangements are appropriate and necessary as regards SLGs following the introduction of new provisioning processes and the conclusion of contractual negotiations on appropriate SLAs and SLGs.
- 13.9 Aside from these *ex ante* remedies, we set out in the May 2015 BCMR Consultation a framework for the conduct of, and principles and criteria to be applied to, contractual negotiations between Openreach and its customers concerning the SLAs and SLGs for the provision of Ethernet services. The OTA2 has taken a central role in facilitating these negotiations which remain ongoing.
- 13.10 We will assess Openreach's compliance with each of the above minimum standards and requirements on an annual basis.

# Changes following the May 2015 BCMR Consultation

- 13.11 The decisions we have set out above, are substantively unchanged from the proposals made in the May 2015 BCMR Consultation but we have modified our proposals in some respects. We set out our reasoning and careful consideration of stakeholders' responses in this section and set out our supporting analysis in Annex 12.
- 13.12 The main changes we have made are summarised below:
  - in relation to the minimum standards for Ethernet orders completed on or before the initial CDD, we have decided to **exclude** any orders validated prior to the date our decision comes into force and which are yet to be completed;

<sup>&</sup>lt;sup>647</sup> Ofcom, Service level guarantees: incentivising performance, Statement and Directions, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/slg/statement/statement.pdf</u>

- the average time between order validation and the initial CDD given by Openreach to its customers for orders for Ethernet services to comply with requirements in Table 13.2 above;
- in relation to minimum standards for the time to provide of Ethernet orders, we have decided to **include** any orders validated prior to the date our decision comes into force and which are yet to be completed, but to apply a reduction of 80% to the accrued working days (excluding customer caused delay) from the date our decision comes into force; and
- we have decided to add further KPIs which Openreach is required to provide.

# SMP regulation of quality of service in this review relative to the last review in 2013

13.13 Our above decisions represent a change in regulatory intervention as regards quality of service relative to the last review concluded in 2013. A comparison between the quality of service remedies we imposed in the March 2013 BCMR Statement and those we have decided to impose in this review is set out in Table 13.5 below.

# Table 13.5: Comparison between the existing quality of service remedies and the remedies imposed in this review

Remedies	BCMR 2013	BCMR 2016
EOI SMP condition	Yes	Yes
Reference Offer (including SLAs and SLGs) SMP condition	Yes	Yes
SLG direction	Yes	Yes
Transparency as to quality of service SMP condition	Yes	No
Quality of service SMP condition	No	Yes
Minimum standards direction	No	Yes
KPI direction	No	Yes

#### Strategic Review of Digital Communications (DCR)

- 13.14 Announced in March 2015 and running concurrently with this review of leased line markets, Ofcom has been conducting its first strategic assessment of the telecommunications sector in ten years. This is only the second since Ofcom was established.
- 13.15 The aim of the DCR is to make sure digital communications markets continue to work for consumers, citizens and businesses. It considers future policy challenges across fixed, mobile and content sectors, including:
  - investment and innovation, delivering widespread availability of services;

- sustainable competition, delivering choice, quality and affordable prices;
- empowered consumers, able to take advantage of competitive markets; and
- targeted regulation where necessary, deregulation elsewhere.
- 13.16 An important part of the DCR is the quality of service and quality of experience that consumers and businesses receive when using digital communications services.
- 13.17 We consider that overall consumers have received good value for money over the past ten years with strong competition on price in many retail services, particularly in the residential market. However, too often, consumers have had to endure poor quality of service in our sectors. Some consumers have suffered unacceptable delays to installation or fault repair, or frequent incidents of dropped mobile calls. This is against the backdrop of an economy in which the quality of communications services is becoming ever more critical as consumers increasingly depend on them in all aspects of their lives. Most stakeholders agreed with this view.
- 13.18 Following consultation with stakeholders last year, we recently published our initial conclusions which can be found at <a href="http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf">http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf</a> and set out our decision to broaden our strategy to strengthen wholesale and retail operators' incentives to deliver better service quality. We plan to:
  - set clear expectations about how Openreach should improve its service quality and ensure that it has appropriate incentives to do so. Our tools to achieve this could include more demanding minimum standards and measures to incentivise performance above the minimum required;
  - seek improvements to communication and coordination between CPs to reduce, for example, missed appointments and provide more certainty for end users as to when repairs or installations will take place;
  - consult on requiring CPs to publish information on elements of the network service quality that they provide, at both wholesale and retail levels. This could enable greater supply-side competition on service quality between CPs and help consumers make informed choices. We will examine whether the release of further comparative measures of operators' customer service would be useful to end users and help improve performance; and
  - consult on introducing automatic compensation for end users when something does go wrong.
- 13.19 In the DCR we noted our proposals for Ethernet quality of service to impose new *ex ante* minimum performance standards focused on incentivising Openreach to restore quality of service to acceptable levels over the forward looking period. However, we recognise that the minimum standards that we have decided to impose in this statement are not sufficient in themselves, but rather one means of ensuring the performance standards that Openreach actually delivers evolve to match customers' future expectations of good service. Our approach of setting clear minimum standards and reporting requirements means that BT has clarity as to what it needs to do to ensure adequate performance and that we can act swiftly to enforce if that baseline is not reached.

- 13.20 We have taken account of this in our design for quality of service remedies by imposing a new SMP condition which requires BT to comply with any quality of service requirements we direct pursuant to the legal tests in section 49 of the Communications Act 2003 (the Act). This SMP condition provides a mechanism whereby we can direct Openreach to comply with further quality of service requirements without necessarily re-opening the entire market review.
- 13.21 In addition to Ethernet quality of service compliance monitoring, we will continue to keep Openreach's Ethernet service performance under review.
- 13.22 Consistent with our strategic aims, where we consider that other approaches might also deliver performance improvements for customers of leased lines, we will look at acting via a direction in advance of the next BCMR.

# **Structure of this section**

- 13.23 This section is structured as follows:
  - Introduction.
  - Assessment of Openreach's quality of service.
  - The impact of poor performance on Openreach's customers.
  - Openreach's incentives to deliver acceptable Ethernet provisioning quality of service.
  - Considerations regarding the design of minimum standards for Ethernet provisioning and repair quality of service.
  - Setting the minimum standards.
  - Decisions on the implementation of quality of service remedies.

# Introduction

#### April 2014 BCMR CFI

- 13.24 We had been aware for some time of growing concerns about the provisioning of new Ethernet leased lines, in terms of the speed and unpredictability of delivery and have been monitoring the situation. We reflected this at the start of this BCMR when we published the April 2014 BCMR CFI, in which we summarised our understanding of the context and concerns in relation to quality of service at that time and invited stakeholders to tell us about their experience of Openreach's provision and repair of wholesale leased lines.
- 13.25 Non-confidential responses to the April 2014 BCMR CFI are published on our website.<sup>648</sup> In our May 2015 BCMR Consultation, we summarised these responses in Section 13 and Annex 17 and therefore do not reprise them again here.

<sup>&</sup>lt;sup>648</sup> Ofcom, *Business Connectivity Market Review, Timetable and initial call for inputs,* Consultation, 1 April 2014, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity-market-review/summary/Business-Connectivity-Market-Review.pdf</u> and non-confidential stakeholder

- 13.26 However, the core concern of most respondents was delivery date certainty. CDDs provided by Openreach had been subject to a great deal of uncertainty due to the application of "deemed consent" by Openreach. Deemed consent is a contractual provision allowing Openreach to deem the consent of its customers to a change of the CDD in a range of circumstances as provided for in its contract and without incurring SLG payments for late provision. A related and important, but typically secondary, concern was that overall lead times had also increased. The general view expressed by most CPs at that time, was that these were ongoing problems that had endured over an extended period of time and were particularly significant in respect of those orders that required network build i.e. where Openreach needed to extend its network to the customer's premises.
- 13.27 BT set out in its response to the April 2014 BCMR CFI that delivery against a firm commitment, within a reasonable and predictable timescale, was a significant issue for customers. It acknowledged that businesses plan on the basis of original timescales and do not want these to change at short notice. It noted that customers were also dissatisfied with the frequency of quality updates throughout the provisioning process.

# **BDRC Quality of Service Report**

- 13.28 Prior to publishing our proposals in the May 2015 BCMR Consultation, we engaged BDRC Continental to conduct research into the value which businesses and public sector organisations place on those elements of service performance which are directly attributable to Openreach's quality of service.
- 13.29 The BDRC Quality of Service Report was published alongside the May 2015 BCMR Consultation and can be found at <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> <u>2015/annexes/QoS\_report\_27th\_April.pdf</u>. We have repeated the summary we provided in Annex 17 of the May 2015 BCMR Consultation in Annex 12 of this statement for ease of reference.
- 13.30 We considered that the findings of the BDRC Quality of Service Report were consistent with the views set out by CPs and other stakeholders initially in their responses to the April 2014 BCMR CFI and subsequently. The evidence we gathered demonstrated that customers of leased lines valued the following, in order of importance:
  - certainty of delivery date;
  - prompt delivery (short lead times); and
  - clear and prompt communication of changes to delivery date when necessary.

#### May 2015 BCMR Consultation

13.31 On 13 May 2015 we published the main consultation on the Business Connectivity Market Review (BCMR) - our review of competition in the provision of leased lines.

responses to the April 2014 Consultation are published at <a href="http://stakeholders.ofcom.org.uk/consultations/business-connectivity-market-review/?showResponses=true">http://stakeholders.ofcom.org.uk/consultations/business-connectivity-market-review/?showResponses=true</a>.

This included our provisional assessment of BT's quality of service in providing Ethernet leased line services.

- 13.32 We considered that Openreach's quality of service in providing wholesale Ethernet leased line services was not acceptable in several respects. Provisioning performance since 2011 had deteriorated and, at the time we completed our provisional assessment, showed little sign of sustained improvement despite Openreach having initiated improvement plans. We also considered that whilst the quality of Openreach's repairs of these services was broadly acceptable, this too could easily decline if Openreach were to choose to divert resources to improve the quality of provision.
- 13.33 Openreach had recognised these problems, and we supported the work it had been undertaking with the industry to address the issues. Openreach was developing changes to its order handling processes and systems to enable performance improvements. The timescales of these developments were, at the time, uncertain.
- 13.34 Nevertheless, we considered that regulatory and contractual arrangements currently in force for wholesale Ethernet leased line services were not sufficient to ensure that Openreach was incentivised to provide levels of quality of service that would deliver significant improvements in Ethernet provisioning for both downstream providers and customers.
- 13.35 Therefore, we proposed to impose obligations on Openreach to ensure that it has appropriate incentives to improve its provision of wholesale Ethernet leased line services and to do so without degrading its repair performance.
- 13.36 Our research showed that although end users would like Openreach to deliver their services within shorter lead times, they attached greater importance to certainty that Openreach will deliver those services on agreed dates. Accordingly, we proposed that Openreach should be required to adhere to two sets of minimum standards.
- 13.37 First, we proposed a minimum standard of certainty of delivery date which would require Openreach to improve on its current performance from Year 1 of the review period, as shown in Table 13.6 below.

		New minimum standard				
	Current performance (2014)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)		
% of orders completed on or before initial CDD	circa 45%	80%	85%	90%		

#### Table 13.6: Proposed minimum standards for orders achieving the initial CDD

13.38 Secondly, we proposed minimum standards of provision lead times and of repair, as shown in Tables 13.7 and 13.8 below. The proposals would require BT to deliver improvements in its provision lead times from Year 2 of the review period, and to maintain at least its current repair performance throughout the review period.

			New minimum standard (Working days excludes customer caused delays)		
	2011 performance	Current performance (2014)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)
Mean time to provide across orders	40 working days	46 working days	No more than 46 working days	No more than 40 working days	As Year 2
Lower percentile limit	40% of provisions delivered in 29 working days	40% of provisions delivered in 30 working days	At least 40% of provisions delivered in 30 working days or less	At least 40% of provisions delivered in 29 working days or less	As Year 2
Upper percentile limit	3% of provisions delivered in more than 118 working days	3% of provisions delivered in more than 159 working days	No more than 3% of provisions delivered in more than 159 working days	No more than 3% of provisions delivered in more than 118 working days	As Year 2

#### Table 13.7: Proposed time to provide minimum standards for orders

#### Table 13.8: Proposed minimum standards for fault repair

			New minimum standard		
	2011 performance	Current performance (2014)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)
% faults fixed within 5 hours	93.1%	94.4% (Jan'14 to Jul'14)	At least 94% of faults fixed within 5 hours	As Year 1	As Year 1

- 13.39 In assessing what a reasonable ultimate average lead time target for Openreach would be over the period of this market review, we had taken into account evidence from end user research and practices in other European member states, as well as Openreach's historical Ethernet service performance levels.
- 13.40 We did not propose that Openreach should be required to deliver improvements in lead times before Year 2 because we recognised the greater priority which end users and CPs attached to addressing the issue of certainty in delivery dates. We took into account that, in developing its order handling processes and systems over the coming period to meet our proposed requirements, Openreach would need to improve certainty of delivery dates, reduce lead times and deliver new dark fibre products. Openreach would nevertheless be required to ensure that it at least maintained the lead time performance it was achieving at that time in Year 1. In practice, we considered that in order for Openreach to prepare itself to meet the minimum standards applying to lead times in Year 2, it will likely need to out-perform its Year 1 lead time obligations and therefore that these should be seen as an absolute floor rather than an expected performance standard.

- 13.41 We further proposed to:
  - require Openreach to provide specified key performance indicators (KPIs) for its main Ethernet services; and
  - maintain obligations on BT to offer its current set of service-level agreements and guarantees (SLA/SLG) until it negotiates with the industry a new set of SLAs/SLGs based on the new provisioning process that was being trialled at that time.
- 13.42 In addition, we set out our expectation for the process of negotiating new SLAs/SLGs, or modifications to existing ones.

#### **Responses to the May 2015 BCMR Consultation**

- 13.43 Many respondents to the May 2015 BCMR Consultation provided us with their views on some or all aspects of our assessment and proposals regarding quality of service remedies and the specific questions we asked.
- 13.44 All non-confidential responses to the May 2015 BCMR Consultation are published on our website at <u>http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/?showResponses=true</u>.

# Assessment of Openreach's quality of service

- 13.45 In this sub-section, we:
  - summarise the assessment we set out in the May 2015 BCMR Consultation about Openreach's service performance and process developments;
  - summarise what stakeholders said about our assessment;
  - respond to stakeholders' comments;
  - update our assessment in light of observed developments since the May 2015 BCMR Consultation; and
  - set out our final conclusions about Openreach's service performance.

#### May 2015 BCMR Consultation assessment

#### Ethernet provisioning process and order categorisation

- 13.46 In the May 2015 BCMR Consultation we described the Ethernet provisioning process which Openreach used to deliver orders from its customers (including its own downstream divisions) for wholesale Ethernet leased lines over the whole period which we examined in our assessment (2008 to 2014).
- 13.47 In summary, after initial validation of an order, it progresses to a planning stage where initial survey activities are carried out. This activity results in the classification of the order under one of the provision categories discussed below and identifies whether any Excess Construction Charges (ECCs) are required. The order then moves to the design stage to determine how the order will be fulfilled. A CDD is provided to Openreach's customer during the design stage. Openreach contractually commits to a CDD of 30 working days, subject to survey. The design is then passed

to Openreach's field force and/or contractors to execute any build and finally the electronic equipment is installed, tested and commissioned. A description and illustrations of the provisioning process can be found in Annex 12.

- 13.48 We found that some orders are relatively easy to fulfil in circumstances where there is pre-existing infrastructure at or close to the premises to be connected. But orders requiring differing degrees of infrastructure build to provide leased line fibre connectivity to the premises are more complex and bespoke.
- 13.49 At the time, Openreach used four categories to identify these different complexities of order provision. These are shown in Table 13.9 below taken from the May 2015 BCMR Consultation together with the proportion of orders in each category which we observed over 2014.

Category	Order category definitions	Approximate percentage of orders (circa 2014)
1	Fibre connection available between customer's premises. Possible installation and connection of fibre and equipment within the customer's premises and service testing and commissioning required.	40%
2	Fibre connection is available between Openreach network distribution nodes. In addition to possible category 1 activities installation of duct and fibre (cable or tubing with blown fibre) is required from Openreach network distribution node(s) to the customer's premises.	50%
3	In addition to possible category 1 and 2 activities a new spine fibre connection is required in part or whole between Openreach distribution nodes and serving exchange.	2%
4	In addition to possible category 1, 2 or 3 activities a new core fibre cable is required between exchanges.	2%

Source: Ofcom based on Openreach presentation "Ethernet Education Openreach/Ofcom 16th June 2014" and Ofcom analysis of Openreach section 135 responses dated 15 January 2015.

13.50 Using these categories, we looked at the composition of orders over time. Figure 13.1 below, taken from Annex 15 of the May 2015 BCMR Consultation, shows that the composition of orders by category since 2011 has been relatively stable with a slight shift towards Category 1 orders.



Figure 13.1: Composition of orders by category

Source: Ofcom analysis of Openreach section 135 responses dated 15 January 2015.

#### Provisioning performance

13.51 We undertook our own review of Openreach's provisioning performance using significant amounts of information which we required BT to provide to us under our formal powers.<sup>649</sup> This included certain details about every order processed by Openreach between 2008 to 2014 – amounting to 219,501 individual orders.

#### Lead times

- 13.52 We found that although Openreach's existing provisioning process and SLAs at that time were designed around a contractual lead time of 30 working days, in practice, the actual time taken by Openreach to deliver its customers' orders was higher across all provision categories.
- 13.53 The only set of orders for which we found that the mean time to provide was within 30 working days was for those categorised as Category 1, and then only if we removed delays attributed by Openreach to the customer. The mean time to provide for all other categories was higher. This is shown in Table 13.10 below taken from the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>649</sup> Section 135 of the Act.

Excluding customer caused delay						
Provision category	1	2	3	4	All	
2011	29	42	64	43	40	
2012	26	46	78	43	39	
2013	29	49	105	47	41	
2014 <sup>650</sup>	29	58	133	48	46	

#### Table 13.10: Mean time to provide excluding customer caused delay

Source: Ofcom analysis of Openreach section 135 response dated 18 March 2015.

- 13.54 The table above also shows that, with the exception of Category 1 orders, whose provision times have remained fairly static, the mean time to provide Category 2, 3 and 4 orders (removing customer caused delay) has been deteriorating since 2011.
- 13.55 We also noted that the introduction of flat-rate ECCs on 1 June 2014 for EAD orders had reduced delay spent in processing and obtaining customers' approval of these charges. Despite this, the mean time to provide across all four provision categories was the same or higher in 2014 than in earlier years.

#### Delivery date certainty

- 13.56 The current contract for Ethernet services (Contract for Connectivity Services<sup>651</sup>) provides for Openreach to invoke what is termed "deemed consent", which effectively means it can change the CDD for a defined set of reasons without seeking its customers' express agreement prior to each individual change. The combination of a contractual 30-day lead time and Openreach's frequent application of deemed consent meant that customers' experience of changes to their CDD were commonplace rather than exceptional.
- 13.57 Between 2011 and 2014, we found that 71% of all provide and regrade<sup>652</sup> orders for Ethernet products<sup>653</sup> completed by Openreach, were subject to at least one change to their CDD by deemed consent. This was particularly the case for those orders where there is no pre-existing fibre in place and new build was required. Openreach classified deemed consent changes to CDDs using 28 different deemed consent codes.<sup>654</sup> Our analysis of the incidence of these codes and the delays to the provisioning process related to them, found that the need for infrastructure build corresponded to both the most prevalent reason for delay and the greatest amount of delay.<sup>655</sup>
- 13.58 We assessed delivery date certainty on the basis of the proportion of orders that were subject to a change of CDD, and the number of changes of CDD per order. The evidence we gathered demonstrated a divergence in the performance across

<sup>650</sup> Data shown for 2014 includes January to November 2014 i.e. 11 months.
 <sup>651</sup> Published on the Openreach website at

https://www.openreach.co.uk/orpg/home/products/ethernetservices/contracts/contracts.do

<sup>&</sup>lt;sup>652</sup> To upgrade the product bandwidth e.g. 10Mbit to 100Mbit or to change the product features.

<sup>&</sup>lt;sup>653</sup> EAD, EAD LA, EBD, WES, WES LA, WES Aggregation, WEES, BES and Cablelink.

<sup>&</sup>lt;sup>654</sup> See May 2015 BCMR Consultation Table A17.9 at Annex 17 and explanatory text at paragraph A17.127 et seq.

<sup>&</sup>lt;sup>655</sup> See May 2015 BCMR Consultation Figures A17.12 and A17.13 at Annex 17.

provision categories. The certainty around the least complex Category 1 orders had improved, with fewer orders experiencing a CDD change, fewer changes per order when changes did take place, and therefore less time added to the overall lead time of the order due to changes taking place. However, across provision categories 2, 3 and 4 these statistics had all deteriorated since 2011 as shown in Table 13.11 below taken from the May 2015 BCMR Consultation.

Provision Category	Year	Proportion of orders where the CDD was changed	Mean volume of changes to lead time per order	Days delay due to date changes (working days)
All	2011	76%	3.0	23.0
	2014	71%	3.1	24.4
1	2011	64%	2.2	12.4
	2014	53%	1.5	8.3
2	2011	87%	3.8	31.0
	2014	88%	4.6	43.4
3	2011	95%	5.4	63.2
	2014	96%	9.9	129.2
4	2011	74%	2.2	14.0
	2014	83%	2.7	25.2

Table 13.11: Propensity for changes to orders and the impact on lead times

Source: Ofcom analysis of Openreach section 135 response dated 18 March 2015. We provided detailed analysis around lead time uncertainty – volumes of CDD changes and associated delays – in Annex 17 of the May 2015 BCMR Consultation.

13.59 Prior to August 2008 the lead time for legacy WES, WEES and BES Ethernet products had been 57 working days, also subject to 'deemed consent' provisions in the contracts. However, EAD and EBD Ethernet based products had only ever been available on a notional 30 working day lead time subject to contractual 'deemed consent' provisions during the period January 2011 to November 2014 which we used for our analysis. In practice, as set out above, only a small proportion of all orders are actually delivered within 30 working days.

# <u>SLGs</u>

- 13.60 The SLA/SLG regime for the provision of most Ethernet services requires Openreach to compensate its CP customers for late delivery of their order at a rate of one month's rental per day of delay.
- 13.61 In their responses to the April 2014 BCMR CFI, CPs had raised concerns over Openreach's ability to amend the CDD and thereby potentially mitigate the SLG liability. They had also noted over-use of the deemed consent mechanism, which

they had at times successfully challenged, and identified the lack of information provided around CDD changes in particular and order updates in general, as an issue that left them exposed with their own customers.

13.62 Openreach only becomes liable for SLGs if it fails to deliver against the "final" CDD it offers the customer and not the initial CDD. Notwithstanding this, we found that both the percentage of provisions subject to a SLG payment and the total value of provisioning SLGs had risen since 2011 and substantially so in 2013/14.<sup>656</sup>

#### Project Services

13.63 Some CPs had raised concerns that orders placed with Openreach Project Services – a premium coordination and management service offered by Openreach – received preferential treatment by Openreach. We set out our analysis of how provision orders placed through Project Services compare with normal orders at paragraphs A17.157 to A17.160 of Annex 17 of the May 2015 BCMR Consultation. Based on the available evidence, we did not consider that Project Services orders received favourable treatment over the 2011 to 2014 period considered.

#### Quality of service provisioning performance between BT divisions and other CPs

13.64 We also assessed whether Openreach's provisioning performance over the 2011 to 2014 period had given rise to any significant differences in the quality of service provided by Openreach to BT downstream divisions and that provided to other CPs. We set our analysis at A17.161 to A17.163 of the May 2015 BCMR Consultation, which included a comparison of internal (i.e. Openreach's BT customers) and external (i.e. Openreach's non-BT customers) mean time to provide performance by order category and the incidence, frequency and impact of deemed consent on orders placed by BT downstream divisions and other CPs. We concluded that, based on our analysis, there was no evidence of systematic bias.

#### Performance in keeping customers informed

- 13.65 We also noted from the BDRC Quality of Service Report and comments in stakeholders' responses to our April 2014 BCMR CFI, that there was a third important dimension of quality of service: clear, timely and comprehensive communication. We had limited evidence on which to reach a provisional view on Openreach's performance in this regard. To an extent at least, we considered it likely that concerns regarding Openreach's performance in providing clear, timely and comprehensive communications regarding order progression were a symptom of the deterioration in Openreach's performance in relation to delivery date certainty discussed above. In other words, as changes to CDDs through deemed consent and resultant delays had become more frequent and problematic for Openreach's customers, so the requirement for information about order progression from Openreach had become more important to customers.
- 13.66 However, we assessed Openreach's performance in meeting KCI 1 the completion of validation by 5pm on the working day following order placement; and KCI 3 the 14 working day target for issuing customers a CDD. KCI stands for 'Keep Customer Informed' and are Openreach milestones for keeping its customers informed of their order progress, so that they can in turn manage their own customers.

<sup>&</sup>lt;sup>656</sup> See May 2015 BCMR Consultation Table A17.20 at Annex 17.

- 13.67 In relation to the validation of EAD orders, we found that Openreach met KCI 1 for approximately 95% of all orders consistently during the period January 2011 to October 2012. Thereafter its performance had fluctuated significantly from month to month between a peak of 99% to a trough of 36%. For orders which were not validated by 5pm on the working day after the order had been placed, the average impact of the delay had been relatively stable at just over 2 working days.<sup>657</sup>
- 13.68 Turning to Openreach's performance against KCI 3, we observed that over the period November 2012 to July 2014 and excluding delays attributable by Openreach to its customers, only Category 1 orders met the 14-day target and had done so consistently over the period. For Category 2 orders the average time to issue its customers an initial CDD had been stable at approximately 27 working days. KCI 3 performance for Category 3 orders fluctuated considerably and had deteriorated from around 50 days in 2012 to between 70 and 80 days in the first half of 2014.

#### Root causes of the deterioration of quality of service

- 13.69 We considered the root causes of deterioration in Openreach's quality of service and investigated several potential causes based on our analysis of the data, monitoring of developments in the relevant markets and suggestions in CPs' responses to the April 2014 BCMR CFI. While we were not able to isolate a single cause we noted the following potential contributory factors:
  - in February 2013 Openreach's Ethernet Strategic Transformation (EST) programme was halted and rolled back, introducing delays to process improvements and re-work to already submitted orders;<sup>659</sup>
  - the deterioration in Ethernet service provision appeared to have occurred over a similar period in which Openreach was engaged in the mass market roll out of superfast broadband (SFBB). The data we collected from Openreach did not allow us to reach a conclusion on whether the deterioration in Ethernet service provision may have been related to diversion of resources from Ethernet to SFBB. However, we did find that the increase in volumes for Ethernet services was not matched by a proportionate increase in the resources available to undertake Ethernet related work. We therefore provisionally concluded that the level of resources had not kept pace with demand;
  - any incentives Openreach may have had to invest in maintaining or improving quality could have been outweighed by incentives to reduce costs, if for example it sought to comply with the charge control whilst maintaining its profitability; and
  - the existing package of regulatory measures intended to maintain quality of service, in particular the SLA/SLG regime, had not been effective.
- 13.70 In relation to resource levels, we compared the first half of 2011 and 2014 to demonstrate the significant divergence in demand (a 59% increase) and resources (a

<sup>&</sup>lt;sup>657</sup> See May 2015 BCMR Consultation paragraph A17.119-120 of Annex 17.

<sup>&</sup>lt;sup>658</sup> See May 2015 BCMR Consultation paragraph A17.143-148 of Annex 17.

<sup>&</sup>lt;sup>659</sup> The EST programme was intended to replace existing ordering processes and operational support systems (OSS) with new processes and an OSS based on the Equivalence Management Platform (EMP). The new processes and OSS suffered a number of issues causing the programme to be halted. We understand the activity has been restarted on a trial basis.

25% increase). This is shown in Table 13.12 below taken from the May 2015 BCMR Consultation.

	Accepted orders	Completed orders	Total kilo- man-hours	Ratio of resource to demand [≫]	Ratio of resource to completed orders [≫]
2011 H1	28,994	22,910	[×]	[×]	[×]
2014 H1	45,992	28,373	[×]	[×]	[×]
2011 H1 to 2014 H2	59%	24%	25%	-21%	1%

#### Table 13.12: Comparison of volumes and resources

Source: Ofcom analysis of Openreach section 135 responses dated 22 October 2014 and 29 October 2014.

#### Developments which we reported in the May 2015 BCMR Consultation

- 13.71 Openreach had undertaken a programme of process redesign in order to address the situation and had engaged with CPs and the OTA2 as part of this programme. Openreach's proposed changes being trialled included:
  - Differentiated Order Journey (DOJ) the objective of this initiative was to revise the provision order journey and allow for variation of the lead time by order type based on a statistical analysis of historic lead times, among other process improvements. We commented that if this was successful we would anticipate improved delivery date certainty.
  - Project Clarity the objective of this initiative was to provide more information to CPs on a timelier basis, which should, if successful, improve CPs' ability to keep their customers informed about the status of their orders.
- 13.72 We supported both these initiatives and encouraged Openreach and CPs to continue to collaborate (facilitated by the OTA2) on these and other programmes intended to deliver improvements to quality of service. We were particularly mindful, in our consideration of quality of service remedies in this review, not to de-rail the considerable efforts and progress that had been made thus far in re-engineering the provision order journey.

#### Our provisional conclusions on Openreach's performance

13.73 We summarised our provisional conclusions on Openreach's quality of service performance.

- 13.74 We had analysed data relating to provision and regrade of Ethernet products between 2008 and 2014 although, due to the quality of the data we received, focused our analysis on data from the period 2011 to 2014. Our aim was to confirm whether, and identify the extent to which, performance had deteriorated, and to understand whether the data provided us with any insight as to the causes of the deterioration, or any significant variations within the pattern of movements in lead times.
- 13.75 Our provisional findings demonstrated a clear deterioration in the frequency with which customers faced changes to the delivery dates of their orders and the length of time they had to wait for the orders to be completed.
- 13.76 We also included in our analysis, Openreach's performance in relation to Ethernet fault repair.<sup>660</sup> Openreach's performance against the fault repair SLA of five hours for most Ethernet products had been fairly stable, at about an average of 94%, since 2011. We provisionally concluded that, overall, our analysis of Openreach's repair data supported the view that Ethernet repair performance had generally been maintained at a good level since 2011.
- 13.77 Whilst the evidence we assessed indicated that resources had not kept pace with demand for Ethernet provisions, and that this had led to the deterioration in Openreach's provision performance which we observed, we could not isolate any single root cause as to why this had occurred.
- 13.78 In the May 2015 BCMR Consultation we asked:

Question 13.1: Do you agree with our assessment of Openreach's Ethernet provisioning process, how it has been working in practice, the root causes of performance deterioration and process developments? Does our assessment reflect your experiences and understanding of Openreach's wholesale Ethernet provisioning performance? If not, please explain why and provide us with supporting evidence.

Question 13.2: Do you agree with our provisional conclusions on Openreach's performance? If not, please explain why and provide us with any further supporting evidence.

#### Stakeholders' responses

- 13.79 No respondents disagreed substantively with our assessment and most agreed with our provisional conclusions about Openreach's service performance.
- 13.80 Openreach considered that our assessment did not take into account exogenous factors and was over-simplified in certain respects. Whilst supporting our view that the existing remedies had been effective in ensuring no discrimination in relation to service performance, Openreach said that it understood why Ofcom had concluded that the existing obligations had not maintained quality of service at consistently acceptable levels for Ethernet provision where network build is required.
- 13.81 In support of our assessment, a number of respondents both CPs and end users set out their own first-hand experiences of poor service delivery including extensive delays on individual orders and across major projects. For the sake of brevity, we have not summarised these specific experiences. However, non-confidential

<sup>&</sup>lt;sup>660</sup> See A17.164-167 of Annex 17 of the May 2015 BCMR Consultation.

responses to our consultation are published at http://stakeholders.ofcom.org.uk/consultations/bcmr-2015/?showResponses=true.

13.82 Some stakeholders provided further comments about Openreach's Ethernet provisioning process and/or their views on the root causes of the performance they had experienced. We have summarised these below.

13.83 [><

≫]<sup>661</sup>

- 13.84 The PAG<sup>662</sup> considered that its understanding of the provisioning process, how it works in practice and Openreach's process developments differed in a number of key respects from the description we had provided. In summary, the PAG considered we had based our process description on the framework in Openreach's contracts rather than that used in practice and that it was unclear which processes - those in play or development - we had designed our remedies around. 663
- 13.85 The PAG went on to describe some differences in the practical process including the application of 'Day 19'. The PAG explained that Day 19 was a process introduced in 2013 by Openreach for more complex orders and "redefined certain milestones in terms of the information provided to CPs at those points".<sup>664</sup> The PAG said that Openreach "now apply the "Day 19" process as a de facto policy across all orders".<sup>665</sup> It also noted that, in practice, the lead time for Ethernet is rendered "meaningless for all orders except Category 1 'quick win' orders". 666
- 13.86 The PAG also commented on the DOJ initiative. It noted that DOJ did not reflect "the extent to which Ofcom is applying deemed consent" in that DOJ based lead times

<sup>&</sup>lt;sup>661</sup> [**※**]

<sup>&</sup>lt;sup>662</sup> The Passive Access Group (PAG): Colt Technology Services, Sky, TalkTalk, Three UK and Vodafone.

The PAG. Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P23-24, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>2015/</sup>responses/Passive\_Access\_Group.pdf 664 The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P24, Paragraph 4.15.2.1, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Passive\_Access\_Group.pdf

The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P24, Paragraph 4.15.2.1, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Passive\_Access\_Group.pdf 666 The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and

Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P24, Paragraph 4.15.2.2, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Passive Access Group.pdf

factored in deemed consent delays as applied by Openreach.<sup>667</sup> It further considered that the initiatives being introduced by Openreach reflect basic business processes that would be expected of any efficient operator such as 'left to right' working i.e. commencing each step in the process as the previous one is completed as opposed to working back from the CDD.<sup>668</sup>

- 13.87 Hyperoptic considered that a further catalyst for poor performance was Openreach's decision in August 2011 to centralise responsibility for planning and design from local survey officers to a national team. Hyperoptic also pointed out that whilst orders delivered using Project Services did not have better lead times than those without, they do have a better customer experience and that the need for adequate and meaningful updates is an element of performance to be considered.<sup>669</sup>
- 13.88 [×

<sup>670</sup>[×

- 13.89 Scottish Futures Trust (SFT) commended our analysis and highlighted that Openreach's service performance across the UK and Scotland in particular had not been effective.<sup>671</sup>
- 13.90 Six Degrees Group noted "that the delays appear not just to be related to lack of "boots on ground" in terms of engineers and planners, but also in back-office areas such as way-leave".<sup>672</sup>
- 13.91 KCOM agreed with our assessment but also suggested "that Openreach's inability to work to and deliver against provisioning targets and fluctuating levels of quality in service delivery suggests there are deep-seated issues in terms of both the service delivery organisation and the processes it uses".<sup>673</sup> It also suggested that we refresh the data used to produce the minimum standards before they are finalised.
- 13.92 [><

<sup>&</sup>lt;sup>667</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P34, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Passive\_Access\_Group.pdf

<sup>2015/</sup>responses/Passive\_Access\_Group.pdf 668 The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P23, Paragraph 4.12, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Passive\_Access\_Group.pdf

<sup>2015/</sup>responses/Passive\_Access\_Group.pdf <sup>669</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P16, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf</u> <sup>670</sup> [><

<sup>≫]</sup> 

<sup>&</sup>lt;sup>671</sup> SFT, Ofcom Business Connectivity Market Review Response from Scottish Futures Trust, August 2015, P6, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>2015/responses/Scottish\_Futures\_Trust.pdf

<sup>2015/</sup>responses/Scottish Futures Trust.pdf 672 Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P10, Paragraph 2.25,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf <sup>673</sup> KCOM, *Business Connectivity Market Review KCOM response*, 31 July 2015, P17, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/KCOM.pdf

×<sup>674</sup>]

- 13.93 TalkTalk considered the case for regulation to improve Openreach's quality of service was compelling. It said that:
  - due to its SMP, Openreach lacks the competitive pressure that would incentivise it to provide the quality levels that meet customer needs (i.e. at an efficient level);
  - Openreach's vertical integration (with downstream businesses) reduces its incentive to provide good quality:
    - poor quality slows erosion of market share of BT's downstream divisions by making switching away from them more difficult;
    - when quality is poor there tends to be a 'flight to brand' where businesses favour the perceived safe brand of BT (albeit irrational); and
    - no SLGs are paid to the rest of BT weakening the incentive for good quality under vertical integration.
  - because SLGs only reflect losses to CPs (not end customers) they are unlikely to incentivise optimal quality (optimal level of quality being where the marginal cost reduction of lowering quality equals the marginal cost to users of lower quality which Openreach does not face in full); and
  - the prolonged period of poor performance and repeated failures to deliver improvement provide strong evidence that Openreach's incentives are insufficient to deliver good quality.
- 13.94 TalkTalk considered it important to recognise that poor provisioning quality has detrimental effects beyond affected customers. The whole market suffers through deterred switching and so competition and market entry.<sup>675</sup>
- 13.95 Vodafone agreed that we had undertaken a robust review and observed that our data showed that, as at July 2014, 90% of orders were subject to delayed validation adding an additional 3 day lead time to order categories.<sup>676</sup>
- 13.96 Vodafone provided details of the SLG payments made to it by BT in the last two financial years (2013/14 and 2014/15). It commented that given "a back drop of volume increases, and service crisis, it is odd that actual SLGs paid have fallen. This suggests to us that Deemed Consent has been used in the latter year to reduce SLG commitments."<sup>677</sup>

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>676</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P54-55, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf

<sup>&</sup>lt;sup>674</sup> [×

<sup>≫]</sup> 

<sup>&</sup>lt;sup>675</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P41, Paragraphs 6.3-5,

P54-55, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodatone.pdf</u>
 Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P56, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>

- 13.97 In response to question 13.2, Vodafone referred to the final CDD performance data made available to it and said that "analysis of performance standards based upon the Openreach statistics is misleading".<sup>678</sup> It said that this was due to Openreach excluding deemed consent and delays in order validation within its performance statistics. Even with these 'preferred' statistics included, "it is evident that performance is still below expectation".<sup>679</sup> Vodafone went on to say that since 2015 it now had data on performance based on the initial CDD which revealed the issues that underlie provisioning.
- 13.98 Openreach considered that its performance in relation to Category 1 circuits had been "consistently good over time (and had recently been on an improving trajectory)". Openreach went on to say that it considered "the 'problem' associated with Ethernet provision is in relation to circuits where new network needs to be built".<sup>680</sup> It considered that Ethernet demand will increase over the market review period, including more difficult network build circuits. Openreach said that we had not sufficiently recognised that the absolute increase in circuit numbers requiring additional network build itself presents a growing challenge, and that there is evidence to suggest the underlying average 'difficulty' is increasing.<sup>681</sup>
- 13.99 Openreach said that in our assessment of its Ethernet provisioning performance, we had failed to take into account 'exogenous factors' such as CPs' forecasting, changes to traffic management and wayleaves. It also considered that the introduction of dark fibre would heighten the necessity for accurate forecasting "since Openreach will need to understand the new mix of passive and active products to deploy appropriated skilled resources to meet market need".<sup>682</sup>
- 13.100 Openreach said that our assessment had not acknowledged the investment in resource levels for Ethernet over the last year 1000 full-time equivalents (FTEs), which Openreach said would be required to meet our proposed minimum standards and should be taken into account in the charge control so BT can recover its efficiently incurred costs.<sup>683</sup>
- 13.101 In its response to question 13.2, Openreach said that it "accepts that the analysis conducted by Ofcom shows that the frequency of deemed consent applications has increased over time, also that the operation of deemed consent has been a source of

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>683</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P13, Paragraph 62,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

 <sup>&</sup>lt;sup>678</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P56, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>
 <sup>679</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P56, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf

<sup>&</sup>lt;sup>680</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P11, Paragraph 43,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>681</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P12-13, Paragraphs 46-48,

<sup>&</sup>lt;sup>682</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P13-14, Paragraph 53-54,

dissatisfaction for a number of CPs".<sup>684</sup> However, Openreach considered that we had oversimplified matters and mischaracterised how deemed consent is applied in practice. As part of its response, Openreach said that customer caused delay formed 47% of delays post KCI 3. It also stated that the incidence of deemed consent code DC22 (new infrastructure build) had increased but essentially that this is beyond Openreach's control despite being reflected in its performance.<sup>685</sup> Openreach considered deemed consent enables the financial risk for delayed delivery to be managed in a fair and proportionate way "where the circumstances that cause the delay are outside of Openreach's control".<sup>686</sup> It agreed that improvements to delivery date certainty are required<sup>687</sup> but that in our conclusions, we should not assume that the category mix of orders will remain as it is today.<sup>688</sup>

#### Our considerations and decisions

- 13.102 We are grateful to all stakeholders who commented on our provisional assessment including all those CPs and end users who provided first-hand accounts of their service delivery experiences.
- 13.103 With regard to responses we received from advisers to, or providers of, Critical National Infrastructure (CNI) expressing concern over delays in Openreach delivering rollout plans to replace Very Low Bandwidth (VLB) products, we have taken these concerns into account in reaching our decisions in relation to the future regulation of VLB leased lines, set out in Section 3 of the April 2016 BCMR VLB Statement in particular, our decision to monitor CNI operators' migrations until the withdrawal of VLB services in March 2020.<sup>689</sup>
- 13.104 In response to the PAG's comments, we did not consider it either necessary or helpful to describe all the various Ethernet provisioning processes (and changes within them over time) in detail. Rather, we sought to describe the high level steps of an order provision journey from placement to completion within the existing contractual SLAs. We did so in order to provide context to our general assessment and, in particular, our consideration of delivery date certainty and changes to CDDs which arise through the operation of existing provisioning processes and contractual

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>686</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P20, Paragraph 79,

<sup>&</sup>lt;sup>684</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P18, Paragraph 71,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf 685 Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P17-20, Paragraphs 70-78,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>687</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P20, Paragraph 81,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>&</sup>lt;sup>688</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P22, Paragraph 87,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>689</sup> Ofcom, Business Connectivity Market Review: Very low bandwidth leased lines, Statement, 28 April 2016, http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/

arrangements. We were very clear in setting out the principles for the design of minimum standards that our proposed remedies should not be tied to any business processes that may exist (or are proposed) as these may change.<sup>690</sup>

- 13.105 We note Hyperoptic's view that the centralisation of responsibility for planning and design from local survey officers to a national team was also a catalyst for Openreach's poor performance. We did examine various changes in the structure of Openreach's delivery organisation over the assessment period but did not find any evidence to suggest that any particular structural change was a root cause for the observed deterioration in service performance. However, the evidence we obtained did suggest that the level of resources employed by Openreach more generally had not kept pace with demand. We note Hyperoptic's view about improved customer experience where Project Services are purchased.
- 13.106 We note KCOM's comment about Openreach's service delivery organisation and the processes it uses. We would be inclined to see Openreach take the initiative on any changes to its service delivery organisation and the processes it uses. However, we recognise that it may well be appropriate to consider such changes as part of our broader work, signalled in the DCR, to set more ambitious service standards for Openreach through both minimum standards and incentives. This broader work will be undertaken taking into account developments over the course of the forward looking period of this review.
- 13.107 In response to KCOM's suggestion that we refresh the data used, we have done so in reaching our final decisions and this is set out below.
- 13.108 We note [≫] suggestion and we consider our response to KCOM's comment above about Openreach's service delivery organisation and the processes it uses applies equally to [≫] suggestion.
- 13.109 We note and agree with TalkTalk's view that further regulatory intervention to improve quality of service is justified and that Openreach's position of SMP in the relevant wholesale markets means that it lacks the competitive pressure that would incentivise a level of quality which meets the demands of customers. We note TalkTalk's further assertions regarding the effects on incentives to provide good quality of vertical integration in relation to which it submitted no evidence. Based on the evidence we have considered in this review we cannot comment further on these assertions. As regards the broader point of vertical integration, in particular Openreach's status within BT Group, we refer to our recently published initial conclusions from the Strategic Review of Digital Communications.<sup>691</sup>
- 13.110 We note Vodafone's comment as regards SLG payments made to it. We looked at provisioning SLG out-payments in aggregate over the assessment period. We found that, notwithstanding contractual arrangements which provide for the CDD to be changed in certain circumstances without incurring SLGs, overall out-payments had nevertheless increased significantly from 2011/12 to 2013/14.
- 13.111 We note Vodafone's suggestion that Openreach has used deemed consent in 2013/14 to reduce its SLG commitments. On the 6 November 2015 we decided to

<sup>&</sup>lt;sup>690</sup> Paragraph 3.115 of the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>691</sup> Ofcom, Making communications work for everyone: Initial conclusions from the Strategic Review of Digital Communications, Statement, 25 February 2016,

http://stakeholders.ofcom.org.uk/binaries/telecoms/policy/digital-comms-review/DCR-statement.pdf.

open an investigation into BT's use of deemed consent in relation to the provision of Ethernet Services during the period from 1 September 2012 to 31 December 2014.<sup>692</sup> However, in considering different approaches to remedy our concerns regarding Openreach's incentives to provide improved service performance on a forward looking basis, we rejected specifying rules around deemed consent and/or changes to the SLA/SLG regime as likely to give rise to unintended consequences particularly in the context of the development work on order process re-engineering. We explained this in the May 2015 BCMR Consultation. Our current view remains that new *ex ante* minimum standards specifically targeted at performance to the initial CDD and lead times and which apply at the aggregate level, are likely to be more effective in incentivising service improvement than other options we considered. However, we would not rule out re-visiting this again over the course of the forward looking period of this review should circumstances, and new evidence, warrant further investigation.

- 13.112 We note Vodafone's comments regarding the difference between performance to its final and initial CDDs.
- 13.113 We note the comments made by Openreach. We agree that the problem with Ethernet provision is largely associated with those orders requiring some degree of network build. However, we do not consider that our assessment or provisional conclusions are deficient in any material regard in light of Openreach's representations about certain issues which it considers we failed to take into account and/or over-simplified.
- 13.114 We recognise that the business of delivering orders for wholesale Ethernet circuits. most of which require some degree of network build, may be operationally challenging. We also recognise that delays, particularly in more complex order journeys, may be attributable to a number of parties. But, other than customer caused delay (which we considered should be excluded from our assessment of Openreach's performance and from the minimum standards we proposed), we remain of the view that delivering orders which require network build (including. where applicable, engaging with third parties such as land-owners and Local Authorities etc) cannot be meaningfully characterised as "exogenous" to, or outside of, Openreach's control. Rather they are all aspects of the business-as-usual service delivery operation of provisioning new circuits for customers. We have not seen any evidence to suggest that some significant external factor(s) (for example, some major legislative change relating to wavleaves and/or traffic management or some other external factor which would add time to order delivery which was not present previously) provides an explanation for the deterioration in Openreach's performance in Ethernet provisioning observed in our assessment.
- 13.115 As regards Openreach's comments about the mix of complexity of Ethernet orders (which it refers to as the category mix) over time, we discuss more recent changes in category mix further below and in Annex 12. Our assessment takes into account the category mix over time which we consider has been relatively stable.
- 13.116 In setting our minimum standards, we have taken into account that the proportions of Category 1 and 2 orders (in particular) have fluctuated over the last 5 years and we consider this is likely to continue over the forward-looking period. We note, for

<sup>&</sup>lt;sup>692</sup> See Ofcom's Competition and Consumer Enforcement Bulletin at <u>http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/open-cases/all-open-cases/cw\_01170/</u>

example, that the category mix of completed orders has, over the last year or so, looked more similar to that observed in 2011 where Category 2 orders formed a higher proportion of total orders. We also observe that Openreach was better resourced and completed its customers' orders much more quickly in 2011 than 2014/15.

- 13.117 Whereas we do not discount the possibility that the category mix could change in the future (outside that which we have observed over the last 5 years), we do not consider there is likely to be a significant deviation from historic fluctuations. We will monitor the category mix through our KPI requirements. To the extent that there is material change in category mix we would, subject to evidence submitted, take this into account in our compliance assessment and any enforcement considerations.
- 13.118 We remain of the view that, whilst we cannot identify any single cause, the performance observed is a consequence of the decisions made by Openreach against the background of increased demand for regulated wholesale Ethernet circuits.
- 13.119 Given Openreach's SMP in the wholesale CISBO markets (previously AISBO), we believe that any incentives it may have had to invest in maintaining or improving quality (commercial and/or regulatory) could have been outweighed by incentives to reduce costs. It is the effectiveness of incentives to maintain quality of service in the provision and repair of Ethernet services which is our primary concern, given that the effective functioning of downstream markets and the demands of end users is, to a large extent, reliant on regulated network access from Openreach.
- 13.120 We note Openreach's recent recruitment activities and refer to our considerations and decisions in Volume II of this statement surrounding the costs related to quality of service. The various points Openreach makes about the challenges of meeting growing demand for its Ethernet products including forecasting demand are considered further in this section.

#### 2015 update to our assessment in the May 2015 BCMR Consultation

- 13.121 The assessment we carried out and published in the May 2015 BCMR Consultation was based on Ethernet provision and repair data which we obtained under our formal powers for the period January 2008 to November 2014. As explained above, and in the May 2015 BCMR Consultation, we concluded that the data from January 2011 onwards was sufficiently reliable for our analysis and remedy design purposes and therefore concentrated on the period January 2011 to November 2014.
- 13.122 We have used our formal powers again to update the data we previously used to conduct our assessment of quality of service in order to take more recent developments into account in reaching our decisions.
- 13.123 In this sub-section we summarise our findings. We cross refer extensively to Annex 12 in which we set out, in more detail, our analysis across the whole period from January 2011 to November 2015.

#### Lead times

13.124 Our detailed updated findings on lead times (mean time to provide) are presented in Annex 12 Table A12.6 and Figure A12.6 while a summary is presented in Table 13.13 below. We have found that the trends in lead times identified in our analysis for the May 2015 BCMR Consultation have not changed substantially. Lead time

averaged across all order categories continues to increase, as does the lead time for Categories 2 and 3. However, lead times of Category 1 orders have improved in 2015, after remaining relatively static during 2011 to 2014, and those of Category 4 orders have also improved in 2015 to nearly the same performance as in 2011 following a small increase during 2013 and 2014. Consequently, we remain concerned about the continuing decline in Openreach's lead time performance.

	Provision Category				
Year	1	2	3	4	All
2011	29	42	64	43	40
2012	26	46	78	43	39
2013	29	49	105	47	41
2014	28	57	129	46	45
2015	22	64	168	44	48

#### Table 13.13: Mean time to provide in working days excluding customer caused delay

Source: Ofcom analysis of Openreach section 135 response dated 11 November 2015.

- 13.125 In our continued investigations into the likely causes of delay, we have found that the average customer caused delay was relatively stable throughout the period analysed while the average of delays not caused by customers increased significantly after January 2014. The detail is set out in Annex 12 Figure A12.11. We have found the need for network build continues to be the dominant cause of the delays which are not caused by customers. The need for traffic management and wayleave also remain the next largest contributors to delay. Further information is set out in Annex 12 Figure A12.9.
- 13.126 Openreach claimed, in its response to the May 2015 BCMR Consultation, that specific activities such as traffic management, wayleave and dealing with collapsed/blocked ducts/manholes are now taking longer overall for each order affected than they did in 2011 and are a significant factor in the declining performance of completing orders.<sup>693</sup> We therefore investigated delays caused by traffic management (deemed consent code DC25), wayleave (DC7F) and collapsed/blocked ducts/manholes (DC24) over the period 2011 to 2015. We also investigated the effect of network build (DC22). Our detailed findings are presented in Annex 12 Figure A12.10.
- 13.127 We found that the average delay caused by wayleaves remains broadly constant, at circa 55 working days, except for an increase to about 65 working days during the middle of 2015, which coincided with an exceptional increase in accepted orders in the period May to July 2015.<sup>694</sup> Delay due to traffic management has continued to increase steadily throughout the period 2011 to 2015 from about 30 to 70 working days. We also found delay caused by the need for network build increased steadily from about 20 to 50 working days after January 2014 and that there had been an

2015/responses/Openreach Q13.13 service response.pdf

<sup>&</sup>lt;sup>693</sup> Openreach, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, P11-13, Paragraphs 34-44, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

 $<sup>^{694}</sup>$  The month by month values vary by up to +/- 10 working days about the average.

increase in the incidence of and delay caused by collapsed, blocked or damaged ducts/manholes.

- 13.128 Openreach further claimed that the more difficult Category 2 and 3 Ethernet provision orders are taking longer to complete because the nature of the provision work is more difficult. <sup>695</sup> We considered that the average length of the fibre cable, blown fibre and duct and the average quantity of manhole components typically installed in a provision order would provide a good indication as to whether the complex orders are getting harder to complete. Our detailed findings are presented in Annex 12 Figures A12.23 and A12.24. We found small increases in some orders, but we are not persuaded that the effect of these observed increases would cause an impact material enough to consider that the minimum standards could not be achieved. 696
- 13.129 In our view, delivery delays can increase either because the various order delivery activities (planning through to physical installation and test) each take longer or because insufficient resource is made available to address the demand in orders. We therefore investigated the workstack size at the end of each month, which represents the amount of outstanding work. The workstack size is directly linked to the delay an arriving order is likely to experience, depending on the job allocation rules. We have found the workstack size has increased steadily from around 8,500 orders before January 2013 to circa 17,500 orders by October 2015. Further details are in Annex 12 paragraph A12.114 onwards and Figure A12.26.
- 13.130 Our analysis of the evidence we have received continues, in our view, to demonstrate that most of the additional delay is due to Openreach's actions or aspects of the provision work it instigates and manages. We consider the analysed data supports our view that there has been no fundamental change in how long it should take to complete the underlying physical activities (e.g. installing fibre, fibre cable, duct, etc) necessary to complete provision orders. Openreach has not provided any evidence that physical activities are taking longer on average.
- 13.131 Where delays are apparently increasing, such as those relating to traffic management, we note that they are still considerably shorter than our time to provide minimum standards. Given the significant increase in workstack size we have observed, it is our view that the most likely cause of increase in the time to complete a provision order is resource levels not keeping pace with increases in order demand. It is not clear whether this is due to deficiencies in order forecasting, a lack of management of order intake (negotiation with CPs), inappropriate budget or an inability to recruit, in a timely manner, sufficient resource to address the market demands. Even though some of these issues are clearly influenced by factors outside of Openreach itself, we consider that Openreach should better manage these issues.

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>&</sup>lt;sup>695</sup> Openreach, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, P9, Paragraph 26,

<sup>2015/</sup>responses/Openreach\_Q13.13\_service\_response.pdf 696 Our analysis covered the shorter period of April 2014 to November 2015 because data for the period prior to this was not reliable.

#### Delivery date certainty

- 13.132 Our updated investigations into delivery date certainty are presented in detail in Annex 12 Table A12.7 and a summary of the certainty related measures is presented in Table 13.14 below.
- 13.133 We have found certainty of delivery dates appears to have improved when averaged across all orders. Overall, fewer orders experienced a change to their CDD (66% in 2015, down from 76% in 2011). However, the average number of CDD changes for those orders which experience a CDD change and the associated delay has increased.
- 13.134 The apparent improvement in average certainty of delivery dates appears to be due to the significant improvement in the delivery of the least complex Category 1 orders, for which the percentage of orders experiencing at least one change, the average number of changes and the associated CDD delay all decreased in value. We found all three measures for the other categories either continued to increase or, at best, returned to the values they exhibited in 2011, indicating a decline in certainty performance.
- 13.135 Our updated analysis of the deemed consent codes used by Openreach to identify the causes of change to CDDs indicates the need for network build continues to be the greatest cause of changes in CDD as well as causing the greatest delay.

Provision Category	Year	Proportion of orders where the CDD was changed (%)	Mean number of CDD changes per order	Mean delay per order (working days)
	2011	76	3.0	30.3
All	2014	74	3.3	37.3
	2015	66	3.4	42.9
	2011	64	2.2	19.3
1	2014	53	1.6	16.2
	2015	38	1.1	13.2
2	2011	87	3.8	35.6
	2014	94	4.8	54.2
	2015	86	5.1	64.1
	2011	95	5.4	66.5
3	2014	99	10.9	149.6
	2015	98	12.8	189.6
	2011	74	2.2	18.9
4	2014	90	2.8	33.2
	2015	89	3.0	38.7

#### Table 13.14: Propensity for changes to orders and the impact on lead times

Source: Ofcom analysis of Openreach section 135 response dated 11 November 2015.

#### Project Services

13.136 As explained earlier at paragraph 13.63, some CPs had raised concerns that orders placed with Openreach Project Services received preferential treatment by

Openreach. We set out our updated analysis of how provision orders placed through Project Services compare with normal orders at paragraphs A12.77 to A12.83 of Annex 12. Based on the available evidence, we do not consider that Project Services orders received favourable treatment over the 2011 to 2015 period. We specifically note the evidence presented in Figure A12.16.

#### Differences in quality of service provisioning performance between BT divisions and other CPs

- 13.137 We also extended our assessment as to whether Openreach's provisioning performance had given rise to any significant differences between the quality of service provided by Openreach to BT downstream divisions and that provided to other CPs. Our assessment now covers the period 2011 to 2015 and the analysis findings are presented in Annex 12 Table A12.11 and Figure A12.17 and associated text. The analysis includes a comparison of internal (Openreach's BT customers) and external (Openreach's non-BT customers) mean time to provide performance by order category and the incidence, frequency and impact of deemed consent on orders placed by BT downstream divisions and other CPs. We conclude, based on our analysis, that there is no evidence of systematic bias. We do however observe that for the small proportion of all orders which are Category 4, other CPs, on balance over the period, appear to experience considerably longer average lead times, worse certainty and more changes to the CDD. We will monitor this.
- 13.138 We also note that the role of monitoring, advising and reporting on Openreach's compliance with the Undertakings BT gave to us in 2005 (which established Openreach as a functionally separate division within BT providing regulated network access to all customers (BT and non-BT CPs) on an equivalent basis) is carried out by the Equality of Access Board (EAB). 697
- 13.139 The EAB, though the Equality of Access Office (EAO), had been closely monitoring Openreach's compliance with its equivalence obligations in the supply of Ethernet services for some time as set out in its annual reports. In its 2015 Annual Report, it reported that with regard to Ethernet "extensive investigation and analysis by the EAB has concluded that there are no significant indications of failures in compliance with the Undertakings".698

#### Performance in keeping customers informed

- 13.140 We noted earlier that there was a third important dimension of quality of service: clear, timely and comprehensive communication.<sup>699</sup>
- 13.141 We have updated our assessment of Openreach's performance in meeting KCI 1 the completion of validation by 5pm on the following working day after an order has been placed; and KCI 3 - the 14 day target for issuing customers a CDD.

697 See

http://www.btplc.com/Thegroup/Ourcompany/Theboard/Boardcommittees/EqualityofAccessBoard/Equ alityofAccessBoard.htm 698 Equality of Access Board, Annual Report 2015, 21 May 2015, P20,

http://www.btplc.com/Thegroup/Ourcompany/Theboard/Boardcommittees/EqualityofAccessBoard/Pub lications/EAB\_Annual\_Report\_2015.pdf <sup>699</sup> See paragraph 13.65 *et seq* earlier in this section.

- 13.142 In relation to KCI 1, we have found that order validation performance has declined considerably since July 2014, to a level that is considerably worse than the deterioration in performance observed during the period January 2013 to July 2014. The percentage of orders validated by 5pm on the following day has only been above 95% for a few months since July 2014 and dipped to a low of around 45% for a few months in the period May to July 2015. The average delay in completing validation for those orders not validated by 5pm on the following day has deteriorated considerably, with delays in some months since July 2014 of circa 9 to 17 working days. Our detailed observations can be found in Annex 12 Figures A12.3 and A12.4 and associated text.
- 13.143 Turning now to KCI 3, we have found no significant change since July 2014 to the trends we observed before July 2014. Delays of KCI 3 for order Categories 2 and 3 continue to increase, with delays between 40 and over 100 working days, excluding customer caused delays, respectively before the initial CDD is issued. Delays of KCI 3 for Category 4 orders vary around a flat trend of about 20 working days (excluding customer caused delays) while those for Category 1 orders have continued their slow decrease to around 10 working days (excluding customer caused delays) by October 2015. Our detailed observations can be found in Annex 12 Figure A12.12 and associated text.

#### Final conclusions on our assessment of Openreach's service performance

- 13.144 We have analysed data relating to provision and regrade of Ethernet products between 2011 and 2015. Our aim was to confirm whether, and identify the extent to which, performance has deteriorated, and to understand whether the data provides us with any insight as to the causes of the deterioration, or any significant variations within the pattern of movements in lead times.
- 13.145 Our findings demonstrate a clear deterioration in the frequency with which customers face changes to the delivery dates of their orders and the length of time they have to wait for the orders to be completed.
- 13.146 We have also included in our analysis Openreach's performance in relation to Ethernet fault repair. This is set out in paragraphs A12.88-93 in Annex 12. Openreach's repair performance against its SLA of service restoration within 5 hours for most Ethernet products has been fairly stable at about an average of 94% since 2011.
- 13.147 We note below the main conclusions we draw from the data:
  - The overall mix of orders has remained relatively stable. The two largest order categories, Categories 1 and 2, have fluctuated over the whole period but provide no evidence of a trend toward a substantive shift from Category 1 to Category 2 or vice versa. See Figure A12.21 in Annex 12.
  - Over the 2011 and 2015 period we found that most orders are subject to a change of CDD; over 3 changes per order on average. The average lead time change (delay) arising from these CDD changes has increased from 30 to 43 working days.
  - There were notable variations in the degree of deterioration in lead times by order type between 2011 and 2015. Category 1, the simplest order type, showed an improvement toward the end of the period we reviewed and Category 4 lead times worsened then recovered. However, the remaining order types showed a

deterioration, with Category 3 significantly different from the others increasing from 64 working days to 168 working days.

- There is no evidence of a bias between the performance of BT and non BT orders. See Table A12.11 and Figure A12.17 in Annex 12.
- There is no evidence that orders that included the additional "Project Services" payable service received favourable treatment. See Tables A12.9 and A12.10 in Annex 12.
- Between H1 2011 and H1 2014 we have observed a 59% increase in the number of accepted orders. Over the same period, we have identified a 25% increase in the man-hours expended by Openreach on Ethernet provisioning. We could not identify a gain in efficiency to explain the difference between the growth in orders and the lower corresponding increase in man-hours, as the man-hours per completed order have not reduced over the period. Furthermore, as noted above, we have not observed a substantive change in the mix of orders.
- Openreach's Ethernet repair performance has generally been maintained at a good level since 2011. See Figure A12.19 and A12.20 in Annex 12.
- 13.148 We have summarised above, and set out in detail in Annex 12, our findings based on the evidence from Openreach about its Ethernet provisioning performance, which we have obtained using statutory information gathering powers. They essentially confirm the concerns which stakeholders raised in response to the April 2014 BCMR CFI at the start of this BCMR process about Openreach's declining quality of service performance in the provision of wholesale Ethernet services since 2011.
- 13.149 Having now taken into account stakeholders' responses to the assessment we published in the May 2015 BCMR Consultation and the further analysis we have subsequently undertaken, we conclude that Openreach performance has deteriorated over key dimensions of service quality, and from our analysis of the available data we conclude that this has been caused, in the main, by underresourcing.

# The impact of poor performance on Openreach's customers

13.150 In this sub-section, we:

- summarise the assessment we set out in the May 2015 BCMR Consultation about the impact of Openreach's poor service performance on Openreach's customers;
- summarise what stakeholders said about our assessment;
- respond to stakeholders' comments; and
- set out our final assessment.

#### Assessment in the May 2015 BCMR Consultation

13.151 In the May 2015 BCMR Consultation we summarised the responses we received from CPs to our formal request for information about any costs that they considered they incur as a result of Openreach's performance. We categorised these costs as 'direct' (e.g. additional staff overhead associated with obtaining updates from Openreach) and 'indirect' (e.g. reputational damage). We do not repeat this evidence, which was set out in paragraphs 13.69 to 13.84 of the May 2015 BCMR Consultation.

- 13.152 However, in the May 2015 BCMR Consultation, we noted that the responses we received from BT divisions and from other CPs on the direct and indirect costs of Openreach's performance issues, provided a consistent view on the costs incurred by Openreach's customers of the deteriorating performance they have experienced.
- 13.153 Whilst most CPs were unable to provide us with details of the actual costs they had incurred as a result of Openreach's performance, it was evident to us that, at the very least, CPs purchasing material volumes of wholesale Ethernet services from Openreach had dedicated more resources to managing relationships with their customers and with Openreach, hence incurring additional costs. In some cases, CPs reported recruiting more staff as a result. All CPs reported they had incurred, or were likely to have incurred, costs as a direct result of the deterioration in Openreach's provisioning performance. Some CPs also commented on cancellations of orders due to provisioning problems and/or the loss of business either due to reputational damage to themselves or more generally in selling products to market where the date of delivery of wholesale inputs is uncertain.
- 13.154 We said that we were unable to quantify the effects on competition as we had insufficient information on which to reach any provisional conclusions on the distributional effects at the retail level. We considered it unlikely that the impacts of Openreach's deteriorating performance had no effect on competition at the retail level. We did, therefore, provisionally conclude that the deterioration in Openreach's provisioning performance at the wholesale level has had a detrimental effect downstream.
- 13.155 In the May 2015 BCMR Consultation we asked:

Question 13.3: Have we accurately captured the reported impact of poor performance? If not, please explain why and provide us with any further supporting evidence.

# Stakeholders' responses

13.156 Most stakeholders agreed that we had captured the impact of Openreach's poor performance and a number of respondents provided further comments which we summarise below. Openreach expressed concerns with our assessment which we have also set out below.

13.157 [×

**≫]**<sup>700</sup>

700 [×]

- 13.158 Sohonet agreed with our assessment and added that its end users may refuse to place further orders with it because of the provisioning and fault repair experience provided by Openreach.<sup>701</sup>
- 13.159 GTC believed that the real and critical impact on it was the reputational damage which failing to connect a development site ahead of the first customers moving in can have, as well as direct costs to it of having to pay compensation to its customers or incur costs of workarounds.<sup>702</sup>
- 13.160 Hyperoptic confirmed that Openreach's poor performance had given rise to both direct and indirect costs including increased staffing of its fibre team and loss of revenue due to delays.<sup>703</sup>
- 13.161 Six Degrees Group agreed that it was difficult "to accurately quantify the direct costs but that there is indeed direct impact to staffing, workload and time taken to manage the underperformance of Openreach".<sup>704</sup> It added that reputational damage was a key concern especially where issues with provisioning can have consequences on other product lines (such as voice or cloud services).

13.162 [×

≫]<sup>705</sup>

13.163 Vodafone agreed that we had captured the impact of poor performance which it grouped into eight categories. It accused BT of "masking its poor performance by using preferred statistics that do not expose the use of Deemed Consent or other such date management tools such as delaying the clock to start the countdown to CDD i.e. failing to validate orders in a timely manner".<sup>706</sup> Vodafone noted that "CPs have proposed as part of the SLA/G negotiations that where BT does not validate an order by end of the next working day as is required by SLA then the clock is deemed to have started from that time regardless of when the order is eventually validated".<sup>707</sup>

13.164 [×

≫]

 <sup>&</sup>lt;sup>701</sup> Sohonet Limited, P5, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>
 <u>2015/responses/Sohonet Limited.pdf</u>
 <sup>702</sup> GTC, *Business Connectivity Market Review - Response by GTC to Ofcom's main consultation*

 <sup>&</sup>lt;sup>702</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P14, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf</u>
 <sup>703</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P17,

 <sup>&</sup>lt;sup>703</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P17, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf</a>
 <sup>704</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity

<sup>&</sup>lt;sup>704</sup> Six Degrees Group, *Six Degrees Group response to Ofcom Business Connectivity Market Review 2015*, 23 July 2015, P10, Paragraph 2.27,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf

 <sup>&</sup>lt;sup>706</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P57, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>
 <sup>707</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P57, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>

×]<sup>708</sup>

- 13.165 Whilst Openreach did not deny that CPs had incurred additional costs attributable to any decline in the underlying level of service being provided by it, it did set out a number of points regarding our assessment.<sup>709</sup> In summary these were:
  - that it was difficult to be confident about the precise level of any additional costs;
  - that CPs had incentives to artificially inflate the cost impacts;
  - that the approaches taken by CPs in dealing with service issues vary and, in some cases, these approaches can inflate the costs borne by them and Openreach which are avoidable and inefficient;
  - that we had not recognised that additional costs incurred by CPs are, in part, already accounted for in the SLG payments that Openreach makes when SLAs are not met;
  - that the existing quantum of SLGs paid by Openreach per day of delay are the highest in Europe;
  - that our assertion that it was unlikely that the impacts of Openreach's performance has had no effect on competition at the retail level was questionable;
  - that we should conduct more analysis to substantiate the effects of lower levels of service performance on competition at the retail level; and
  - that we should review the level of Openreach SLGs that are passed on to end customers by retail CPs.

#### Our considerations and final assessment

- 13.166 We note the further comments and evidence provided by Openreach's customers about the direct and indirect costs which they consider they have incurred as a result of the deterioration in Openreach's service performance. We take these into account together with the summary of information provided by CPs under formal powers which we set out in our May 2015 BCMR Consultation.
- 13.167 Vodafone's comments largely concern our assessment of Openreach's service performance rather than the impact (e.g. costs) which we have considered earlier in this section. Insofar as the alleged misuse of deemed consent may have given rise to costs in the form of lost SLG out-payments, we refer to our above comments at paragraph 13.111 concerning our investigation into the use of deemed consent.

<sup>708 [&</sup>gt;<

<sup>≫]</sup> 

<sup>&</sup>lt;sup>709</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P21-23, Paragraphs 93-105, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

- 13.168 We have considered the comments made by Openreach. We agree that it is difficult to define the precise level of additional costs arising from its declining service performance. In fact, several CPs, rather than providing us with their estimates in relation to which Openreach asserts that we should be cautious of artificial inflation, said that they could not derive robust assessments of direct costs and, even less so, indirect costs. Similarly, we consider that it is difficult to assess to what extent CPs have been satisfactorily compensated for low levels of service performance through the out-payments of SLGs by Openreach relative to payments made to CPs' customers under their contractual arrangements. Openreach's application of deemed consent is relevant in this regard and is a matter which, as we have already indicated, is subject to investigation.
- 13.169 We also note the evidence in section 5.8.2 of the BDRC Quality of Service Report concerning the actions end customers would take if installation arrangements were "unreasonable" (such as having to wait too long). Whilst the majority of respondents said that they would chase up their order, 38% of respondents said that they would look into switching to an alternative provider and 2% would cancel their order.
- 13.170 In conclusion therefore, we assess that the deterioration in Openreach's Ethernet provisioning performance at the wholesale level has had a detrimental effect downstream.

# Openreach's incentives to deliver acceptable Ethernet provisioning quality of service

13.171 In this sub-section, we:

- summarise the assessment we set out in the May 2015 BCMR Consultation about the incentives that apply to Openreach in the context of the existing remedies we imposed in the previous BCMR in 2013;
- summarise what stakeholders said about our assessment;
- · respond to stakeholders' comments; and
- set out our final assessment.

#### Assessment in the May 2015 BCMR Consultation

- 13.172 In the May 2015 BCMR Consultation we considered the incentives that apply to Openreach in the context of the existing remedies which we imposed in the BCMR 2013. These remedies comprised of:
  - an obligation to provide Ethernet services on an EOI basis;
  - a requirement to publish quality of service information as directed by Ofcom;
  - a requirement to publish a Reference Offer which includes SLAs and SLGs, requirements; and
  - an SLA/SLG regime requiring Openreach to provide specified SLG payments in respect of provisioning and repair.

13.173 We noted that whilst Openreach's repair performance had generally been maintained at a high level, its provision performance had been deteriorating since 2011. We were therefore concerned that the current mix of commercial incentives and regulatory remedies were not having the desired effect of maintaining levels of quality of service.

#### **Competing Priorities**

#### Incentive to accelerate revenue

13.174 We noted that long lead times and deferred installation delay revenue. While this may be considered an incentive to shorten lead times, we assessed that the incentive for Openreach to accelerate revenue through quicker delivery, was weak at best. We supported this view by setting out our analysis of the nominal revenue flow for an EAD circuit under a fast and slow delivery scenario to illustrate that the difference between the two was unlikely to have a material effect on Openreach's behaviour.

#### Incentive to grow volume

- 13.175 We also considered two variants of volume effect that may incentivise Openreach volume loss to competition and improving quality to grow its own revenue base. In relation to volume loss to competition we observed that over the period of deteriorating performance, BT's service shares had remained high and concluded that there is unlikely to be a competitive volume effect.
- 13.176 As regards Openreach's incentive to improve quality in order to grow its revenue base, we noted the evidence in our comparison of volumes and resources.<sup>710</sup> We considered that Openreach may not be incentivised to grow volumes if it recognised that its current systems, resourcing and supply chain were unable to meet a higher level of demand. We provisionally concluded that it was unclear that there were positive volume-based incentives on Openreach to improve its quality of service.

#### Incentives from existing KPIs and Reference Offer requirements

- 13.177 We considered that, in principle, the Reference Offer should provide incentives on Openreach to maintain quality of service. However, in practice, we observed that the expected lead times detailed in Opereach's Reference Offer are often not met. The initial CDD is subject to repeated change for most orders through the use of deemed consent. We therefore concluded that the Reference Offer has no incentive effect with regard to maintaining quality of service.
- 13.178 We further considered the incentive effect from exposure of poor quality of service to external scrutiny but noted that, until September 2014, the primary metric for reporting Openreach's performance was delivery to the final CDD i.e. after the application of deemed consent. We concluded that reporting of performance against this KPI metric had no incentive effect until performance to initial CDD was exposed.

<sup>&</sup>lt;sup>710</sup> May 2015 BCMR Consultation Table 13.8.

#### Incentives from the existing SLA/SLG regime

- 13.179 We noted that under the existing SLA/SLG regime for Ethernet provision, Openreach is required to offer customers an installation date and pay compensation for missing this date at a rate of one month's rental-revenue for each day of delay.
- 13.180 We noted that the SLG on provision applied to the final CDD (rather than the initial CDD) and that, whilst the payment for missing this date is substantial, Openreach can change the date itself repeatedly. We considered that the SLG may in fact be acting as a disincentive to deliver improved lead times and delivery to the initial CDD, as Openreach can mitigate the risk of triggering the SLG by changing the CDD as delays are encountered.
- 13.181 We referred to our nominal revenue flow for an EAD circuit analysis and estimated that in order for Openreach to entertain missing the CDD on one circuit by one day, Openreach would need to be certain it could successfully accelerate the delivery of 3 circuits by one full month.
- 13.182 We therefore considered that the current SLA/SLG regime for Ethernet provision was at risk of circumvention by the uncontrolled use of deemed consent and does not assist giving customers certainty over their delivery date.
- 13.183 We provisionally concluded that the current package of remedies and other commercial and reputational factors were inadequate to incentivise Openreach to deliver acceptable levels of quality of service for Ethernet provisioning.
- 13.184 In the May 2015 BCMR Consultation we asked:

Question 13.4: Do you agree with our assessment of Openreach's incentives to deliver acceptable Ethernet provisioning quality of service? If not, please explain why and provide us with any further supporting evidence.

#### Stakeholders' responses

- 13.185 With exception of Openreach, those stakeholders who responded to the above question agreed with our assessment of Openreach's incentives and, in particular, our provisional conclusion that the uncontrolled use of deemed consent had circumvented the SLA/SLG regime for Ethernet provisioning. Some respondents made additional comments which we summarise below.
- 13.186 Openreach, whilst expressing its understanding as to why we had provisionally concluded that additional remedies were required to ensure it has the necessary incentives to provide Ethernet services at acceptable levels on a consistent basis, did not agree with all aspects of our assessment. We summarise these points below.

13.187 [><
≫]<sup>711</sup>

13.188 Vodafone considered that "provisioning has been in crisis since late 2012" and that the obligations currently in place "have not created sufficient incentives upon Openreach / BT to deliver acceptable Ethernet provisioning quality of service". 712 Vodafone was of the view that "resources within BT are used to manage date changes in order to reduce the SLG burden, rather than focusing on circuit delivery".<sup>713</sup> It noted that SLG payments for 2014-15 were down 50% on the previous year with "no significant change in performance of Ethernet delivery". 714

13.189 [><

×1<sup>715</sup>

- 13.190 In summary Openreach considered that in our assessment we had underestimated the incentives that already exist.
- 13.191 In relation to commercial incentives it considered that our assessment was too narrow in scope and failed to acknowledge that "the commercial incentives to deliver good levels of service are significant". Openreach estimated that "improving average circuit lead time performance by 1 day would deliver £1 million additional annual revenue". It argued that the total volume of Ethernet orders it is able to complete (and therefore bill for) was of critical importance to Openreach's ability to meet its commercial targets and was part of the annual budget setting targets monitored by its senior management. Openreach accepted that in 2014/15 it had underperformed against its revenue target. 716
- 13.192 Openreach referred to its comprehensive programme to deliver sustainable performance improvements, which it had commenced in advance of our May 2015 BCMR Consultation as a result of commercial incentives and not in anticipation of future regulatory minimum standards. 717
- 13.193 Openreach considered that our "provisional conclusion that the Reference Offer has no incentive effect with regard to maintaining guality of service is incorrect".<sup>718</sup>

<sup>712</sup> Vodafone. Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P57, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf <sup>713</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P57, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u> <sup>714</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>711 [&</sup>gt;<

<sup>≫1</sup> 

P57, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf

<sup>×1</sup> 

<sup>&</sup>lt;sup>716</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P25, Paragraph 107-110,

Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P25, Paragraph 111-112,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>718</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document

Openreach was of the view that the Reference Offer provides certainty for CPs regarding the rules of engagement and "provides CPs with recourse in circumstances where they consider that Openreach has not met the standards required of it".<sup>719</sup>

- 13.194 It further considered that we had not taken proper account of the level of transparency Openreach already provides on a voluntary basis about its Ethernet performance to CPs and end customers (the detail of which it also summarised) and had underplayed its role in our assessment. Openreach pointed out that it had actually been reporting against performance to initial CDD since August 2014, rather than September 2014 as we had reported. Openreach considered that even if we were to conclude that its performance reporting has only been meaningful more recently, there was no basis for the same conclusion to be applied more widely.<sup>720</sup>
- 13.195 Openreach considered that the SLA/SLG scheme "clearly creates an incentive for Openreach to deliver service on the CDD provided".<sup>721</sup> It considered that we had not recognised that its contract specifies a lead time of 30 working days and that the application of deemed consent is subject to rules to ensure its proper application and that the inclusion of contractual provisions, to protect Openreach from financial exposure in circumstances where it is not at fault, are reasonable.<sup>722</sup> Openreach did not support our view that the existing SLA/SLG scheme is at risk of being circumvented by the uncontrolled use of deemed consent and said that "Ofcom offers no analysis to support this assertion and ... there are inherent protections already provided for in the CSA."723

#### Our considerations and final assessment

13.196 As regards Openreach's comments on incentives, we note its various representations regarding the strength of existing commercial and regulatory incentives and its arguments that we have underestimated these in our May 2015 BCMR Consultation. However, we note that Openreach understands the reason why we seek to impose additional ex ante remedies to ensure quality of service. We remain of the view that irrespective of the relative strength of existing commercial and regulatory incentives, they were plainly insufficient to ensure that Openreach's quality of service was maintained at acceptable levels.

"Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P26, Paragraph 116,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

Openreach. Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P26, Paragraph 117,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>720</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P26-27, Paragraphs 119-122,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>721</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document

"Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P27, Paragraph 123,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

Openreach noted that this was standard practice across key European jurisdictions. <sup>723</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document

"Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P27, Paragraph 126,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

- 13.197 Our performance assessment has shown that during the period 2011 to 2014 demand increased but the resources employed by Openreach in its service delivery organisation did not track this in wholesale markets in which we note Openreach had SMP and in which we had imposed network access obligations (including an SLG Direction) as regulatory remedies. We note that Openreach has not argued that its resources had tracked demand. We further note that Openreach's much more recent "comprehensive programme to deliver sustainable performance improvements" including 1000 extra FTEs seems to us an effort to bridge the resourcing gap which it had allowed to occur.
- 13.198 What we observed was a deterioration in performance (in particular increasing lead times for orders requiring network build) and, having removed customer caused delay from our analysis, found that Openreach had increasingly applied deemed consent to repeatedly change the CDDs it was giving to its customers to account for these delays most notably with causes coded as DC22 "a need for infrastructure build" and associated network build deemed consent provisions such as blocked ducts (DC24), traffic management (DC25) and wayleaves (DC7F).
- 13.199 We consider that our assessment shows that Openreach has protected itself from financial exposure. That exposure appears to us to have largely arisen as a consequence of Openreach's own resourcing decisions. We consider that Openreach was well aware that demand for wholesale Ethernet leased lines was growing and that this would lead to an increase in absolute volumes of orders requiring network build. In terms of the mix of orders completed, from July 2011 to April 2014 we observed that the mix actually shifted toward Category 1 (from c.30% of all orders in 2011 to c.50% in 2014), i.e. jobs which did not require network build, formed a larger proportion of all orders. We note that this has changed subsequently. We expect to review what regulatory arrangements are appropriate and necessary as regards SLGs following the introduction of new provisioning processes and the conclusion of contractual negotiations on appropriate SLAs and SLGs.
- 13.200 The purpose of the SLA/SLG regime for Ethernet provisioning was to incentivise Openreach to complete orders on time by requiring it to pay compensation to its customers for late delivery. In our view and for the reasons set out above the SLA/SLG regime was not effective in maintaining quality of service and the use of the deemed consent clause in Openreach's contract was a factor relating to this. Openreach's use of deemed consent is under investigation as reported in our competition bulletin.

# The design of minimum standards for Ethernet provisioning and repair quality of service

13.201 In this sub-section, we:

- summarise the considerations we set out in the May 2015 BCMR Consultation about our proposals for the design of our remedies;
- summarise what stakeholders said about our considerations;
- respond to stakeholders' comments; and
- set out our final decisions.

#### May 2015 BCMR Consultation considerations

- 13.202 We considered, on the basis of the available evidence which we had assessed, that quality of service performance for Ethernet provisioning had been in decline for a significant period of time. Average lead times for orders was increasing and most orders were subject to repeated changes to the delivery date. Our analysis showed that Openreach's lead time performance was materially better in 2011. We could not say for certain whether Openreach's performance was better still prior to 2011 as we found the pre-2011 data to be insufficiently reliable to draw such conclusions.<sup>724</sup> We also provisionally concluded that, in general, quality of service for repair had not deteriorated or become unstable and had been maintained at acceptable performance levels.
- 13.203 We considered on the available evidence that the current regulatory and contractual arrangements had not been sufficient to ensure that Openreach maintained its quality of service in the supply of Ethernet provisioning services to a sufficiently high level to prevent material detriment to downstream competition and/or end users in the relevant markets and that, absent further *ex ante* regulation, these conditions were likely to persist over the forward looking period of this review.
- 13.204 We also stated that our objective was to ensure repair performance should remain at an acceptable standard. In considering our proposals for remedies we were mindful that repair performance could decline if Openreach were to divert resources to improve provisioning.
- 13.205 We therefore proposed to impose minimum standards on Openreach covering Ethernet provisioning and repair activities to incentivise improvements in Ethernet provisioning and maintain repair performance at an acceptable level.
- 13.206 We first considered the principles, scope and other factors around which we had designed the proposed suite of minimum standard measures.

#### Principles for the design of minimum standards

- 13.207 In terms of the design of our remedies and in addition to the requirements to be evidence-based and proportionate we also considered it important to observe the following principles:
  - the design should acknowledge the complexity and variety in Ethernet order types;
  - the design should recognise the trade-off between delivery date certainty and the time to provide (i.e. that greater certainty over the actual delivery date can be more readily achieved by extending the period between order acceptance and final completion);
  - the design should not be tied to any *categorisation* of orders that Openreach may use from time to time, as this may change;
  - the design should not be tied to any business processes that Openreach may use (or propose) as these may change; and

<sup>&</sup>lt;sup>724</sup> See paragraph A17.113 *et seq* at Annex 17 of the May 2015 BCMR Consultation concerning the availability and integrity of Ethernet provision and repair performance data.

- the design should balance the timely issuing of a CDD with the probability that that CDD will be met.
- 13.208 Based on these principles we considered a number of possible approaches to incentivise Openreach to improve its quality of service performance in Ethernet provisioning activities.
- 13.209 We considered at an early stage that any remedies we propose should not, as far as possible, seek to specify or interfere with the design of any provisioning process. We considered that remedies attempting to directly control the design of the provisioning process were more likely to lead to unintended consequences.
- 13.210 We also considered whether we should address the issue of date certainty by specifying rules as to the use of deemed consent. However, we considered that this approach may also lead to unintended consequences or interfere with industry processes.
- 13.211 We also considered changing the SLA/SLG regime, but again we considered that in the context of new processes, this approach also risked unintended consequences. Our view was that while a change to the SLA/SLG regime may well be required once industry has developed and implemented a new provisioning process, we considered that industry is better placed to negotiate and agree what the appropriate regime should be going forward.

#### Scope and other factors in the design of minimum standards

13.212 We set out the considerations we had given to the scope and other factors in the design of the minimum standards we proposed.

13.213 We considered:

- the products to which the standards will apply;
- the factors influencing quality of service that we proposed to include and exclude from the metrics; and
- our other considerations in applying standards over time and on a national basis.

#### The products to which the minimum standards apply

- 13.214 We proposed that minimum standards should apply to the main volume-driving order types of "provide" and "regrade" for EAD and EAD LA, which account for the vast majority of Ethernet orders. We also applied our proposed minimum standards to EBD, Cablelink services, and variants of or replacements for all of these above mentioned services, including EAD/EAD LA.
- 13.215 We considered applying the minimum standard to legacy Ethernet services such as WES, WES LA, WEES, BES, etc. However, we recognised that many of these products had been or are in the process of being withdrawn with consequent falling volumes. We proposed that it would be inappropriate to impose minimum standards on these products.
- 13.216 We also considered applying the minimum standards to Openreach's optical services (WDM products such as OSA and OSEA). However, we had not included optical services in the early information gathering stages of our review because responses

to our CFI had a clear focus on concerns surrounding Ethernet provisioning. We also noted that, in comparison with Ethernet services, these products account for much smaller volumes so would be unlikely to make a material difference to the overall lead times achieved.<sup>725</sup>

13.217 Additionally, we considered that our proposed quality of service remedies might encourage improvements in Openreach's leased line fibre provisioning processes and performance more generally, which would include both legacy Ethernet products and optical services. We considered that it was unlikely that Openreach would operate substantially different order and provisioning processes for these other products, which are delivered in much the same way.

#### Inclusion/exclusion of various factors

- 13.218 Our analysis highlighted various causes of poor provision performance, some of which were outside Openreach's direct control. We considered the following three main factors:
  - Customer caused delay delays attributed by Openreach to its customers (or further downstream) and which are identified by certain deemed consent codes in Openreach's systems which are shown in Table A12.4 in Annex 12;
  - Non-customer caused delay (including delays caused by third parties) delays attributed by Openreach to either itself or third parties. Third parties may include, for example, land owners and/or local authorities where Openreach may be delayed during the delivery process whilst seeking permission to build on private property or carrying out street works. These are also identified by certain deemed consent codes in Openreach's systems which are shown in Table A12.4 in Annex 12; and
  - MBORC (Matters Beyond Our Reasonable Control) delays which Openreach attributes to, for example, a *force majeure* event such as extreme weather conditions.
- 13.219 We proposed excluding customer caused delay from the values specified in the lead time minimum standards we were proposing and our compliance assessment. This would limit the potential for Openreach's customers to game the minimum standard measures, and would focus the minimum standards on Openreach's performance. We also proposed that delays caused by customers be excluded from most of the KPIs (discussed later in this section), which we proposed to require Openreach to provide for assessment of its compliance with our minimum standards and for other reasons.
- 13.220 We proposed including non-customer caused delays in the metrics specified in the lead time minimum standards and our compliance assessment. Our analysis revealed that most of these delays are wholly or partially within Openreach's control, although third parties do contribute to some of the delays. Excluding, or providing relief for, non-customer caused delays would remove any incentive on Openreach to improve its performance to the extent that issues are within its control. Whilst including the non-customer caused delays within the minimum standard would

<sup>&</sup>lt;sup>725</sup> See Section 8 of BT's Regulatory Financial Statements for 2014 at http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2014/Current\_Cost\_F inancial\_Statement\_2014.pdf

include some delays which are not within Openreach's direct control, we considered that this should incentivise Openreach to manage the process of interaction and delay relating to third parties better, so as to obtain the best outcome. Therefore, we included non-customer caused delays (including Third Party in Openreach/industry terminology) in the metrics we used, and we did not propose to allow any relief against the standards for this cause of delay.

- 13.221 We proposed to include MBORC in the values specified in the lead time minimum standards and our compliance assessment. Openreach usually raises MBORCs when weather or third parties cause serious damage to its network, or weather prohibits Openreach staff from attending sites where installation or repair work is required. The principal purpose of MBORCs is the suspension of SLG payments for the relevant region and period. We considered that events leading to MBORC declarations are much more likely to affect minimum standard performance measures relating to repairs than provision orders, because of the short period (typically 5 hours) within which service should be restored after the fault has been reported.
- 13.222 We considered that, by including delays due to events covered by MBORCs, we would avoid the risk of incentivising Openreach to use MBORC declarations as a means of addressing potential minor non-compliance issues with our minimum standards or to apply less rigor in its criteria for declaring MBORC.
- 13.223 We also investigated the likely impact of including MBORCs in our proposed minimum standards. Using our formal powers, we asked Openreach for provision performance data to identify specifically the extent to which MBORC related events contributed to delays in provisioning. No significant levels of delay were identified, as illustrated in Figures A12.8 and A12.9 in Annex 12. The repair performance data similarly contained faults covered by MBORC declarations. We noted that performance in terms of the proportion of repairs completed within the SLA was acceptable throughout the period we analysed, from January 2011 to July 2014. We also noted that during late 2012, when the UK experienced severe flooding after the second highest level of rainfall since records started in 1910, repair performance actually improved, although it did decline (but only to 91.5%) in January 2013, after which it recovered rapidly. This demonstrated that Openreach was able to reprioritise resources to meet targets where necessary, or that the weather and consequent flooding occurred in regions where there are low volumes of Ethernet services, or both.
- 13.224 Therefore, we included existing MBORC events in the metrics we had used and we did not propose to allow any relief against the standards for this cause of delay.

## Proposed scope of relevant products and types of provision orders in the May 2015 BCMR Consultation

#### Stakeholders' comments

13.225 Sky considered our proposals for quality of service remedies would be improved by including OSA and OSEA in the product set covered by the minimum standards and

that by proposing to exclude them, we were running a significant risk that they would be deprioritised and be subject to even worse provisioning quality.<sup>726</sup>

- 13.226 The PAG considered it important that the scope of the minimum standards covered all relevant services in the defined market and was concerned that services such as OSA were not covered by the proposed minimum standards and KPIs. The PAG considered we had not explained why non-Ethernet services should be excluded and that, absent compelling reasons to the contrary, the quality of service regime should apply to all services in the relevant market.<sup>727</sup>
- 13.227 TalkTalk also disagreed with our proposal to exclude optical services (e.g. OSA) from the scope. It considered that the justifications we set out in the May 2015 BCMR Consultation were not sound. TalkTalk considered that the comments made by stakeholders in response to the April 2014 BCMR CFI reflected the historic situation. Our focus in the BCMR is the period 2016 to 2019 and [≫<

 $\times$  ] and is also experiencing provisioning problems and reducing quality with OSA.  $^{\rm 728}$ 

- 13.228 TalkTalk disagreed that applying minimum standards to EAD would lead to good quality on OSA. Rather, it said that this exclusion would provide Openreach with a strong incentive to divert resources and prioritise EAD and EBD orders over OSA, notwithstanding that the same process is used.<sup>729</sup>
- 13.229 TalkTalk recognised that legacy Ethernet products may have low provisioning volumes but did not consider that this was reason for their exclusion.<sup>730</sup>
- 13.230 TalkTalk further considered that the inclusion of regrades in the minimum standards might create problems. It noted that regrades do not require new fibre to be installed and can be provisioned quickly with little resource. Their inclusion in the minimum standards would allow Openreach to meet its obligations by providing a greater proportion of regrades and a lower quality on provide orders. TalkTalk suggested that it may be appropriate to apply separate standards for provides and regrades.<sup>731</sup>

<sup>&</sup>lt;sup>726</sup> Sky, Sky's response to Ofcom's Business Connectivity Market Review consultation dated 15 May 2015 and Business Connectivity Market Review consultation on leased lines charge controls and dark fibre pricing dated 12 June 2015, 7 August 2015, P16, Paragraph 9.2(b),

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sky.pdf

<sup>&</sup>lt;sup>727</sup> The PAG, *Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper*, 31 July 2015, P19, Paragraph 4.4.1, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>2015/responses/Passive\_Access\_Group.pdf

<sup>2015/</sup>responses/Passive\_Access\_Group.pdf <sup>728</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P42, Paragraph 6.10,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>729</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P42, Paragraph 6.11,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>730</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P42, Paragraph 6.15,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>731</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P42-43, Paragraph 6.16,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf

- 13.231 Vodafone said that we had only proposed to regulate quality of service for EAD services whereas it considered that the proposals should be extended to cover the wider CI set of services including OSA. It considered that limiting regulation to certain products could lead to the deprioritisation of others and that we must protect against this.<sup>732</sup>
- 13.232 UKCTA stated that it was important that all business connectivity services have a quality measure as a minimum safeguard in order to protect other services from being downgraded through Openreach prioritising EAD to avoid fines where quality of service dips. It added that OSA and any other new services subject to SMP obligations should be covered.<sup>733</sup>
- 13.233 Some of the above respondents also argued that minimum performance standards should be extended to include dark fibre and Vodafone in particular considered that the provision of interconnection and accommodation services should also be backed up with minimum standard principles.

#### Our considerations and decisions

- 13.234 As regards quality of service in the provision of dark fibre and interconnection and accommodation services, we set out our considerations in Sections 9 and 12 respectively.
- 13.235 We have carefully reviewed our proposals in light of stakeholders' comments, however we have decided not to change the products and types of provision orders to which our minimum standards will apply.
- 13.236 We note the principal concern of several stakeholders that imposing minimum performance standards on EAD (including EAD LA), EBD and Cablelink could lead Openreach to deprioritise other current or future regulated products in the wholesale CISBO markets, in particular its optical products (OSA and OSEA).
- 13.237 We have taken account of this, amongst other uncertainties and risks, in the construction of our quality of service remedies. In particular, our decision to target directions imposing obligations on Openreach to comply with minimum standards for provision and repair in relation to particular Ethernet products, is based on a new SMP condition requiring BT to comply with all such quality of service requirements as we may from time to time direct in the relevant wholesale markets.
- 13.238 We have therefore put in place a mechanism which enables us to intervene (without necessarily re-opening the BCMR) and impose such requirements as we consider are justifiable and proportionate in the circumstances pursuant to the legal tests in section 49 of the Act.
- 13.239 To the extent therefore that Openreach responds to our minimum standards by deprioritising or otherwise reducing the quality of service with which it may provide other regulated products in the wholesale CISBO markets over the forward-looking period of this BCMR, it would risk inviting further regulatory attention and potential interventions as to the quality of service it is obliged to provide.

<sup>&</sup>lt;sup>732</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P54, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>
<sup>733</sup> UKCTA, Pupingan Connectivity Market Review Logged Lings Charge Control Paviow of PT's control PT's control Paviow of PT's control Paviow of PT's control Paviow of PT's control Paviow of PT's control PT's contr

<sup>&</sup>lt;sup>733</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P4, Paragraph 1.9, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf

- 13.240 We remain of the view that our interventions should provide Openreach with strong incentives to improve the quality of service provided by its service delivery organisation, which includes staff, processes and systems common to the whole Ethernet and optical product set, and not just those within scope of our minimum standards.
- 13.241 However, in light of the concerns expressed by stakeholders concerning the risk of Openreach deprioritising provision and repair of optical products, we have decided, for the purposes of transparency, to include Openreach's provisioning performance for its optical products in the KPIs we are requiring Openreach to provide.
- 13.242 In relation to TalkTalk's concern about the inclusion of regrades (upgrading the product bandwidth e.g. from 10Mbit/s to 100Mbit/s or 1000Mbit/s), we note that many provide orders do not require new fibre to be installed. Further, the volume of regrades is very small in comparison to provide orders (less than 5% in 2014). We do not consider that the inclusion of regrade orders materially affects Openreach's provisioning performance, as our assessment has shown, or are likely to do so over the forward looking period. Consequently, we regard the risk that Openreach may meet its obligations by providing a greater proportion of regrades and a lower quality on provide orders is sufficiently low such that we have decided to maintain our proposal to include regrades in the minimum standards.

### Proposal to exclude customer caused delays in the May 2015 BCMR Consultation

13.243 We asked stakeholders:

Question 13.5: Do you agree that it is appropriate to exclude customer caused delays from the minimum standard performance measures for provision activities? If not, please explain why.

#### Stakeholders' responses

13.244 All respondents to our consultation agreed that it was appropriate to exclude customer caused delay from the minimum standard performance measures. However, most CPs considered that we should intervene further to ensure that such exclusions were applied fairly.

13.245 [×

≫]<sup>734</sup>

- 13.246 Hyperoptic agreed but gave a number of examples of customer caused delay deemed consent codes where Openreach had a responsibility to ensure such delays were minimised through clear communication and advanced notice.<sup>735</sup>
- 13.247 GTC also agreed but considered it imperative that Openreach fix all of the issues that were causing lack of clarity for customers.<sup>736</sup>

<sup>&</sup>lt;sup>734</sup> [×

<sup>&</sup>lt;sup>735</sup> Hyperoptic, *Response to Business Connectivity Market Review May 2015*, 31 July 2015, P17, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf</u>

#### 13.248 [×

×1<sup>737</sup>

- 13.249 The PAG did not oppose our proposal but considered it essential that our legal instruments should be tightly drafted to ensure Openreach does not exploit the definition of "customer caused delay" and apply it in inappropriate circumstances to circumvent the policy intent of the SLA regime.<sup>738</sup> PAG proposed that we should adopt a number of interventions in relation to deemed consent including that we:
  - provide more clarity about the definitions of the various codes;
  - impose an obligation on Openreach to use these codes and definitions;
  - ensure that customer caused delay codes are defined objectively rather than at Openreach's discretion to avoid potential abuse; and
  - require Openreach not to introduce new deemed consent codes without our approval.
- 13.250 Sky welcomed our clarification as to what events would be attributed to customer or non-customer delay. However, it considered that we will need to monitor the use of deemed consent codes carefully and that a requirement on Openreach to regularly report its use of the codes would greatly facilitate monitoring. Sky was concerned that Openreach could choose to introduce new codes and that we should explicitly prescribe when and how new events can be defined as a cause for deemed consent.739
- 13.251 TalkTalk agreed with our approach but said it was not clear how we were proposing to exclude customer caused delay from the minimum standards. It also raised concerns about Openreach gaming or manipulating this exclusion to categorise noncustomer caused delay as customer caused delay. TalkTalk pointed to Openreach's history of behaviour in respect of deemed consent and its view that this had been manipulated in order to reduce SLG out-payments. TalkTalk suggested that we should design our regulation to prevent this, such as by not allowing Openreach to change delay categories without CPs' and/or Ofcom's approval.<sup>740</sup>

≫1

Sky, Sky's response to Ofcom's Business Connectivity Market Review consultation dated 15 May 2015 and Business Connectivity Market Review consultation on leased lines charge controls and dark fibre pricing dated 12 June 2015, 7 August 2015, P17, Paragraph 9.4(b),

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sky.pdf <sup>740</sup> TalkTalk, Business Connectivity Market Review and Leased Line Charge Control TalkTalk response, August 2015, P45-46, Paragraph 6.30-33, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf

<sup>&</sup>lt;sup>736</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P15, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf

<sup>&</sup>lt;sup>738</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P21-22, Paragraph 4.10.2, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Passive\_Access\_Group.pdf

- 13.252 Vodafone also agreed with our proposals to exclude customer caused delays and added that "the appropriate level of evidence must be provided where these delays are incurred".741
- 13.253 Six Degrees Group said that customer caused delay should be excluded but that "this should take into account reasonable CP response times and not be used to stop the clock in the style of a game of chess every time a response is solicited".<sup>742</sup>
- 13.254 Openreach strongly supported our proposal noting that customer caused delay was a significant factor that impacts certainty and speed of delivery. It noted that customer caused delay occurs both pre- and post-KCI 3 and that we should remove all such delay from our proposed minimum standards because it is outside Openreach's control.
- 13.255 Openreach considered it important to note the significant amount of work it had done with CPs to improve their management of customer caused delay and reduce its overall impact on order delivery. Openreach cited:
  - the holding of workshops with CPs specifically in relation to mitigating the impacts of customer access related issues which Openreach maintained was in its interests to speed up delivery (and hence revenue activation) and reduce wasted engineering effort such as where it cannot gain access; and
  - the introduction of 'flat rate' ECCs in June 2014.
- 13.256 Openreach considered that the exclusion of customer caused delay ensured CPs incentives to manage their part of the process efficiently are maintained and that Openreach is not exposed to 'gaming'.
- 13.257 Openreach argued that there is protection within the existing contract to ensure that it applies deemed consent correctly. It stated that it runs quality checks and provides guidance to its job control teams to ensure deemed consent is applied accurately and fairly. It further stated that a challenge process was easily accessible to CPs.
- 13.258 Finally, Openreach noted that the DOJ process, which it had been developing with significant input from CPs, included further granularity on date management and that the adoption of category-based lead times should enable a significant reduction in the level of deemed consent applied once DOJ was put into operation.<sup>743</sup>

#### Our considerations and decisions

13.259 All respondents either agreed to or did not oppose our proposal to exclude customer caused delay from our minimum standard performance measures for provision activities. We have, therefore, decided to apply this exclusion.

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf <sup>743</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document

"Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P28-29, Paragraphs 128-139,

<sup>&</sup>lt;sup>741</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P58, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf

Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P11, Paragraph 2.29,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

- 13.260 We have carefully considered whether, in light of the concerns expressed by many CPs about Openreach's incentives to apply this exclusion fairly, we should impose further requirements and/or oversight to that which we proposed in the May 2015 BCMR Consultation.
- 13.261 In Annex 7 Draft Legal Instruments (Part 1 Proposed directions for BT) which we notified in the May 2015 BCMR Consultation, we proposed to define "Customer Caused Delay" as a delay "which the Dominant Provider may reasonably attribute to being caused by a Third Party Customer or a customer of that Third Party Customer including an end user".
- 13.262 We consider that the exclusion of customer caused delay from the relevant minimum standards is sufficient, as defined, to enable our compliance assessment of Openreach's performance in relation to the minimum standards to take into account the exclusion of only such delays as have been reasonably attributed by Openreach to the customer. The requirement for delays to be reasonably attributed by Openreach is an objective one, and we will enforce on that basis.
- 13.263 In response to TalkTalk's point about how customer caused delay would be excluded from the minimum standards, we consider that our proposals in the May 2015 BCMR Consultation were clear. We note that TalkTalk referred to the inclusion or exclusion of certain "orders" in its response. However, we made no mention of exclusion of orders in our proposals. We referred to the factors influencing quality of service that we propose to include and exclude from the values and compliance assessment. We proposed that customer caused delay be removed from the calculation of time to provide in the minimum standards for provision. We further refer to Annex 7 Draft Legal Instruments (Part 1 Proposed directions for BT, Schedule 1) which we notified in the May 2015 BCMR Consultation. We proposed a definition of "Time To Provide" to mean "the total number of Working Days, excluding only Working Days reasonably attributed to Customer Caused Delay, from the date on which an Order becomes an Accepted Order to the date when that Accepted Order becomes a Completed Order". We set out the Legal Instruments to impose our final decisions in Annex 35.
- 13.264 However, in light of the concerns raised by several CPs, we agree with Sky's view that we should monitor changes to CDDs. We proposed KPIs to monitor the proportion of monthly completed orders subject to a CDD change and the average number of changes per order excluding customer caused delay. The suite of KPIs we proposed in the May 2015 BCMR Consultation did not include any specific measure to monitor customer caused delay, nor do we consider that we could easily detect changes in customer caused delay from the KPIs we did propose. We consider that the formal reporting of customer caused delay would provide transparency and reassurance to CPs and alert us to any changes in such delays that may warrant further consideration. We have therefore decided to impose further KPIs on Openreach to address this concern which we set out later in this section.
- 13.265 We note that the PAG and some other respondents linked our proposal to exclude customer caused delay from the relevant minimum standards to the SLA/SLG regime. We did not propose any such linkage in the May 2015 BCMR Consultation. Rather, we made it clear that, in light of the design principles we had identified, our consideration of a range of approaches to incentivise Openreach to improve its quality of service in Ethernet provisioning had led us to reject specifying rules as to the use of deemed consent and/or changing the SLA/SLG regime in advance of any industry negotiation of an appropriate regime to support anticipated new provisioning processes. We were concerned that either of these approaches could result in unintended consequences. We remain of this view. Further, we consider that the

imposition of targeted minimum performance standards, at an aggregate level, required under an ex ante SMP services condition, is likely to be the most effective remedy in delivering quality of service improvements. However, we would not rule out re-visiting this again over the course of the forward looking period of this review should circumstances, and new evidence, warrant further investigation.

13.266 Finally, as regards Openreach's comments regarding the fair and accurate application of deemed consent, we note that its historical use of deemed consent is currently under investigation.744

#### Proposal to include non-customer caused delays in the May 2015 BCMR Consultation

13.267 We asked stakeholders:

Question 13.6: Do you agree that it is appropriate to include the "non-customer" delays (also including Third Party delay in Openreach data) in the minimum standard performance measures for provision activities? If not, please explain why.

#### Stakeholders' responses

13.268 With the exception of Openreach, all respondents agreed with our proposal.

- 13.269 TalkTalk<sup>745</sup>, Six Degrees Group<sup>746</sup>, the PAG<sup>747</sup>,  $[\times]^{748}$  and  $[\times]$ 1<sup>749</sup> all made similar comments that our proposal should incentivise Openreach to better manage and minimise the extent of provisioning delays attributable to itself or to third parties.
- 13.270 Vodafone also agreed, saying that aside from genuine delays caused by the ordering CP or by the end user, "any other service aspects which cause delay should be counted and not excluded". It noted that since the last market review, responsibility for delays had been a contentious issue. However, Vodafone was concerned that it was not certain that BT would modify its contract in line with our proposals regarding responsibility for delays and asked us, as a minimum, to "set out its [Ofcom's]

<sup>&</sup>lt;sup>744</sup> See <u>http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/open-cases/all-open-</u> cases/cw\_01170/ <sup>745</sup> TalkTalk, Business Connectivity Market Review and Leased Line Charge Control TalkTalk

response, August 2015, P45, Paragraph 6.30,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>746</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P11, Paragraph 2.30,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf <sup>747</sup> The PAG, *Response to Ofcom's Business Connectivity Market Review Consultation Paper and* Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P35, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Passive Access Group.pdf

<sup>[×</sup> 

<sup>≫]</sup> <sup>749</sup> [×

expectations for BT's behaviour as a result of the new publication and service standards".  $^{750}$ 

13.271 In its response, Openreach said that it did not agree with the proposal as drafted in the consultation. It considered "that including all non-customer delays in the composition of the minimum standards is disproportionate because it makes Openreach responsible for a group of factors, regardless of whether they are within its control or not".<sup>751</sup>

13.272 Openreach considered that:

- our analysis in relation to non-customer delay was inadequate;
- our proposals were unfair and disproportionate;
- our proposals place the entire risk and responsibility for managing these delays on Openreach even in relation to matters that are outside its control;
- our proposals introduce a real risk that Openreach will fail to meet minimum standards due to exogenous factors;
- we should re-consider the inclusion of all non-customer caused delays in the minimum standard performance measures for provision activities and conduct a more detailed evaluation; and
- it would be more proportionate for us to only include those delay types that are largely within Openreach's direct control and exclude those that are largely outside its control. Should we include those delay types largely outside of Openreach's control we should only include the element that relates to the application for the permission and not the element within the control of the third party.<sup>752</sup>
- 13.273 Openreach agreed that delays classified as deemed consent codes 22, 23, 24, 28, 29 and 7H are Openreach's responsibility to manage.<sup>753</sup>
- 13.274 It considered delays classified as deemed consent codes 26 and 27 (manhole or footway box that is contaminated and needs special treatment and asbestos has been identified) are not fully within Openreach's control "in that they are subject to

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>752</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P35, Paragraphs 170-173,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>753</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P30, Paragraph 141,

<sup>&</sup>lt;sup>750</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P58, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>

<sup>&</sup>lt;sup>751</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P30, Paragraph 130,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

health and safety considerations / legislation, and where a very careful process needs to be followed to ensure appropriate protection of individuals".<sup>754</sup>

- 13.275 Openreach stated that delays classified as deemed consent codes 25, 7F and 7G (which relate to traffic management notices, customer wayleaves and force majeure events respectively) are "largely outside of Openreach's direct control and that they should not be included in the minimum standards".<sup>755</sup>
- 13.276 Openreach provided evidence that delays classified as deemed consent codes 25 and 7F are the most common cause of delay and said that both "require Openreach to obtain permission from third parties in order to progress circuit delivery".<sup>756</sup> Openreach acknowledged that it is involved in the process of obtaining the required permissions - bearing responsibility for identifying the needs and submitting requests but asserted that the "majority of delay is associated with the permission being granted by the third party after the request has been made".<sup>757</sup>
- 13.277 Openreach said that for delays classified as deemed consent code 25 (traffic management) the expediency with which permissions are provided are governed by rules on a per authority basis and that it is often the case that there is limited scope to negotiate reductions to the time period stipulated by the relevant authority. <sup>758</sup> Openreach added that the delays "associated with obtaining traffic management and wayleave permissions are particularly prevalent in relation to the most challenging to deliver circuits, including those at the 97<sup>th</sup> percentile of speed performance".<sup>75</sup>
- 13.278 Openreach noted that there is a wide range of permissions relating to traffic management, all requiring differing legislative notice periods. Until 2012, the simplest permissions could simply be notified but this was no longer the case, adding time, cost and effort to manage these issues since the 2011 base year we had used in the setting of speed minimum standards. Openreach also noted that since 2014, a

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>&</sup>lt;sup>754</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines". consultation response, P30, Paragraph 142,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines".

consultation response, P30, Paragraph 143, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

Openreach. Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P31, Paragraph 146,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>757</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document

<sup>&</sup>quot;Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P31, Paragraph 147,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>758</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P31, Paragraph 148,

<sup>&</sup>lt;sup>759</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response. P31. Paragraph 149.

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

growing number of local authorities require permits<sup>760</sup> in addition to permissions for traffic management activities, which had a negative impact on lead time and certainty performance for a greater proportion of orders.<sup>761</sup>

- 13.279 Openreach argued that for wayleave requests (DC7F) the experience is even more variable because of the difference in the type of grantors which range from private individuals to large corporations. It argued that grantors frequently use wayleave requests as an opportunity to negotiate over remuneration and described two frequently encountered scenarios to illustrate its points.<sup>762</sup>
- 13.280 Openreach stated that in relation to both traffic management and wayleaves, it had tried, and continues to try to improve those parts of the process it can influence citing:
  - workshops within the Ethernet Service Forum which resulted in a number of amendments and improvements to the application process;
  - training and briefing its planning teams to identify traffic management requirements at the planning stage;
  - working with local authorities to improve the process for applications;
  - managing different requests in parallel rather than in series where possible;
  - developing a detailed view of the different approaches to traffic management by local authorities to assist in accurate lead time estimation:
  - applying for 'early starts' to reduce delay associated with traffic management applications;
  - using greater legal resources;
  - encouraging mobile network operators to play a greater role in relation to wayleaves required for circuits to cell sites on private land where 'easements' may make additional wayleave application unnecessary; and
  - the potential review of the existing Electronic Communications Code by Government which could offer improvements to current wayleave processes.<sup>763</sup>

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf Openreach, Openreach response to service-related questions in Ofcom's consultation document

<sup>&</sup>lt;sup>760</sup> Permit schemes were introduced by legislation in 2004 to improve authorities' abilities to minimise disruption from street and highway works. Instead of informing a street authority about its intention to carry out works in the area, a utility company would need to book time on the highway through a

permit. <sup>761</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines". consultation response, P31-34, Paragraphs 150-163,

<sup>&</sup>quot;Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P34-35, Paragraphs 164-169,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>763</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document

#### Our considerations and decisions

- 13.281 We note that all respondents (with the exception of Openreach) supported our proposal to include non-customer caused delays in our minimum standards for Ethernet provisioning.
- 13.282 With regard to Vodafone's comments, we recognise (as we set out in the May 2015 BCMR Consultation) that the contractual arrangements for the Ethernet products which CPs buy from Openreach in the wholesale CISBO markets, including SLAs and SLGs, remain a necessary and important element to maintaining performance incentives.
- 13.283 However, for the reasons we set out in the May 2015 BCMR Consultation, we did not make any proposal to intervene to change the contractual arrangements in order to address the service performance concerns we had identified. Rather, we set out our proposals to impose new *ex ante* minimum standards with effect at an aggregate level whilst setting out a framework for negotiations on SLAs/SLGs (facilitated by the OTA2) in light of, amongst other things, expected changes to the provisioning process for Ethernet services. We proposed the re-imposition of the existing SLG Direction pending the outcome of these negotiations.
- 13.284 In setting out our proposals for the inclusion of non-customer caused delay specifically in relation to the design of our proposed minimum standards, we neither explicitly nor implicitly provided any view as to the appropriate treatment of delay within Openreach's existing contract or any future contractual arrangements. This remains our position at this time.
- 13.285 We have carefully reviewed the arguments and evidence provided by Openreach. The principal concern, around which our proposals and decisions regarding the imposition of new minimum standards are based, is ensuring that Openreach faces strong incentives to deliver regulated network access to an improved level of quality of service for Ethernet leased line services in the wholesale CISBO markets in which we find BT has SMP. We are particularly concerned about the provisioning of wholesale Ethernet circuits in respect of which we have observed a serious deterioration in Openreach's service delivery performance since at least 2011.
- 13.286 We recognise that delivering orders for wholesale Ethernet circuits, most of which require some degree of network build, poses operational challenges. We also recognise that delays that can occur in a complex order journey may be attributable to a number of parties. But, other than customer caused delay (which, as set out above, we have decided should be excluded from our minimum standards and compliance assessment of Openreach's performance), we remain of the view that delivering orders which require network build (including, where applicable, engaging with third parties such as land-owners and Local Authorities etc) cannot be characterised as "exogenous" to, or outside of, Openreach's control. Rather they are all aspects of the business-as-usual service delivery operation of provisioning new circuits to customers.
- 13.287 We also note that, whereas Openreach cannot reasonably be expected to predict the exact delay in any particular instance of obtaining a wayleave or a traffic-

"Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P31 & 33-35, Paragraphs 147, 160, 166-168, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

management permission and/or permit, it can be reasonably expected to predict the likely range of such delay, and plan and act accordingly.

- 13.288 As set out above, we consider that Openreach (as the dominant provider subject to network access obligations in the wholesale CISBO markets) should face strong incentives to ensure that its service delivery organisation minimises non-customer caused delay to the fullest extent. We are concerned, given the close interplay between Openreach and third parties in the delivery process, that excluding elements of non-customer caused delay would significantly weaken these incentives and provide potential for Openreach to game the minimum standards in the same way that the inclusion of customer caused delay could be exploited by its customers.
- 13.289 To the extent the inclusion of non-customer caused delay also captures truly exogenous delay attributable to third parties we note that:
  - the risk that such third parties may be seeking to game the minimum standards is negligible; and
  - such delays are to an extent included in the metrics we have used in our minimum standards for provision lead times and for which we have set our upper percentile at 97% recognising that some orders may remain subject to protracted delays due to third-parties.
- 13.290 We consider the appropriateness of these metrics later in this section including the detailed comments Openreach has raised regarding delays attributable to wayleaves and traffic management and how it considers these have changed since 2011.
- 13.291 Openreach further argues that our proposals place the entire risk and responsibility for managing these delays on it even in relation to matters that are outside its control and that this introduces a real risk that Openreach will fail to meet minimum standards due to exogenous factors.
- 13.292 We have arrived at the minimum standards we are imposing, as a result of having taken into account, for example, delays attributable to third parties such as wayleaves and traffic management. To the extent that there is some future material increase in delay attributable to these factors (over and above that already factored into our metrics) we would, subject to evidence submitted, take this into account in our compliance assessment and any enforcement considerations. Moreover, were some wholly exogenous factor(s) to arise in the future with major implications (for example some legislative change in relation to street works), we could review the minimum standard directions and modify or withdraw them as appropriate pursuant to section 49 of the Act.
- 13.293 Having given our full consideration to the comments of all stakeholders, as set out above, we have decided to adopt our proposal to include non-customer caused delays in the minimum performance measures for provision activities.

#### Proposal to include delays due to MBORC in the May 2015 BCMR Consultation

13.294 We asked stakeholders:

Question 13.7: Do you agree that it is appropriate to include delays due to events covered by MBORC declarations in the minimum standard performance measures for provision and repair activities? If not, please explain why.

#### Stakeholders' responses

13.295 With the exception of Openreach, all stakeholders that responded to question 13.7 either simply agreed with our proposals or agreed and made further comments. We have summarised below these further comments as well as the reasons why Openreach disagreed with our proposals.

13.296 [><

≫]<sup>764</sup>

- 13.297 The PAG agreed with our proposal, for the same reasons as set out in its response to question 13.6 above, that the inclusion of MBORCs provides an incentive on Openreach to minimise the extent of delays. It considered that the exclusion of such events from the minimum standards would incentivise Openreach to rely on MBORC declarations in a broader range of circumstances, as a new pathway to avoiding SLG out-payments.<sup>765</sup>
- 13.298 TalkTalk also agreed. It also considered that excluding MBORCs would incentivise Openreach to game the regulation by declaring MBORCs and would have little incentive to respond quickly to such events since they would not count in our minimum standards.<sup>766</sup>
- 13.299 Six Degrees Group noted the inclusion we proposed applied to both provision and repair performance measures which it welcomed. It hoped that this would create incentives on Openreach to maintain strength in depth of its engineering resource that is capable of adapting to the conditions as necessary.<sup>767</sup>
- 13.300 Sky considered that Ofcom needed to address Openreach's ability to unilaterally call MBORCs without a fully explained rationale or opportunity to challenge and that Openreach should, at a minimum, be required to regularly report its use of MBORCs.<sup>768</sup>
- 13.301 Openreach explained that MBORC declarations are used to reflect conditions that affect the service Openreach offers which are outside of its control. Causes of MBORC included extreme weather conditions, fire, third party damage to cable or cable theft affecting its network or its engineers' ability to work. Openreach stated

≫]

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf

<sup>768</sup> Sky, Sky's response to Ofcom's Business Connectivity Market Review consultation dated 15 May 2015 and Business Connectivity Market Review consultation on leased lines charge controls and dark fibre pricing dated 12 June 2015, 7 August 2015, P17, Paragraph 9.4(a),

<sup>&</sup>lt;sup>764</sup> [×

<sup>&</sup>lt;sup>765</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P35, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015 (response) (Paper) Access Crown add

<sup>2015/</sup>responses/Passive\_Access\_Group.pdf <sup>766</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P45-46, Paragraph 6.30,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>767</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity

Market Review 2015, 23 July 2015, P11, Paragraph 2.31,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sky.pdf

that it operated a strict governance process to oversee when it is appropriate to invoke and remove MBORC declarations.

- 13.302 Openreach argued that delays due to MBORC are outside its control and therefore it is disproportionate for us to include these delays for the purposes of assessing Openreach's compliance with the minimum standards. Whereas Openreach noted that our analysis suggested that MBORC delays were small, it argued that when MBORC is declared it could have a significant impact on order progression.
- 13.303 Openreach considered that if we decided to include delays due to events covered by MBORC in the minimum standard for provision, we should take the same approach as in the FAMR and set a cautionary allowance of 1% to ensure Openreach is not unfairly penalised for matters outside its control.
- 13.304 In relation to our minimum standards for repair, Openreach considered that if we decided to mandate a minimum standard for repair to include MBORC, an allowance should be set at 2.5% based on the fault data Openreach had provided to us for the period 2011 to July 2014.<sup>769</sup>

#### Our considerations and decisions

- 13.305 We remain of the view, as we proposed, that it is appropriate and proportionate to include MBORC delays in the metrics we have used for the minimum standards for provisioning and repair and not to provide relief against our standards for this cause of delay.
- 13.306 We consider that the inclusion of MBORC delays will ensure Openreach has strong incentives to manage MBORC events appropriately and effectively and minimise any delays which arise as a result of these events. The exclusion of MBORC delays could, as several stakeholders highlighted and as we set out in our May 2015 BCMR Consultation, incentivise Openreach to be less rigorous in its management of, and governance process for, MBORC declarations and be less responsive to resultant delays because they would not count in our minimum performance standards.
- 13.307 We recognise, as we did in our May 2015 BCMR Consultation, that the purpose of MBORC is to reflect conditions which impact the service which Openreach offers which are outside its control, such as serious damage caused by weather or third parties. However, whereas the cause and occurrence of the MBORC delay may be outside Openreach's control (to the extent the impact of events such as extreme weather, fire, damage or theft etc cannot be reasonably or economically prevented) the totality of the delay associated with MBORC events is rather more within Openreach's control, in particular its recovery activities. By including MBORC delays within our minimum standards we seek to ensure that Openreach is incentivised to mitigate where it can and recover quickly from MBORC events to the extent they impact its wholesale Ethernet provisioning and repair activities.
- 13.308 In the May 2015 BCMR Consultation, we set out our analysis of the likely impact of including MBORCs in our proposed minimum standards by examining the extent to which MBORC-related events contributed to delays in provisioning over the period

<sup>&</sup>lt;sup>769</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P36-37, Paragraphs 174-186,

from January 2011 to November 2014. We did not identify significant delays and our updated analysis to November 2015 set out in Annex 12 shows no substantive change in this.

- 13.309 With regard to the inclusion of MBORCs in our minimum standards for provisioning we therefore consider that our approach remains proportionate. Further, we do not consider that there is any substantive basis for a cautionary MBORC allowance for provision of 1% to ensure Openreach's is not unfairly penalised based simply on the possibility that MBORC events could lead to significant delays over the coming three years which have not been observed over the last five. If this were to happen, then we consider a more appropriate response is not to weaken the incentives of our minimum standards but to take such MBORC delays into account in any compliance assessment or enforcement considerations. We would also highlight the fact that in setting our time to provide minimum standards for Years 2 and 3 based on observed provision performance in 2011, this includes delays due to MBORC incidents in that 2011 period.
- 13.310 We take the same view as set out above with regard to Openreach's representations about repair activities and MBORC. We note Openreach's evidence that faults that failed their 5 hour repair SLA and were subject to MBORC between 2011 and July 2014 represented between 1.63% and 2.46% of total faults over the period (2.23% on average). Openreach itself describes this as "relatively low". Openreach then argues that these MBORC instances are "inherently variable and by definition unpredictable" and that we should therefore set an allowance at 2.5% in any minimum standard for repair.
- 13.311 In our view Openreach's own data suggests that faults subject to MBORC are not inherently variable or unpredictable but have, in fact, remained within a range of less than one percentage point variation over a four year period. As we noted in the May 2015 BCMR Consultation the proportion of repairs completed within the SLA over the period 2011 to 2014 has been fairly stable, fluctuating around an average of 94% and never falling below 91% in any month during that period. We further noted that late 2012 saw the UK experiencing severe flooding after the second highest level of rainfall since records began in 1910.
- 13.312 As regards the comments made by the PAG, we would emphasise that our consideration of MBORC concerns only its inclusion/exclusion for the purposes of our minimum standards.
- 13.313 Finally, we note Sky's comments but are unclear in what context it raises its concerns. We had proposed that MBORCs should be included in our minimum standards for provisioning and repair and therefore consider additional reporting measures to be unnecessary. If the context refers to Openreach's contractual arrangements with its customers, then we consider this to be a matter for negotiation between the parties.

### Proposals that the minimum standards should apply at a national level in the May 2015 BCMR Consultation

- 13.314 We considered whether the minimum standards should apply nationally or to individual regions.
- 13.315 We proposed to assess performance standards on a national level. This was because the volumes of Ethernet orders are relatively low and we were concerned

that applying minimum standards at a more granular (e.g. regional) level may include statistically invalid sample sizes.

- 13.316 We did however propose that KPIs should apply at a regional level to provide transparency and mitigate the likelihood of any regional bias.
- 13.317 We asked stakeholders:

Question 13.8: Do you agree that it is appropriate to apply the minimum standards nationally? If not, please explain why.

#### Stakeholders' responses

13.318 All stakeholders who responded to this question agreed with our proposal to apply the minimum standards nationally. We have only summarised below the responses from those stakeholders who made further comments.

13.319 [><

≫]770

- 13.320 Six Degrees Group noted that to report on a geographical basis would be an added overhead which it does not consider justified.<sup>771</sup>
- 13.321 Hyperoptic agreed but considered that minimum or better than minimum standards be applied to the top 100 exchanges before applying nationwide.<sup>772</sup>
- 13.322 Openreach supported our proposal to apply the minimum standards at national level where it has SMP. It considered this approach would provide Openreach with the operational flexibility needed to cater for unpredictable and localised demand spikes whereas a regional model would require Openreach to resource to inefficiently high levels to meet the standards.
- 13.323 Openreach reported that it changed its regional delivery teams in the summer of 2015 after our May 2015 BCMR Consultation, and these are now:
  - North & Scotland;
  - Wales & South West;
  - London & East; and
  - Northern Ireland.
- 13.324 Openreach said that we were correct to state that, given the volumes of Ethernet orders, applying the minimum standards at a regional level could result in statistically

 <sup>771</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P11, Paragraph 2.32, available at <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf</u>
 <sup>772</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P18, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf

<sup>&</sup>lt;sup>770</sup> [×

<sup>×1</sup> 

invalid sizes. It pointed out that, in this regard, Ethernet volumes are tiny compared with WLR and MPF in relation to which we had imposed minimum standards on a regional basis in the last fixed access market review.<sup>773</sup>

#### Our considerations and decisions

- 13.325 We note the unanimous agreement with our proposal to apply the minimum standards nationally and have therefore decided to proceed on this basis. For the avoidance of doubt, this applies only to those geographic markets in which we have found BT to have SMP in wholesale CISBO services, and therefore excludes the CLA, the Hull area and the expanded competitive core network which we do not regulate.
- 13.326 In response to [≫] comments we proposed that Openreach be required to report performance at a regional level as part of its KPI obligations and consider this further later in this section. Here we are concerned solely with application of the minimum standards and with the level of aggregation of orders at which it would be appropriate to assess compliance with those standards.
- 13.327 We are unclear as to the reasoning behind Hyperoptic's proposal that the minimum standards are initially applied to the top 100 exchanges ahead of application nationally. However, our intent is to incentivise Openreach to improve its performance uniformly across the UK. We expect the benefits of improved certainty of completion dates of orders and of faster installation (and maintained levels of repair) to be delivered to consumers irrespective of location and without discrimination between CPs in relation to the geographic areas they may serve. We therefore consider it reasonable and appropriate to apply the minimum standards nationally but require transparency on a regional basis and by CP to provide visibility that Openreach is not focusing its improvement activities in particular areas or aimed at particular CPs at the expense of others.
- 13.328 We note Openreach's comments that applying the minimum standards nationally provides it with flexibility to deploy its resources more efficiently than would be the case if the regime were applied regionally. We have not undertaken any assessment at this stage as to the relative efficiency of Openreach's resources under a national or regional based regime or what additional costs might arise from a particular approach. We also note Openreach's comments about forecasting and demand volatility which we have set out below in more detail.
- 13.329 We may consider a regional regime in the future, in particular, were we to be concerned that the flexibility afforded to Openreach under a national regime was not delivering improvements uniformly or in a non-discrimatory manner. However, as set out in the May 2015 BCMR Consultation and notwithstanding the issues which Openreach considers we should also take into account, our main concern with a more granular application of the minimum standards is a practical one of remedy design. The number of Ethernet orders partitioned by region may be too low to provide reliable statistical measures of performance.

<sup>773</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P38 & 41-43, Paragraphs 187-191 & 207-211, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf 13.330 Finally, we note Openreach's changes in its regional delivery teams which we consider further later in this section in relation to our KPI decisions.

#### Openreach's representations regarding forecasting and demand volatility

#### Forecasting

- 13.331 In our May 2015 BCMR Consultation, we did not discuss or make any proposals with regard to forecasting.
- 13.332 However, as part of its response to question 13.8, Openreach argued that assessing future levels of demand for Ethernet services was a key consideration in its ability to consistently deliver specified levels of service performance. Openreach said that it can only understand the level of resource it requires, and when and where that resource will be needed, through accurate demand forecasting.
- 13.333 Openreach explained that it requires, on average, 4.5 months to recruit and deploy fully trained additions to its teams of engineers, making effective short-medium term forecasting very important.
- 13.334 Openreach explained that it forecasts demand by:
  - analysing historic demand;
  - conducting market analysis;
  - obtaining insight from Openreach sales teams; and
  - obtaining forecast information directly from CPs.
- 13.335 As regards the latter, Openreach noted that CPs are required to supply forecasts under the terms of its contract but that the current industry Ethernet demand forecasting regime was not optimised. It said this was because not all CPs provide forecasts and because the quality of the forecasts that are provided is mixed.
- 13.336 Openreach argued that it was exposed to un-forecast demand spikes which exceed the total level that it is resourced to meet whether nationally or regionally since such spikes could not be anticipated through other forecasting techniques. Openreach provided data in which it compared total EAD demand versus forecast from April to July 2015 showing that weekly demand was exceeding its forecast over the period by up to around 200 orders per week.
- 13.337 Openreach argued that CPs should reasonably be expected to have greater insight than Openreach into their own future demand forecasts and that further work was necessary to improve CPs' input into the industry forecasting which Openreach relies upon.
- 13.338 In particular, Openreach said that CPs need to be incentivised to give Openreach early insight into projects likely to drive significant new demand and avoid demand shocks that were impacting service delivery for the whole industry. Openreach said it understood the challenges for CPs of providing accurate forecasting consistently, with complexities of multiple CPs bidding for the same contract or where CPs' own network build projects are required at short notice. However, Openreach considered that CPs have a better insight in such matters than it does.

- 13.339 Openreach said it had developed an approach to improve forecasting that it had proposed trialling with industry in late 2013 but that this was rejected by CPs. Openreach set out the key features of this in its response and so we have not summarised them here. However, it sought to apply date management (which we assume to mean longer lead times) for orders tagged as outside forecast parameters.
- 13.340 Openreach argued that its forecasting proposal should be reviewed again now.
- 13.341 In relation to our proposals to impose minimum standards, Openreach said we should either:
  - remove CPs' orders that are un-forecast and that lead to demand exceeding the prevailing Openreach demand forecast from our assessment; or
  - treat un-forecast demand as customer caused delay.

13.342 In Openreach's view this would:

- incentivise CPs to provide better forecasts;
- prevent demand shocks from deteriorating performance for all;
- allow Openreach to plan with more certainty; and
- ensure the minimum standards were a truer reflection of Openreach's performance and based on factors within its control.<sup>774</sup>

#### **Demand volatility**

- 13.343 Openreach said that demand volatility was a major issue for industry in relation to Ethernet service delivery. Given relatively low volumes, volatility is high at a national level but even more pronounced at sub-national levels. Openreach referred to two graphs in its response. The first showed weekly demand intake for overall Ethernet orders nationally between 30 March 2015 and 6 July 2015 which ranged between around 175 and over 350 orders per week. The second showed EAD orders received by Senior Operations Manager (SOM) level on a monthly basis between January 2014 and July 2015 varying between less than 10 to around 65 orders per month.
- 13.344 Openreach explained that repair can also be subject to localised spikes associated with incidents such as cable theft or network damage.
- 13.345 Openreach said that imposing minimum standards at a regional level would exacerbate these problems and incentivise it to resource to an inefficiently high level by region to avoid breaching the standards.<sup>775</sup>

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>775</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P40-41, Paragraphs 204-206,

<sup>&</sup>lt;sup>774</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P38-40, Paragraphs 192-203,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

#### Our considerations and decisions

- 13.346 We recognise the need for accurate forecasting to provide Openreach with the information on which to base effective and timely business and resourcing decisions regarding the scale and configuration of its service delivery organisation. We note the explanation provided by Openreach about the various techniques it employs in its forecasting activities.
- 13.347 We further recognise that the provision to Openreach of accurate forecasts of demand by its customers is a necessary and important part of this process. In this regard, we note that Openreach has contractual obligations in place on its customers to provide demand forecasts including an incentive mechanism whereby unforecasted orders are not bound by its SLA/SLG schedule.
- 13.348 However, it appears to us that Openreach is suggesting that its own contractual provisions are deficient and that its initiatives to agree an improved forecasting mechanism with its customers have thus far proved unsuccessful. In light of this Openreach considers that we should exclude unforecasted orders from our minimum standards or, by some means, consider this as a form of excluded customer caused delay.
- 13.349 We are not persuaded that we should exclude unforecasted orders from our minimum standards or within the mechanism to exclude customer caused delay from our metrics. We are concerned that this could provide Openreach with an incentive to game forecasting as a means of meeting the minimum standards which we consider are appropriate to impose on it to address the service performance concerns we have identified.
- 13.350 We nevertheless recognise that any deficiencies with the current commercial and contractual forecasting arrangements should be addressed at the earliest opportunity. We consider that Openreach and industry, facilitated through the offices of the OTA2 as necessary, are better placed to review and agree a robust and fit-for-purpose mechanism for forecasting rather than through regulatory intervention. It should be in the interests of all stakeholders (whilst safeguarding their commercial interests and recognising the challenges for individual CPs of forecasting future demand) to ensure that Openreach has, to the fullest extent possible, timely and accurate demand forecasting information upon which it is then incumbent on Openreach to ensure its service delivery organisation is adequately resourced and optimally configured.
- 13.351 In the absence of effective forecasting arrangements between customers and their wholesale supplier, we recognise that Openreach could be exposed to spikes in demand to which it could not have reasonably resourced itself to respond to and that this could potentially lead to compliance issues with our minimum standards. We will therefore, subject to evidence presented, take this into account in our compliance assessments and, where appropriate, in enforcement considerations.
- 13.352 However, to ensure we have visibility of industry forecasting, we have decided to impose further KPIs on Openreach in respect of its volume forecasts including that supplied to it by each of its customers.
- 13.353 In relation to demand volatility, Openreach does not explain in what way such volatility is a major issue for industry or for Openreach specifically. In any event, the nature of the requirements we are imposing take account of any such weekly/monthly volatility in that we are setting minimum performance standards to be complied with

over an annual period and on a national basis. We note Openreach's concern that, were we to consider imposing minimum standards at a regional level at some future point, this could incentivise resource inefficiencies.

## Proposals for the application of the minimum standards over time in the May 2015 BCMR Consultation

- 13.354 We considered when the minimum standards should come into force. We proposed that Openreach should be required to meet the standards, in full, as soon as is reasonably practicable in order to address our concerns regarding the detriment to competition and customers of unacceptable quality of service performance.
- 13.355 However, in proposing to set mandatory minimum standards for the first time, we recognised the need for Openreach to organise and resource itself appropriately. Openreach was developing changes to its order handling processes and systems to enable performance improvements. The timescales of these developments were uncertain.
- 13.356 We therefore took this into account in our proposals for setting minimum standards over the forward looking period of this review. In relation to fault repair, we sought to ensure that the current repair performance is maintained throughout the review period and therefore proposed a single minimum standard that applied in each of the three years of the review period.
- 13.357 In relation to our proposal to impose a minimum standard on delivery date certainty<sup>776</sup> we proposed requiring that Openreach should significantly improve on its current performance from Year 1 of the review period.
- 13.358 With regard to our proposal to impose minimum standards on lead times, our proposals would require Openreach to deliver improvements from Year 2 of the review period. In proposing that Openreach would not be required to deliver improvements in lead times before Year 2, we had taken into account the uncertainty in the timescales of Openreach's necessary process and systems developments. However, our proposal would require that Openreach ensures that it, as a minimum, maintains its current lead time performance in Year 1 (based on its performance over 2014). In practice, we considered that in order for Openreach to prepare itself to meet the minimum standards applying to lead times in Year 2, it would likely need to out-perform its Year 1 lead time obligations and that these should therefore be seen as an absolute floor rather than an expected performance standard.
- 13.359 We asked stakeholders:

Question 13.9: Do you agree with our proposals regarding the application of minimum standards over the three year period of this review? If not, please set out your reasons and alternative proposals.

#### Stakeholders' responses

13.360 We received mixed responses from stakeholders about the application of the proposed minimum standards over the forward-looking period of the review. Whilst

<sup>&</sup>lt;sup>776</sup> In relation to which our research showed that although end users would like the delivery of their services within shorter lead times, they attached greater importance to certainty that their services will be delivered on agreed dates.

almost all stakeholders agreed with the general approach of phasing the standards over time, Openreach and CPs expressed different views as to the appropriate standards that should be applied in each of the years.

- 13.361 A number of CPs were particularly concerned that we had proposed that the lead time minimum standards in Year 1 should be based on Openreach's performance in 2014 and that the package of improvements already being developed warranted more stretching standards earlier. Openreach considered that delivery of 2011 lead time standards in Year 2 should be pushed back to Year 3. We have summarised below the responses we received.
- 13.362 The PAG agreed that our proposed end points appeared generally sound and would represent a substantial improvement over CPs' experience today. But it considered that "the generous transition period granted to Openreach is in some respects unjustified".<sup>777</sup> It stated that the mean time to provide target of 46 days in year one represents no improvement relative to current levels for a further year "in circumstances where Ofcom has acknowledged that 2014 performance has been unreasonably low".<sup>778</sup> It considered this an extremely conservative approach and expected the contract to reflect higher ambitions and SLGs paid for failure to achieve higher targets.
- 13.363 In relation to how we had taken into account the uncertainty in timescales for Openreach to make process and systems improvements for Ethernet delivery, the PAG was of the view that "a number of the 'improvements' being developed by Openreach to meet these new targets are simply common sense and do not warrant an extended transition period". It referred to DOJ and its concept of commencing each step of the order journey as soon as the previous step is completed as opposed to Openreach's current process of working backwards from the CDD. The PAG noted that the new approach was already delivering 'quick wins' and it was inexplicable why Openreach had not implemented this previously. It also referred to other service improvement initiatives such as better contractor management, in-house test rodding and reducing wayleave applications and that these were, in many cases, already delivering improvements. The PAG therefore was unclear why Openreach should be permitted a substantial period of time to improve its mean time to provision of Ethernet services, particularly where we were not challenging Openreach to improve beyond addressing the decline that had occurred since 2011.<sup>779</sup>
- 13.364 Hyperoptic were in general agreement in particular on prioritising provision to an agreed date over improving mean time to provide. However, it considered that BT should make a priority of closing out their oldest circuits and that we should impose requirements to reduce the backlog of circuits that are x% over the 2014 mean time to provide.

<sup>&</sup>lt;sup>777</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P22-23, Paragraph 4.11, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Passive\_Access\_Group.pdf

<sup>&</sup>lt;sup>778</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P22-23, Paragraph 4.11, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> <u>2015/responses/Passive\_Access\_Group.pdf</u>

<sup>&</sup>lt;sup>779</sup> The PAG, *Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper*, 31 July 2015, P23, Paragraph 4.12, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Passive\_Access\_Group.pdf</u>

- 13.365 Hyperoptic also considered that the minimum standards for both time to provide and delivery date certainty within each Year should include all circuits delivered or ordered within that year and not just those that are ordered and delivered within that year. Hyperoptic set out some examples:
  - a circuit ordered in July 2015 but delivered in April 2016 should be included in the Year 1 standards to ensure that current circuits are prioritised and do not fall into a black-hole of delivery;
  - a circuit ordered in April 2016 with a CDD within that Year but is not delivered in the Year should still be caught by our measures;
  - a circuit should be counted against the delivery date standard in the Year in which the CDD falls but time to provide in the Year the circuit is delivered; and
  - we should ensure that in-process orders are captured and not manipulated by BT.<sup>780</sup>

13.366 [×

781[×%

- 13.367 UKCTA considered that the proposed minimum standard for order completion by agreed date does not achieve adequate performance (90%) until Year 3 and that the proposals for lead time and repair<sup>782</sup> take until Year 2 to return to 2011 performance levels. UKCTA said this was too little, achieved too late and that we should be more ambitious.<sup>783</sup>
- 13.368 Referring to our having taken into account that the standards will require BT to develop its order handling processes and systems, UKCTA said we were rewarding BT for its past poor performance. This was unwarranted since BT has known since 2013 that measures were required to improve its performance and that, as we had noted, the deterioration was caused in part by under resourcing and the failure of EST, two matters entirely within BT's control.
- 13.369 UKCTA was not reassured by our view that BT would likely need to out-perform its Year 1 lead time obligations and viewed that the minimum standards have been set too low.<sup>784</sup>
- 13.370 [×

≫]<sup>785</sup>

<sup>&</sup>lt;sup>780</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P18, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf
<sup>781</sup> [3

<sup>≫]</sup> 

 <sup>&</sup>lt;sup>782</sup> We assume the reference to repair taking until the second year of the BCMR period to return to
 2011 levels is a drafting error as this is not what we proposed.
 <sup>783</sup> UKCTA, *Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost*

 <sup>&</sup>lt;sup>783</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P3, Paragraph 1.5, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf</a>
 <sup>784</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost

<sup>&</sup>lt;sup>784</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P3-4, Paragraph 1.6-7, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf

- 13.371 Vodafone agreed with our proposals but said that it did so on the basis that the minimum standards are the backstop standards and that it ought to be clear that the "desired levels of services should be higher and contractual obligations can / should be more ambitious".<sup>786</sup>
- 13.372 Vodafone queried how we had defined customer caused delay in our report on provisioning timescales in Table 13.6 in our May 2015 BCMR Consultation as we had used this to determine the provisioning timescale for each period. Vodafone said that its support for our minimum standard metrics was predicated on their being a genuine reflection of average capability.
- 13.373 Vodafone also expressed concern about how Openreach was intending to deliver the new minimum standards. It noted that Openreach was moving towards rolling out the DOJ trial nationally based on EMP only and that "the release schedule on EMP is likely to take at least 12 months before CPs will feel the benefits of the revised process". Vodafone struggled to see how Openreach would meet our standards if it was dependent upon DOJ. <sup>787</sup>
- 13.374 Sky considered more demanding performance targets were appropriate. It noted that Openreach and industry were working hard to implement a new approach to provisioning (i.e. DOJ and other accompanying improvements) and this was already achieving material improvements for a large number of orders with expectations of greater improvements to follow. Sky considered that improved performance could therefore be expected quickly and that our more conservative period of transition was not appropriate. It thought that basing the minimum standard through to 2017 on Openreach's lowest 2014 performance and waiting until 2018 for a return to acceptable 2011 levels was a retrograde step. Sky further considered that we should not accept that any improvements in quality of service required greater resources.<sup>788</sup>
- 13.375 TalkTalk made similar points about the basing of performance in 2016/17 on the level achieved in 2014 and questioned why we considered it appropriate to assume no improvement from the low point of Openreach's performance. It also referred to improvement initiatives which were already delivering service improvements and which were planned to come to fruition before 2016/17 (e.g. DOJ, better contractor management and in-house test rodding).<sup>789</sup>

<sup>785</sup> [×

≫]

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sky.pdf <sup>789</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P44, Paragraphs 6.24-25, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf

 <sup>&</sup>lt;sup>786</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P59, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>
 <sup>787</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P59, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf

<sup>&</sup>lt;sup>788</sup> Sky, Sky's response to Ofcom's Business Connectivity Market Review consultation dated 15 May 2015 and Business Connectivity Market Review consultation on leased lines charge controls and dark fibre pricing dated 12 June 2015, 7 August 2015, P16, Paragraph 9.2(a),

- 13.376 GTC also felt that our timescales were too conservative and that, given Openreach was already working on improvements, that most improvement should be expected in Year 1.<sup>790</sup>
- 13.377 Six Degrees Group agreed with our rationale saying that "given the potential recruitment and reorganisation that Openreach may need to perform in order to meet the standards we feel that a phased approach across year 1 and 2 is an appropriate method for their introduction".<sup>791</sup>
- 13.378 Openreach supported imposing the speed related provision minimum standards in a phased manner and agreed this was the most proportionate approach given the significant work that needs to be undertaken to enable sustainable improvements in a market where demand is increasing and where exogenous factors create difficulties. However, it considered it was more appropriate, given the time to make its improvement initiatives fully effective, to set the desired outcome for the speed minimum standards at Year 3 rather than Year 2 and set Year 2 at the midpoint between Years 1 and 3.
- 13.379 In relation to the certainty minimum standards, it appeared to Openreach that we had departed from our usual method of gliding toward the desired outcome. Rather, the Year 1 outcome of 80% is simply increased over the period of the control.
- 13.380 Openreach set out its improvement initiatives covering organisational changes and process and system changes. It reported that some changes were already well underway whereas others were either in their early stages or not yet commenced.
- 13.381 Openreach said that it was focused on three areas to improve Ethernet delivery:
  - improving certainty by delivering to the date it commits to;
  - reducing lead times to fulfil orders; and
  - making itself easier to do business with by improving the communication through the order process and providing its customers with improved tools.
- 13.382 We have not summarised here the full details which Openreach provided in its response on its improvement initiatives but have noted below the issues which Openreach considered we should take into account:
  - in relation to the set of process and system improvements associated with each of the three improvement areas above, Openreach noted that it required cooperation from CPs to get the best out of the initiatives, including setting themselves up on EMP to realise the full benefits. It said that we should take account of these initiatives and dependencies when setting minimum standards; and

 <sup>&</sup>lt;sup>790</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P15, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf</u>
 <sup>791</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity

<sup>&</sup>lt;sup>791</sup> Six Degrees Group, *Six Degrees Group response to Ofcom Business Connectivity Market Review 2015*, 23 July 2015, P11, Paragraph 2.33, http://atakabaldara.eface.org.uk/biparioa/consultations/bomr.2015/responses/Six\_Degree

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf

- in relation to organisational changes, including the creation of a single unit bringing together end-to-end responsibility for Ethernet delivery (under a Managing Director who is a member of the Openreach executive team), Openreach said it had increased its resources and may require further resources in the future, depending on factors such as demand and category mix. Openreach said it takes 4.5 months on average to recruit, train and effectively deploy them. It noted that certain skills were scarce. It considered that it was important that we recognise the limitations on how quickly Openreach can turn extra recruitment into effective resource.
- 13.383 Similarly, Openreach reported in some detail in its response on the progress against the improvement initiatives. We have not summarised this but note the issues Openreach considered we should take into account:
  - Openreach described the features of DOJ and the progress of its trial in the North West of England. Whilst it reported that as at 24 July 2015 the results in terms of performance against the initial CDD and timeliness of provision were promising (but based on simpler Category 1 and 2a orders), significant automation was required to make the process scaleable. This automation could not be delivered on its legacy systems but was feasible on EMP. Openreach therefore noted that the full benefits of DOJ working was dependent on EMP delivery and CP adoption of EMP and that we should take account of this particularly in setting certainty minimum standards. Openreach further noted that our current proposal to regulate the setting of the initial CDD could undermine the whole DOJ process and its effectiveness in improving certainty.
  - Openreach noted that the previous launch of Ethernet processes on EMP (known as EST) was unsuccessful and did affect its service delivery to some extent. It had conducted a detailed review with the involvement of OTA2 to understand the reasons for EST's failure and take this into account in its EMP re-launch plans. Openreach said it was confident that the next full launch of EMP would be successful but repeated that delivery of a number of the improvement features would only be available on EMP and therefore on its launch timing and CPs' adoption plans.
  - Openreach said that the improvement initiatives in progress represented Openreach's commitment to delivering sustainable service improvements to Ethernet and that its ability to meet our minimum standards was, to some extent, reliant on these organisational and improvement initiatives. It considered that we should adopt a cautious approach in setting the early minimum standards in particular recognising the timing of DOJ and the need for it to run dual processes early on.
- 13.384 Openreach also said that our dark fibre proposals would place on it additional and significant product development work at the same time as other significant programmes to implement its improvement initiative such as DOJ and EMP. It expressed concern about 'initiative overload' with a significant overlap in personnel from Openreach, CPs and the OTA2 responsible for these transformational activities. Openreach was further concerned that the introduction of dark fibre absent an appropriate forecasting regime could lead to serious resource implications for Openreach and impact its ability to meet the minimum standards of provision.
- 13.385 Whilst Openreach said it had concerns about the specification of our minimum standards of speed of provision, it agreed with our approach to set transitional standards in Year 1.

- 13.386 Openreach also said it had concerns about the specification of our minimum standards for delivery date certainty and that our proposal to increase this from 80% to 90% was not based on any assessment as to whether this was achievable. It supported the idea of having lower standards in the early years but did not agree with the absolute levels.
- 13.387 As regards repair, Openreach agreed with the proposal to keep these flat over the three years but had a number of comments about the proposals for repair minimum standards in response to question 13.14.<sup>792</sup>

#### Our considerations and decisions

- 13.388 We discuss the values and metrics for our minimum standards in detail in the following sub-section.
- 13.389 We therefore confine our considerations here to the broader points made about our proposals on the application of our minimum standards over time and the developments we have observed over most of 2015.
- 13.390 Whereas we note the different views expressed by stakeholders about what levels of quality of service improvements should be seen at what point over the forward-looking period of this review, no stakeholder set out any substantive argument against the notion of some transition over time in respect of improvements in provisioning performance (both certainty of delivery dates and lead times). Several CPs including Six Degrees Group, Vodafone, Hyperoptic and the PAG as well as Openreach agreed with this phased approach. Openreach responded specifically to our proposal to keep fault repair flat over each of the three years 2016 to 2019 and, notwithstanding its objections to a minimum standard on repair, agreed with that proposed approach.
- 13.391 The most common issue raised by CPs including the PAG, GTC, Sky and TalkTalk, was that our Year 1 minimum standards for lead times were too conservative. In the main, these CPs argued that our Year 1 minimum standards for lead times should be higher and take into account that initiatives were already delivering service improvements and were planned for implementation before 2016/17 (e.g. DOJ, better contractor management and in-house test rodding etc.).
- 13.392 Openreach agreed with a transitional approach to our minimum standards for lead times in Year 1 but argued that, given the time required to make its improvement initiatives fully effective, the desired outcome for the minimum standards for lead times should be set at Year 3 rather than Year 2 and set Year 2 at the midpoint between Years 1 and 3.
- 13.393 In terms of our proposal on the glide back to 2011 lead times set out in the May 2015 BCMR Consultation, our general view was that the service performance initiatives which were likely to be adopted earliest, DOJ in particular, were focused primarily on improving delivery date certainty rather than lead times.

<sup>792</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P43-51, Paragraphs 212-271, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

- 13.394 We therefore proposed an improvement in delivery date certainty through a minimum standard in Year 1 (above current performance) whilst holding the minimum standard for lead times at the performance observed in 2014. We proposed this having taken into account, in particular, the uncertainties in the timing of Openreach's delivery of the necessary process and systems developments to improve lead times, some of which appeared to be tied to the delivery of automation based on EMP. However, we had set the proposed minimum standard for time to provide in Year 2 at the levels Openreach had achieved in 2011, in the expectation that Openreach, in practice, would out-perform its Year 1 lead time obligations in preparation for Year 2. We had therefore described the Year 1 lead time minimum standards as an absolute floor.
- 13.395 What we have observed in terms of actual service performance over 2015 appears to be consistent with the general assumptions we made in our approach to the application of minimum standards over time. As set out above and in Annex 12, Openreach's performance in terms of delivery date certainty averaged across all orders appears to have improved albeit the improvements were largely confined to Category 1 orders. In contrast, lead times averaged across all orders has continued to increase notwithstanding improvements in lead times seen for Category 1 orders.
- 13.396 In light of these observed developments we consider that our proposals for Year 1 in respect of both delivery date certainty and lead times remain sound. However, we note that basing Year 1 minimum standards for lead times on 2014 performance will now amount to a requirement on Openreach to improve its lead time performance relative to the further deterioration observed over most of 2015.
- 13.397 As we set out in more detail later in this section and noting Hyperoptic's concern that orders in-flight before the minimum standards take effect "do not fall into a black-hole of delivery", we have decided that in-flight orders which are completed after our minimum standards for time to provide come into force will count towards Openreach's lead time performance. However, we will make a one-off adjustment to the accrued time to provide of these orders, which we explain further below in this section. We consider an adjustment is reasonable as it incentivises Openreach to complete in-flight orders quickly but does not impose a retrospective regulatory effect which could unreasonably lead to Openreach failing to meet the minimum standards for time to provide in Year 1 because of activities which it had carried out before the regulation was applied.
- 13.398 With regard to Openreach's argument that the desired outcome for the minimum standards for speed should be set at Year 3, our analysis of the evidence we have received does not lead us to consider that requiring Openreach to achieve 2011 lead times over Year 2 was disproportionate or unreasonable and that we should defer this requirement by a further 12 months to Year 3 as proposed.
- 13.399 We note Openreach argues that this extended period is more appropriate given the need for Openreach to deploy a number of improvement initiatives that will take time to be fully effective.
- 13.400 The improvement initiatives which Openreach specifies as being relevant to lead time reduction are:
  - improved throughput and fluidity;
  - DOJ;
  - single engineering visit;

- process re-engineering;
- data-centre pre-build; and
- customer-specified appointment slots.
- 13.401 We note that two of these initiatives are dependent (at least in part) on EMP adoption although it is not clear to us how material the impact of these initiatives is on time to provide. However, Openreach has not provided evidence that these improvement plans (EMP dependent or not), which it says were commenced in advance of our May 2015 BCMR Consultation proposals and not in anticipation of future regulatory minimum standards, are incapable of being made effective within the time periods for the application of the minimum standards which we have set out.
- 13.402 We note Openreach considered we should variously take into account factors such as recruitment timescales, the complexity of its improvement programme, CPs' plans to adopt EMP, the introduction of dark fibre and dual running of provisioning processes. However, Openreach did not provide any analysis to substantiate why a 12 month delay in achieving the minimum standards for lead times based on its observed lead time performance in 2011 would be more appropriate over Year 3 than Year 2 as we proposed.
- 13.403 We have therefore decided to proceed as proposed in our May 2015 BCMR Consultation.

### Setting the minimum standards

13.404 In this sub-section, we:

- summarise the package of minimum standards we proposed in the May 2015 BCMR Consultation;
- summarise what stakeholders said about our proposals;
- respond to stakeholders' comments; and
- set out our final decisions.

13.405 We proposed a package of measures which were intended to ensure that:

- i) fault repair performance is maintained at current levels,
- ii) customers receive greater certainty over when their order will be delivered, and
- iii) the time taken to deliver their order returns to levels which Openreach was delivering in 2011 their best past performance for which we had reliable data.

13.406 The proposed package of measures included setting:

- minimum performance standards on order completions against initial CDD;
- requirements to constrain the initial CDD;
- minimum performance standards on provisioning lead times; and
• maintaining minimum performance standards on repair.

# May 2015 BCMR Consultation proposals for setting minimum performance standards on order completions against initial contractual delivery dates

13.407 In order to ensure improvements in delivery date certainty for its customers, we proposed requiring Openreach to meet the minimum standards set out in Table 13.15 below.

### Table 13.15: Proposed minimum standards for orders achieving the initial CDD

		New minimum standard			
	Current performance (2014)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)	
% of orders completed on or before initial CDD	circa 45%	80%	85%	90%	

- 13.408 This minimum performance standard required Openreach to complete the delivery of 80% of orders on or before the initial CDD it provides to its customers over the course of the first year. By the end of the third year of the review period we proposed that Openreach should have surpassed its current DOJ proposals for improved delivery date certainty and deliver 90% of orders to the initial CDD over the course of this final year.
- 13.409 Simply setting a minimum standard for the completion of orders on or before the initial CDD may not achieve our objective of ensuring greater delivery time certainty for Openreach's customers. We were concerned that this proposed minimum standard might incentivise Openreach to provide its customers with excessively long initial CDDs.
- 13.410 To address this concern we therefore proposed additional controls on the setting of the initial CDD requiring it to conform to the same profile as the Time to Provide (TTP) minimum standards proposed and defined below. For example, over the first year, 40% of the initial CDDs which Openreach provides to its customers must be set on a period of 30 working days or less; no more than 3% of initial CDDs should be set on a period more than 159 workings days and, the average of initial CDDs must be set on a period of no more than 46 working days. We considered this was a reasonable and proportionate intervention to ensure the objective of greater delivery date certainty is achieved and in a manner which is consistent with our proposals to apply minimum standards on the time taken to deliver orders.
- 13.411 We also considered that there was a risk that Openreach could be incentivised by our proposed intervention to delay issuing initial CDDs to its customers until so late in the process that its achievement is certain. This would render the initial CDD virtually meaningless to customers. As we did not want to pre-empt the process improvements currently under development by industry, we did not propose to specify a timescale by which Openreach should issue a CDD once it has accepted an order. We considered instead that Openreach and industry should agree on a point in the process at which CDDs would be offered. We considered the industry participants are better placed to determine this point, and did not wish to tie the standard to a particular process design.

# Deriving the minimum standards for completion against initial CDD

- 13.412 We considered what metrics might be appropriate for setting a minimum standard with respect to completion against initial CDD, a measure we considered was necessary to improve customer certainty that an order will be delivered to the original timescales set by Openreach.
- 13.413 The BDRC Quality of Service Report and BEREC survey research we undertook did not provide us with any suitable metrics that could help us define this. The only evidence we had available to us was Openreach's recent performance<sup>793</sup> and the targets Openreach and industry had been discussing in the context of DOJ.
- 13.414 We considered that an efficient operator was unlikely to achieve 100% compliance as this may require the operator to maintain excess resource to deal with spikes in demand. In the March 2013 BCMR Statement, in relation to SLG costs, we said that we would not expect an efficient firm to necessarily be resourced up to a level such that they would never have to make such payments. The resource commitments required to ensure that SLAs are always met are likely to be very significant and therefore involve quality of service costs that would unlikely be at an efficient level.<sup>794</sup> Consistent with that approach, and in recognition of the difficulty in precisely identifying an efficient level of performance and the uncertainties inherent in Ethernet provisioning, we therefore proposed that 90% for the initial CDD percentage compliance represented a reasonable and proportionate metric to specify a minimum standard for delivery date certainty by the end of this review period (i.e. performance in Year 3 2018/19).
- 13.415 To establish what initial metric might be appropriate for the initial CDD percentage compliance, we considered what performance Openreach achieved in 2014 and what performance target Openreach had adopted for the DOJ trial.
- 13.416 Openreach's performance in 2014 with respect to the initial CDD percentage compliance was about 45% (although this varied between circa 30% to 60%). For the DOJ trial, Openreach was proposing an initial CDD percentage compliance level of 80%. Given that we anticipated from discussions with Openreach that the new process based on DOJ would be rolled out to most if not all of Great Britain plus Northern Ireland before the start of the new charge control period, we considered the 45% figure to be unduly low as a minimum standard. We therefore believed it appropriate and proportionate to set the initial metric for the initial CDD percentage compliance minimum standard to be 80% in Year 1 2016/17 (i.e. the same as the target adopted by Openreach in consultation with other CPs in industry fora facilitated by the OTA2 and which industry has considered as being appropriate for the purposes of the DOJ trial).
- 13.417 Having identified the proposed metrics which we considered were appropriate to apply, as proposed minimum standards for Years 1 and 3 of the review period, we considered it reasonable to propose, in the absence of evidence which might suggest

<sup>&</sup>lt;sup>793</sup> From the October 2014 Openreach Monthly Service Review which detailed completion to initial CDD from April 2014.

<sup>&</sup>lt;sup>794</sup> Paragraphs 18.45-50, Ofcom, Business Connectivity Market Review, Review of retail leased lines, wholesale symmetric broadband origination and wholesale trunk segments, Statement, 28 March 2013, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/business-</u> connectivity/statement/Sections17-24.pdf

a different approach, that the metric for Year 2 should be halfway between the two metrics i.e. 85%.

13.418 Our proposed intervention to provide customers with greater delivery date certainty is summarised in Table 13.16 below.

Table 13.16: Parameters and metrics for delivery date certainty minimum standard

Parameter	Initial metric	Final metric	
Maximum periods for setting initial CDDs	Maximum periods to be the s lead time minimum standard.	ame as the TTP limits in the	
Initial CDD issue date	To be agreed by Openreach and industry		
% of orders to be completed on or before the initial CDD	80%	90%	

# Proposals regarding the setting of initial CDDs in the May 2015 BCMR Consultation

13.419 We asked stakeholders:

Question 13.10: Do you agree that it is appropriate to use a combination of initial CDD and TTP as the basis around which to set the new delivery date certainty minimum standards? Please provide reasoning for your answer. If you do not agree, please also give your proposed alternative including reasoning.

# Stakeholders' responses

# Openreach response

- 13.420 Openreach strongly disagreed with our proposal to require the initial CDD to conform to the same minimum standards we proposed to impose on TTP. It claimed the proposed linkage would:
  - i) undermine the DOJ way of working where initial CDDs are based on default lead times for each Category;<sup>795</sup>
  - ii) remove the freedom to choose these default values through negotiation with CPs based on records of recent performance, and
  - iii) effectively act as a second more stringent speed target as the certainty minimum standard percentage increases over the control period.
- 13.421 Openreach was concerned our proposal represented a significant regulatory intervention which was likely to be damaging, disproportionate and did not align with Ofcom's regulatory principles in that it indirectly specified how Openreach should achieve the minimum standards as well as setting the minimum standards to be achieved.

<sup>&</sup>lt;sup>795</sup> i.e. initial CDDs derived from historic lead time performance for orders of a certain category.

- 13.422 Openreach claimed that DOJ aims to "optimally resolve" the balance between increased cost and time spent planning to improve accuracy of the initial CDD and reduced accuracy and cost arising from issuing an initial CDD earlier in the order journey.<sup>796</sup> It considered DOJ would provide a more efficient means of offering good levels of certainty to customers.
- 13.423 However, Openreach said that to comply with our proposed certainty minimum standards, especially the link between certainty and TTP, a mixture of best practice based on both the current and DOJ ways of working would be required, particularly concerning the planning of complex orders and consequently the setting of most realistic delivery dates for such orders.
- 13.424 In relation to its current business as usual process, Openreach explained that the initial CDD issued at KCI 3 (the 14-day target for issuing customers a CDD) is a forecast of the remaining time to complete the order from that point. It noted that all our minimum standards include the whole duration from the order validation date. As a consequence, Openreach was concerned that even when very thorough planning had been performed, there would be numerous instances where additional non-customer caused delay occurred after the KCI 3 date that it could not reasonably or accurately have foreseen. Openreach said that this will lead to minimum standard compliance failure given the way we have defined our proposed minimum standards. It considered this unfair.<sup>797</sup>
- 13.425 Openreach considered our concern about initial CDDs being set too conservatively and consequently being easily achievable to be "somewhat inflated".<sup>798</sup> It believed there was no incentive, commercially or operationally, for it to set estimated initial CDD consistently beyond the expected delivery date because this would increase the complexity of co-ordinating work in the later stages of the provisioning process, e.g. fit and test. It proposed two alternatives to our proposals:
  - assess at the end of each year the proportion of completions within the initial CDD and the distribution of the initial CDD values; and
  - update quarterly in a transparent manner the category based default lead times (initial CDD) basing them on the latest available lead time information.<sup>799</sup>

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>798</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>799</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P52-57, Paragraphs 277-318,

<sup>&</sup>lt;sup>796</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P54, Paragraph 292,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>797</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P56-57, Paragraphs 306-313,

<sup>&</sup>quot;Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P53, Paragraph 284,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

# Other CPs

- 13.426 Vodafone agreed that CDD compliance to the TTP minimum standard was critical without which the certainty minimum standard could simply be achieved by offering excessively long CDD targets. Vodafone also said it was imperative that Openreach did not unduly extend the timescale to provide customers with the initial CDD such that it is issued very close to order completion to ensure the certainty minimum standard can be met. Vodafone stressed that the CDD is used to make its promises to its customers and where the CDD changes or is not met, this leads to a sense that Vodafone has failed with its customers.800
- 13.427 Six Degrees Group said the combination of initial CDD and time to provide seemed an appropriate pair of metrics to set standards around delivery dates but did not comment further on whether the use of the TTP minimum standard was an appropriate limit on the issued CDD values.<sup>801</sup>
- 13.428 The PAG agreed with Ofcom's proposal to require CDDs to comply with the TTP minimum standard but it cautioned that the actual effect of this new metric on Openreach's performance was not yet known. The PAG considered that a new KPI setting out the proportion of orders that enjoyed early delivery by category would be helpful to determine whether the new measure was working as well as providing transparency.802

13.429 [><

**≫**]<sup>803</sup>

- 13.430 Hyperoptic<sup>804</sup>, [>]<sup>805</sup>, GTC<sup>806</sup> and Sohonet<sup>807</sup> all agreed that it was appropriate to use a combination of initial CDD and TTP as the basis around which to set the new delivery date certainty minimum standards.
- 13.431 TalkTalk agreed that "the average initial CDD targets should be set to equal the average TTP targets" but also suggested that "certainty could be addressed in other

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P36,

2015/responses/Passive\_Access\_Group.pdf http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

### ≫1

2015/responses/Sohonet Limited.pdf

<sup>&</sup>lt;sup>800</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P59-60, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf <sup>801</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P12, Paragraph 2.34,

<sup>&</sup>lt;sup>804</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P19, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf 805 [>

<sup>≫]</sup> 

<sup>&</sup>lt;sup>806</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P15, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf <sup>807</sup> Sohonet Limited, P6, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>

ways e.g. by combining a TTP target with a target for the correlation between the initial CDD and TTP".<sup>808</sup>

### Our considerations and decisions

- 13.432 All CPs who responded, agreed that it was appropriate or critical to the operation of the certainty minimum standards to limit the initial CDD values by the TTP minimum standards. However, Openreach argued that the proposed regulation on the initial CDDs it can set would act, amongst other things, as a second more stringent speed target and undermine the DOJ way of working.
- 13.433 We have reviewed our proposals in light of stakeholders' comments and conducted some further analysis. In making our final decisions we have decided that it is appropriate to modify our proposed requirement regarding the setting of initial CDDs.
- 13.434 We have decided to impose on Openreach values for the maximum mean period for setting initial CDDs set out in Table 13.17 below for each of the years of the forward looking period.

# Table 13.17: Requirements on the maximum average period for setting the initial CDD

Period	Maximum mean period for setting initial CDD
2016/17	61 working days
2017/18	55 working days
2018/19	55 working days

Source: Ofcom analysis.

- 13.435 When Openreach issues the initial CDD of an order, it sets the customer's initial expectation of the date on which the order will be completed. The minimum standards for delivery date certainty which we are imposing set the minimum proportion of orders for which Openreach must meet this initial expectation, i.e. the minimum proportion of orders which Openreach must deliver on or before their respective initial CDDs.
- 13.436 We recognised that, without an appropriate constraint, the minimum standards for date certainty could incentivise Openreach to set overly conservative initial CDDs. Accordingly, in the May 2015 BCMR Consultation, we proposed that, in each year, the mean expected lead time which Openreach sets in issuing initial CDDs (i.e. the mean difference between the initial CDD and the order acceptance date) should not exceed the minimum standard we proposed for the mean time to provide in the same year.
- 13.437 Openreach claims that it would not respond to our delivery date certainty minimum standards in this way for commercial and operational reasons. However, we remain of the view that our concern is legitimate and note that other CPs agree. We consider that there is a significant risk that the strong incentives created by our minimum standards on delivery date certainty would outweigh any such commercial or operational incentives acting on Openreach as a wholesale provider with SMP. Therefore, we remain of the view that some appropriate intervention is required to ensure Openreach provides its customers with an initial CDD which is reasonably

<sup>808</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P43, Paragraphs 6.20-21, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf reflective of the actual time required to complete their orders in compliance with our minimum standards on lead times.

- 13.438 However, we remain supportive of improvement initiatives such as DOJ which have been and are continuing to be developed by Openreach in collaboration with CPs. As we made clear in the May 2015 BCMR Consultation, we based our design for quality of service remedies on a number of principles including that of being business process agnostic.
- 13.439 DOJ based lead times can be set to achieve predicted levels of completions on or before the initial CDD. By way of illustration only, if Openreach's historical lead time performance for a certain provision category ranged between 15 working days (the quickest order completion) and 30 working days (the longest completion), the default lead time for all orders in this category could be set by Openreach at 30 working days to deliver a predicted 100% of completions on or before the initial CDD. In this example, most customers' provisioning experience would be one where their order was ready for completion up to 15 working days before the default lead time they were given.
- 13.440 We recognise that under DOJ, the initial CDD for a specified category is deliberately set such that the average initial CDD will likely be greater than the average lead time for that category in order to deliver delivery date certainty for a predictable proportion of orders. Where the initial CDD for specified order categories are set in such a manner then the overall average initial CDD across all orders will likely be greater than the average lead time across all orders.
- 13.441 This could breach the proposal we made to require Openreach's average initial CDD to conform to, amongst other things, our average lead time minimum standards. We therefore recognise that it is likely that our proposed requirement would impact DOJ as Openreach maintains.
- 13.442 Moreover, the minimum standards requiring increased delivery date certainty performance over the forward looking period combined with the requirement that Openreach ensures the average initial CDD is no more than the average lead time minimum standards, has the effect of forcing a significantly higher proportion of all orders to be completed on or before the average lead time minimum standards. This effectively results in another, potentially more challenging, time to provide requirement. A similar effect can also occur by requiring the initial CDD to comply with the upper and lower percentile time to provide minimum standards.
- 13.443 We therefore recognise that our proposed requirement that the initial CDD is set in conformity with our time to provide minimum standards would impose on Openreach a secondary time to provide requirement which is likely to be more challenging than our time to provide minimum standards.
- 13.444 Having considered responses to our consultation, we are changing our approach to setting this constraint. We have decided that Openreach should set initial CDDs so that the mean expected lead time in each year should be no more than 15 working days longer than the minimum standard for the mean time to provide in the same year.
- 13.445 We recognise that Openreach must base each initial CDD on an estimate for the lead time to complete the corresponding order, and that each estimate is necessarily subject to uncertainty. A good process for estimating lead times might be expected to produce unbiased estimates, and would therefore result in roughly equal proportions

of orders delivered early and late relative to their corresponding estimates. If Openreach were to set each initial CDD equal to the corresponding estimated delivery date, the resulting (likely high) proportion of orders delivered late would compromise Openreach's ability to meet our minimum standard for date certainty.

- 13.446 We therefore consider it appropriate to include a contingency allowance between the average of the lead times implied by its initial CDDs and the mean time to provide minimum standard in each year.
- 13.447 To determine the appropriate contingency allowance we first considered what its lower and upper bounds might be.
- 13.448 We considered that an absolute lower bound would, theoretically, be zero days. Achieving this lower bound would require Openreach to provide all Ethernet orders exactly on their initial CDDs, on the basis of bespoke planning.<sup>809</sup> While we recognise that, even if Openreach were to plan all provisions on a bespoke basis, it would in practice still require some contingency allowance, although we thought that this would be small.<sup>810</sup>
- 13.449 We considered that an upper bound might be based on a planning process in which Openreach bases its estimates entirely on default lead times by category. The default lead times would be calculated as a percentile of delivery times Openreach had achieved historically that corresponds to the certainty minimum standard, classified by order category. Using this approach to planning, Openreach would first assign each order to a category, and then set the initial CDD with a default lead time based solely on that category, with no bespoke planning of any orders.
- 13.450 We used historical data to model this approach to planning. We modelled how much contingency allowance Openreach would need to have added to category-based default lead times in order to have met its initial CDDs for 90% of orders in 2011 and 2014. We found that it would need to have added an average contingency allowance of 28 working days in 2011 and 35 working days in 2014 had it used this approach.
- 13.451 We considered that it would be reasonable to set the contingency allowance in a manner likely to require Openreach to use a mix of bespoke and default-based planning approaches to estimate lead times. Accordingly we used our judgement to set the contingency allowance at 15 working days, on the basis that this value is approximately halfway between the absolute lower bound of zero days and the upper bounds we had computed of 28 and 35 working days for 2011 and 2014 respectively.

# Proposals for delivery date certainty minimum standards in the May 2015 BCMR Consultation

13.452 We asked stakeholders:

Question 13.11: Do you agree that it is appropriate to set the metrics for the delivery time certainty minimum standard to the initial value of 80% and final value of 90%?

<sup>&</sup>lt;sup>809</sup> The average difference between initial CDD and actual delivery would then be zero and the spread in difference would also be zero.

<sup>&</sup>lt;sup>810</sup> We developed theoretical statistical models to study the contingency allowance which Openreach would need to meet 90% delivery within the initial CDD if it were to plan all provisions on a bespoke basis. The models required us to make a number of assumptions. The resulting estimates of contingency allowance were of around 4 working days.

Please provide reasoning for your answer. If you do not agree, please also give your proposed alternative.

# Stakeholders' responses

### Openreach response

- 13.453 Openreach agreed that certainty of delivery is a key part of delivering good service. It agreed that it is right to set lower minimum standards in the early years of the charge control period to facilitate the implementation of improvements and that certainty needs to be improved over the whole charge control period.
- 13.454 However, Openreach was concerned that our approach to setting the proposed certainty minimum standard departs from Ofcom's usual approach in setting glide paths to a desired target. Instead, Openreach said that Ofcom started with a "desired target and then to make further improvements with no verification or calculation that the eventual level is better, right, or achievable".<sup>811</sup> However, later in their submission Openreach agreed that we're right to propose minimum standards for Year 1 and Year 3 of the control period and then choose the midpoint between these values for the Year 2 value.
- 13.455 Openreach was concerned that the analysis we used to establish the proposed certainty minimum standard was not based on historical records, did not include an assessment of what can be reasonably expected to be achieved and should take account of:
  - recent performance in setting the Year 1 value;
  - Openreach's glass ceiling analysis (that should not be used as a backstop but treated as an upper limit);
  - Openreach improvement initiatives, particularly the time they will take to deploy these initiatives; and
  - removing the linkage between the certainty and lead time minimum standards.
- 13.456 Openreach said that taking the above into account the certainty minimum standards should be 73% for Year 1, 80% for Year 2 and 85% for Year 3.
- 13.457 Openreach claimed that over the period April 2014 to July 2015 certainty has not been above 75%, often closer to 70% and was currently 72% when averaged across all categories. It also noted that the DOJ 80<sup>th</sup> percentile we had referenced when setting the Year 1 certainty minimum standard, was chosen by Openreach as a number to be tested in the DOJ trial and not because it was obviously the right number.
- 13.458 Openreach said it could inflate resource to deliver improved certainty but addressing spikes in demand would lead to inefficiently high resources with cost and price implications that are unlikely to be supported by the market. It further said that

<sup>&</sup>lt;sup>811</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P58, Paragraph 322,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

achieving 100% certainty would require it to maintain excess resource at an inefficiently high level.

- 13.459 Openreach also suggested they could improve certainty by delaying the point at which they issue the initial CDD but this would have to be very close to the completion date, especially for the more complex orders, to achieve very high levels of certainty.
- 13.460 Openreach pointed out that Category 1 orders have achieved 90% certainty but much lower levels of certainty are usual for the other categories calling into question whether 90% certainty over all categories can ever be achieved. Consequently, Openreach considered that overall certainty would be dependent on category mix which is outside its control and could therefore undermine its ability to meet the proposed minimum standards.
- 13.461 In its first submission<sup>812</sup>, Openreach initially identified the following as possible root causes of failure to comply with our proposed certainty minimum standard. It claimed they were all outside Openreach's control and some root causes are often encountered after thorough planning and issue of the initial CDD:
  - TRT (test rod & tube) applied post KCI 3;
  - re-plan required post KCI 3;
  - contractors working on behalf of Openreach missed the Required by Date (RBD);
  - remedial duct work required post KCI 3;
  - blockage identified post KCI 3;
  - further traffic management delay post KCI 3; and
  - further wayleave delay post KCI 3.
- 13.462 In a subsequent submission<sup>813</sup>, Openreach presented outline descriptions of two analyses they had performed to quantify their so called glass ceiling, i.e. an upper limit on the level of certainty that can be achieved. The first addressed possible improvements to the root causes of the c.29% of outstanding certainty not currently being achieved.<sup>814</sup> Openreach said they could improve certainty by 15.37 percentage points to a glass ceiling of 86.37%. The root causes which Openreach considered, included:
  - resource utilisation (inability to secure the right resources at the right time);
  - network records (incorrect planning due to out of date or incorrect records);

<sup>&</sup>lt;sup>812</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P58-63, Paragraphs 319-353,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>813</sup> Openreach, Openreach supplementary response to Question 13.11 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 30 September 2015, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>2015/responses/Openreach\_Q1311\_response.pdf

<sup>&</sup>lt;sup>814</sup> For the purposes of this analysis Openreach claimed their recent level of certainty was 71%.

- blockage (of duct which impacted delivery);
- process Adherence (standard process/procedure not followed);
- civils missed Required by Date (date set prior to work commencing);
- unidentifiable faults / incidents (that could not have been known in advance);
- wayleaves (for access to privately owned property);
- traffic Management (applied for late due to slow progressing A55);
- remedial duct post KCI 3 (duct work identified after initial CDD issued); and
- stores (issues with equipment required for order fulfilment).
- 13.463 The second glass ceiling analysis which Openreach submitted, the so called bottom up analysis, set out possible improvements to the 71% base level of performance if Openreach were to implement a range of potential improvement initiatives. Openreach assessed this by overlaying its anticipated lead time improvements onto a histogram of the number of orders that hit or missed the certainty target. This yielded improvements to 73.6% for Year 1 and 83.6% for Year 3 from the following Openreach improvement initiatives:
  - Plan Furthers (increasing 'on day' completions);
  - B-End (reducing engineering visits at the B-end);
  - Seamless Planning (guided journeys automating planning process);
  - Survey Once (creation of single survey to replace multiple planning and field surveys);
  - 5% addressable Year 2 (unspecified improvements); and
  - 5% addressable Year 3 (unspecified improvements).
- 13.464 Openreach repeated its concern about our linkage of the certainty and lead time minimum standards. Specifically, Openreach said that we had not taken account of how our proposed regulation restricts the deployment of DOJ and the effect this will have on Openreach's ability to meet the highest levels of certainty. It also said DOJ deployment was constrained by EMP rollout. However, Openreach said that if our proposed linkage between certainty and lead times were removed, certainty could be further improved by 1% in Year 1 and by 5% in Years 2 and 3 respectively.
- 13.465 The Openreach submitted glass ceiling and improvements are summarised in Table 13.18 below.

# Table 13.18: Summary of Openreach certainty glass ceiling and improvementanalyses and proposed minimum standard

Control year	Glass ceiling analysis	Bottom up improvement initiative analysis	Additional improvement from removal of linkage	Openreach recommended minimum standards

			between certainty and lead time minimum standards	
Year 1	n/a	73.6%	1%	73%
Year 2	n/a	78.6%	5%	80%
Year 3	86.37%	83.6%	5%	85%

Source: Openreach response dated 30 September 2015 to the May 2015 BCMR Consultation.

#### Other CP responses

- 13.466 Vodafone agreed that the proposed certainty minimum standard values were appropriate as back-stop minimum standards. Vodafone said its ambition was for a much higher quality of service and that Openreach should seek to achieve a higher standard than our minimum values.<sup>815</sup>
- 13.467 Six Degrees Group agreed that 80% was appropriate as a starting level given that it had already been agreed as a baseline for today's resource levels and processes. It further said that given the desire to incentivise Openreach to improve and provide a greater quality of service, then 90% by year 3 also seemed a fair and reasonable target.<sup>816</sup>

13.468 [><

**≫]**<sup>817</sup>

13.469 Hyperoptic agreed "that it is appropriate to set the metrics for the delivery time certainly minimum standard to the initial value of 80% and a final value of 90%."<sup>818</sup>

13.470 [×

≫]

13.471 GTC said it did not agree that the final value of 90% was adequate or safeguards the service delivery of businesses like GTC who are dependent on BT's services. GTC proposed the target be set at as close to 100% as is practicable (and in any event be set at a minimum of 99%). It pointed out that in the absence of competition, it was essential that BT meets it targets in almost every single case. With the proposed 90% value BT could be classified as providing a good service while still providing 10% of all EAD circuits late. GTC was concerned that its otherwise good reputation could be damaged by this level of BT performance.<sup>819</sup>

 <sup>&</sup>lt;sup>815</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P58, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>
 <sup>816</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P12, Paragraph 2.35, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</a>
 <sup>816</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P12, Paragraph 2.35, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf</a>

 <sup>&</sup>lt;sup>818</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P19, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf
 <sup>819</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P15-16, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf</a>

- 13.472 Sohonet agreed that it was appropriate to set the metrics for the delivery time certainty minimum standard to the initial value of 80% and final value of 90%.<sup>820</sup>
- 13.473 TalkTalk broadly agreed with the proposed minimum standard values. However, it had reservations about basing values on the DOJ trial where the metrics were based on existing deemed consent categories and not those as defined in Table A17.9 of the May BCMR 2015 Consultation.<sup>821</sup>
- 13.474 UKCTA said the proposed provisioning minimum standards were not sufficiently challenging, in particular the certainty minimum standard does not achieve an adequate performance level of 90% until the start of the third year of the BCMR period. UKCTA said our proposals should be much more ambitious.<sup>822</sup>

# 13.475 [×

×1<sup>823</sup>

13.476 SPEN said it noted tighter quality of service rules are proposed from April 2017 but, in its opinion, this was too late for the new performance regime to be introduced.<sup>824</sup>

# Our considerations and decisions

- 13.477 Most CPs who responded agreed that it is appropriate to set the metrics for the delivery time certainty minimum standard to the initial value of 80% and final value of 90%. However three CPs said they would like to see higher, more challenging targets and one further CP said the higher minimum standard values should be introduced sooner.
- 13.478 Openreach disagreed with the levels proposed for the certainty minimum standard because they did not take account of recent performance (circa 72%), limits on what can be achieved (circa 83.6% to 86.4%) and the effects of the linkage between certainty and lead time minimum standards. Openreach proposed certainty minimum standard values of 73%, 80% and 85% for the three years of the control.
- 13.479 We said earlier in this section that customers have identified certainty as the most important aspect of Ethernet provisioning that should be improved.
- 13.480 In determining the level of certainty that Openreach should achieve as a minimum standard and by when, we have taken into account stakeholders' responses, including Openreach, and we have exercised our regulatory judgment to arrive at

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>822</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P3, Paragraphs 1.4-5, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf <sup>823</sup> [3<

≫]

<sup>824</sup> SPEN, Response of SP Energy Networks to the consultation on the Business Continuity Market Review (BCMR), 6 August 2015, P2-3, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/SP\_Energy\_Networks.pdf

 <sup>&</sup>lt;sup>820</sup> Sohonet Limited, P6, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>
 <u>2015/responses/Sohonet\_Limited.pdf</u>
 <sup>821</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk*

<sup>&</sup>lt;sup>821</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P44, Paragraph 6.24,

levels which we consider will deliver consistently improving certainty of delivery and which are proportionate to the achievement of that aim.

- 13.481 In so doing, we have taken account of what Openreach considers to be performance limits on what can be achieved. It set out its analyses of the various improvements it has in mind at this time and applied its estimates of what these particular individual improvements might be capable of delivering incrementally (whether to define its glass ceilings or bottom up improvements) to its current way of delivering Ethernet order provisions.
- 13.482 We are not persuaded that these analyses reveal inherent characteristics of planning decisions and operational activities that cannot be developed to achieve better performance on delivery certainty or, for example, that such developments would not be technically and economically viable or feasible.
- 13.483 Our approach to requiring an increasing improvement in the minimum standards from 80% to 90% over 3 years provides Openreach with a reasonable period of time to work through the business challenges of achieving these standards by: i) reducing the actual delivery lead times around which we are imposing minimum standards as discussed below; (ii) setting a more appropriate delivery date which reflects these reducing actual lead times (i.e. increasing initial CDDs within reason as discussed above); or (iii) a combination of (i) and (ii) so that more orders experience an actual delivery date which is less than the initial CDD.
- 13.484 These minimum standards will produce improvements to the end user experience year on year in having their order installed by the date they expected it to be delivered. Our certainty minimum standards should also address, to a considerable extent, the problems Openreach's customers have been experiencing with delays and CDD changes which to date have been inherent in the existing order process and contractual arrangements.
- 13.485 At the same time, while we consider there is a case, as some CPs suggest, that the end-state certainty minimum standard should be higher than 90%, we do not consider it would be appropriate to impose a minimum standard above 90% at this time. We recognise that provisioning Ethernet circuits, particularly where network build is required, entails some degree of uncertainty. Requiring Openreach to accurately estimate completion dates and deliver to these dates more than 90% of the time, whilst restricting them from setting unduly excessive delivery date estimates and require improvements in lead times, would in our view, on the basis of our analysis of the evidence we have considered, risk imposing too onerous a regulatory burden at this point in time.
- 13.486 We have decided to impose the delivery date certainty minimum standards of 80% in Year 1, 85% in Year 2 and 90% in Year 3 as we proposed in the May 2015 BCMR Consultation. A key reason in our decision is that we consider these metrics are appropriate and proportionate to address our concern that Openreach could improve delivery date certainty for most orders (the more predictable orders which require little or no network build) but not for harder, more complex orders. Our aim is to ensure that Openreach is incentivised to improve delivery date certainty for all orders not just the easy ones so that that end users and Openreach's customers benefit from our minimum standards, to some degree, regardless of the complexity of their orders.
- 13.487 This concern is illustrated in Figure 13.2 below. We have assumed a mix of order categories of 80% Category 1 and Category 2.1 (the 'easy' jobs) and 20% Categories

2.2, 3 and 4 (the 'hard' jobs). This broadly reflects the current mix of order categories and is represented by the gradients in the illustration. Our 80% certainty minimum standard in Year 1 is represented by the yellow line. To achieve compliance with an overall certainty of 80% in Year 1, Openreach could focus its efforts on the easy jobs. If it achieved 90% certainty on these jobs, the certainty it would need to provide on the hard jobs would only need to achieve 40% to meet the overall 80% minimum standards. The effect therefore of increasing our certainty minimum standards to 85% in Year 2 and 90% in Year 3 incentivises Openreach to also deliver certainty improvements for the 20% of harder orders as shown in the purple and red lines in this illustration.

# Figure 13.2: Level of certainty hard jobs must achieve to comply with proposed minimum standard given level of certainty achieved by easy jobs (for a mix of 80% easy and 20% hard jobs)



Source: Ofcom analysis.

- 13.488 We have therefore decided to retain the proposed certainty minimum standards that we consulted on, i.e. initial metric of 80% and a final metric of 90%.
- 13.489 We have therefore decided that the certainty minimum standards will be as set out in Table 13.19 below.

# Table 13.19: Parameters and metrics for delivery date certainty minimum standard

Parameter	Initial metric	Final metric	
Maximum mean period for setting initial CDD	61 working days	55 working days	
Initial CDD issue date	To be agreed by Openreach and industry		
% of orders to be completed on or before the initial CDD	80%	90%	

Source: Ofcom analysis.

# Proposals in the May 2015 BCMR Consultation to set minimum performance standards on provisioning lead times

13.490 In order to ensure improvements in reducing lead times for its customers, we proposed requiring Openreach to meet the minimum standards shown in Table 13.20 below.

# Table 13.20: Minimum standards for time to provide Ethernet orders, as proposed in the May 2015 BCMR Consultation

			New minimum standard (Working days excludes customer caused delays)			
	2011 performance	Current performance (2014)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)	
Mean time to provide across orders	40 working days	46 working days	No more than 46 working days	No more than 40 working days	As Year 2	
Lower percentile limit	40% of provisions delivered in 29 working days	40% of provisions delivered in 30 working days	At least 40% of provisions delivered in 30 working days or less	At least 40% of provisions delivered in 29 working days or less	As Year 2	
Upper percentile limit	3% of provisions delivered in 118 or more working days	3% of provisions delivered in 159 or more working days	No more than 3% of provisions delivered in 159 or more working days	No more than 3% of provisions delivered in 118 or more working days	As Year 2	

13.491 Our objective was to restore performance to the level Openreach was achieving in 2011, the best year for which we had reliable data. These proposed lead time reduction standards required Openreach to make significant improvements over a two year period. The final (Year 2) minimum standard was based on Openreach's actual performance in 2011.

#### Deriving the minimum standards for lead times

13.492 Openreach's lead time performance expressed as the percentage of orders exceeding a given TTP is set out in Figure 13.3 below, which clearly shows that performance was better in 2011 than in 2014.

13.493 We considered 2011 as a suitable benchmark for the following reasons:

- the performance in 2011 largely predated the deterioration in lead times for which we had received submissions from stakeholders;
- the data for periods earlier than 2011 was incomplete and did not allow detailed analysis by order category, leading to uncertainty in our analysis;
- the performance in 2011 was demonstrably an achievable standard around which we could practically set a baseline, or minimum level of performance; and

- the performance in 2011 was delivered in a charge controlled environment and was therefore affordable for Openreach at that time.
- 13.494 We had also considered the evidence from the BDRC Quality of Service Report and our comparison with other European countries, which we had summarised in Annex 17 of the May 2015 BCMR Consultation. We provisionally concluded that the BDRC Quality of Service Report indicated that end users were likely to be most satisfied where lead times were around 30 working days but that longer lead times may be acceptable to end users provided the delivery date was guaranteed and delays were minimised. To the extent we could draw any comparisons from other European countries, we provisionally concluded that advertised lead times for less complex orders where fibre was already present appeared to be in the range of 30 to 40 working days.
- 13.495 We considered that the most robust approach would be to set our minimum standards for lead times by reference to what we knew Openreach had delivered in the past. Moreover we noted that the metrics we had derived based on this approach seemed reasonably consistent with the other benchmarks which we had considered. Consequently, we proposed that:
  - the performance for 2011 was an appropriate final metric for provision lead time performance; and
  - the performance for 2014 was an appropriate initial metric for provision lead time performance.
- 13.496 Given the complexity of Ethernet orders, we needed to consider carefully how the minimum standard should be applied. We considered that it would not be sufficient to set a single target for mean TTP, because Openreach could meet such a target by focussing improvements on a sub-set of orders, for example some of the longest lead time orders, without delivering benefits to the majority of customers. We also did not wish to see Openreach improving its lead times for the more complex orders at the expense of sacrificing its relatively good performance in fulfilling the simpler orders. At the same time, we wanted to avoid prescribing lead times for specific order categories because we believed industry was better placed to do this and that they may be subject to change.
- 13.497 Therefore, in addition to considering that a minimum standard for the mean TTP would be appropriate, because it would provide a useful and easily understood indication of overall performance, we also considered it appropriate to incentivise:
  - an improvement to the delivery of orders with longer lead times, by setting a limit on the lead times of orders within an upper percentile; and
  - maintenance of the shorter lead times of simpler orders, by setting a limit on the lead times of orders within a lower percentile.
- 13.498 Hence we needed to specify the following parameters for the initial (2014) and final (2011) metrics discussed above in order to set a comprehensive lead time standard over the three-year review period:
  - mean TTP minimum standard values;
  - an upper percentile percentage and corresponding minimum standard values for the upper percentile; and

- a lower percentile percentage and corresponding minimum standard values for the lower percentile.
- 13.499 Deriving the mean TTP value from the TTP distributions for the initial and final metrics, shown in Figure 13.3 below, was relatively straightforward. However the choice of upper and lower percentile percentages and the associated values was not so straightforward. We started by considering the choice of percentile percentages.

#### The upper percentile percentage

- 13.500 The choice of percentage for the upper percentile limit needed careful consideration. Setting the percentage too low could result in little or no incentive to improve the long lead times of the complex orders which require civil construction (i.e. the tail of the distribution of provisions). Setting the percentage too high could lead to Openreach failing to comply with the targets for reasons genuinely outside its control.
- 13.501 We examined the distribution of orders by category for 2014 covering all orders and orders exceeding a range of lead times. Our findings were summarised in Table 13.13 of the May 2015 BCMR Consultation. It showed that categories 3 and 4 formed a very small proportion of all orders in 2014. It also showed that Category 2 orders dominated the tail of orders displaying very long lead times followed by Category 3 orders. Categories 1 and 4 tend to form a small proportion of the tail.
- 13.502 Setting the upper percentile percentage to 95% or lower for any lead time within the range of 55 to 238 working days could incentivise compliance simply through an improvement of Category 2 orders. Setting the upper percentage percentile to 100% without setting an extremely long lead time would almost certainly produce compliance failure due to factors that may not be entirely under Openreach's control. We therefore believed, on balance, it was appropriate to set the upper percentile percentage approximately mid-way between these two bounds at 97% as a compromise between discouraging performance improvement in some categories at the expense of others and minimising compliance failure outside Openreach's control.
- 13.503 We recognised that the upper percentile percentage of 97% could still result in no incentive to improve Category 3 orders. While Category 3 volumes as a proportion of the total were low during 2014, they had been higher in previous years which would increase the incentive to improve their performance. We recognised the proportion could increase or decrease in future years making the category more or less susceptible to performance improvement incentives. We therefore proposed to monitor the treatment orders receive through the collection of a range of KPIs to allow us to determine whether specific products, categories or regions were being discriminated against.

#### The lower percentile percentage

- 13.504 The choice of percentage for the lower percentile limit was driven by our recognition of the acceptable and consistent performance of Category 1 orders. The TTP had stayed at about 30 days or less throughout the period 2011 to 2014. We believed improvements in the quality of service performance of other categories should not be at the expense of a decline in Category 1 performance.
- 13.505 Category 1 orders had formed between approximately 30% and 50% of all orders throughout the period 2011 to 2014, falling to circa 40% in 2014. Performance of the lower 40% of all orders, which are largely Category 1 orders, had not changed

significantly during this period as shown by Figure 13.3 below.<sup>825</sup> Consequently our aim with the lower percentile was to incentivise Openreach to maintain the Category 1 performance experienced throughout the period 2011 to 2014.

13.506 We therefore believed it was appropriate to propose a lower percentile percentage of 40% as a reasonable compromise between avoiding undue compliance failure and our desire to incentivise protection of the performance of the lower 40% of provision orders however they may be categorised in DOJ or other future provisioning process.

### Choosing the minimum standard parameter values

- 13.507 Having chosen the upper and lower percentiles, deriving the associated values along with the mean TTP for the initial (2014) and final (2011) metrics from the TTP distributions for 2014 and 2011 respectively, as shown in Figure 13.3 below, was relatively straightforward.
- 13.508 In conclusion, we proposed the values set out in Table 13.21 below for the initial and final metrics for the three parameters that we proposed to use in specifying a minimum standard for lead times:

# Table 13.21: Initial and final metrics for the lead time minimum standard (excluding customer caused delay)

Parameter	Percentile percentage	Initial metric (2014 performance)	Final metric (2011 performance)
Lower percentile	40%	30 working days	29 working days
Mean TTP	Not applicable	46 working days	40 working days
Upper percentile	97%	159 working days	118 working days

Source: Ofcom analysis of Openreach section 135 response dated 18 March 2015.

<sup>&</sup>lt;sup>825</sup> The lower 40% of orders corresponds to 60% of orders in the tail in Figure 13.3 where the TTP exceeds approximately 30 days for both 2011 and 2014.



Figure 13.3: Percentage of orders exceeding time to provide (TTP) excluding customer caused delay but including non-customer caused delay

Source: Ofcom analysis of Openreach section 135 response dated 18 March 2015.

13.509 We asked stakeholders:

Question 13.12: Do you agree that it is appropriate to apply limits to mean TTP and upper (97%) and lower (40%) percentiles as the basis for the lead time minimum standard? Please provide reasoning for your answer. If you do not agree, please also give your proposed alternative.

Question 13.13: Do you agree that it is appropriate to set the upper percentile initial and final values to 159 and 118 working days and the lower percentile initial and final values to 30 and 29 working days for the lead time minimum standard to the values? Please provide reasoning for your answer. If you do not agree, please also give your proposed alternative.

# Stakeholders' responses

# Openreach response

13.510 In general, Openreach said it understood the need for the upper and lower percentile speed minimum standards but that Ofcom needed to recognise the scale of challenges involved in meeting such minimum standards and needed to take greater account of the relevant improvement plans and risks.

# Lower percentile (Openreach)

- 13.511 In relation to the lower percentile Openreach said that only the lead times of Category 1 orders consistently comply with the proposed minimum standard and that Category 1 orders frequently constituted less than 40% of orders during the first half of 2015. It was concerned that this will prejudice its ability to comply with the minimum standard.
- 13.512 Openreach also said that it was unlikely that opportunities to uplift network capacity which it was investigating would mitigate large scale swings in Category mix without significant changes to its capacity management policy that could lead to significant, likely inefficient, costs above those recovered in the charge control.
- 13.513 Openreach also noted that the Year 2 and 3 lower percentile lead time minimum standards (29 working days) are set below the current minimum contractual lead time of 30 working days and should be set at 30 workings days for all three years.
- 13.514 Openreach considered that it was not right that it could fail the minimum standards due to exogenous reasons, e.g. changes in compliance mix. It suggested the following to address the category mix issue:
  - impose the lower percentile minimum standard to Category 1 orders only;
  - "signal that, for the purposes of any future minimum standards compliance assessment, it (Ofcom) would take into account the need to remove failures caused by exogenous factors such as category mix before concluding its assessment.",<sup>826</sup> or
  - consider using the new over-arching SMP obligations to change the minimum standards during the charge control period where, for example, the category mix changes by more than +/- 10%.

# Upper Percentile (Openreach)

- 13.515 Openreach said its analysis confirmed that the minimum standard as proposed in the BCMR 2015 Consultation was not likely to be achievable and needed to be revised.
- 13.516 Openreach pointed out in its initial response dated 31 July 2015 that the underlying time taken to deliver these types of circuit had been steadily increasing over time, with 6% of orders taking 159 working days or more at an average timescale of around 200 working days.<sup>827</sup> In a further response dated 9 October 2015 this had

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

<sup>&</sup>lt;sup>826</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P66, Paragraph 371,

<sup>&</sup>lt;sup>827</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P67, Paragraph 378,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf These are the values prevailing at the time of or just prior to its response, 31 July 2015. It is not completely clear if the "average" value is the average of the orders exceeding 159 working days, the average of the orders exceeding the 97<sup>th</sup> percentile prevailing at the time of Openreach's response, or the actual 97<sup>th</sup> percentile prevailing at the time of Openreach's response (and the word "average" is surplus).

increased to 12.3% of orders on the workstack with a further increase of 6.2 percentage points of orders likely to enter the 97<sup>th</sup> percentile group within 2 months. The average timescale had increased to around 215 working days.<sup>828</sup> Openreach claimed our Year 1 target did not reflect recent performance.

- 13.517 Openreach said that "[b]ased on initial analysis, the recent deterioration that is evident in relation to this measure is principally an effect of a growing work stack, where although Openreach is completing more long lead time orders than previously, this has not kept pace with the rate at which new long lead time circuits are coming in. It is also evident that the majority of the circuits in the long lead time work stack are category 2b (duct is required) in nature (using DOJ terminology)."829 In its further response dated 9 October 2015, Openreach stated that "Tail orders grew significantly in H1 2015. There was an increase in completions, but this did not keep pace with intake."830 For example, there were "16% more completions for category 2a and 53% more completions for category 2b" but "this did not keep pace with the very high growth in orders received of 33% and 65% for category 2a and 2b orders respectively over the same period".831
- 13.518 Openreach said that demand had exceeded forecast by 21% between April 2015 and August 2015. Category 2 orders had also increased to around 50% of all orders since January 2014 and spiked to 60% between November 2014 and January 2015.
- 13.519 Openreach claimed that the Category 2+ (2b) orders had got harder and took longer to complete for the following reasons:
  - there has been an increase in Ethernet demand in rural areas of the UK requiring new lead in duct;
  - the size of the Ethernet network has quadrupled leading to a more congested • network in urban areas with consequent increase in new orders requiring new duct (which classifies them as Category 2.2) and or blocked duct work from around 10% in June 2014 to 14% in September 2015 which increases the 2011 equivalent 97<sup>th</sup> percentile from 118 working days to 140 working days when 2015 levels of performance and propensity to occur are included for the new orders requiring new duct and blocked duct;

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

2015/responses/Openreach\_Q13.13\_service\_response.pdf

<sup>&</sup>lt;sup>828</sup> Openreach, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, P5, Paragraphs 10-11,

<sup>2015/</sup>responses/Openreach Q13.13 service response.pdf

<sup>&</sup>lt;sup>829</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P68, Paragraph 381,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>830</sup> Openreach, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, P6, key to Figure 3,

<sup>2015/</sup>responses/Openreach\_Q13.13\_service\_response.pdf <sup>831</sup> Openreach, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, P8, Paragraph 19,

- wayleave agreements have increased from about 35 working days in 2011/12 to around 43 working days in 2015/16 adding about 0.7 working days to every order compared to 2011/12; and
- traffic management agreements have increased from about 22 working days in 2011/12 to about 55 working days in 2015/16 adding about 0.5 working days to each order compared to 2011/12.
- 13.520 Openreach identified an improvement program to address orders exceeding 159 working days which had been widened to include orders exceeding 100 working days. This activity was clearing circa 180 orders per week at 21 September 2015.
- 13.521 Openreach also identified a number of "future state model" improvements for Ethernet service delivery which should improve performance generally and, in particular, the tail speed performance.<sup>832</sup> However it did not identify how much improvement it expected from this work.
- 13.522 Openreach further identified a set of Year 1 improvements that its analysis, which involved the use of theoretical probability distributions, suggested would improve the Year 1 97<sup>th</sup> percentile level of performance from 202 working days down to 145 working days, an improvement of 57 working days. However the full effect of these improvements would not be seen until Year 2 of the charge control period due to a time lag of 9 months for the effect of these improvements to be seen. The improvements considered included:
  - test rod compliance (with new process);
  - planning furthers (increasing on day completions);
  - B End (reducing engineering visits);
  - quick wins (increasing scope and reducing missing potential quick wins);
  - seamless planning (guided journeys automating planning process);
  - survey once (instead of multiple surveys);
  - cease utilisation (allow planners to use lines where cease is in progress);
  - single capability (multi-skilled planners);
  - data centres (prioritise data centre orders to increase delivery speed);
  - ESV (single visit to complete jointing and activate service); and
  - Fluidity Phase 3 (further improvement increase volume of fluid work).

<sup>&</sup>lt;sup>832</sup> Openreach, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, P14, Paragraph 49, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>2015/</sup>responses/Openreach\_Q13.13\_service\_response.pdf

- 13.523 Openreach also presented in its submission a bottom up glass floor analysis and a top down analysis to identify lower limits for the 97<sup>th</sup> percentile. The glass floor analysis, which was based on a sample of 1980 orders exceeding 159 working days and experts identifying the savings possible, identified 92 working days it said were theoretically addressable giving a lower limit of 145 working days. The glass floor analysis considered the following activities:
  - civils delay including infrastructure build, delivery build, unavailable external plant and work manager cabling time;
  - process adherence;
  - traffic management;
  - third party wayleave; and
  - blockage.
- 13.524 The top down analysis, which involved the use of theoretical distributions and the target projections for DOJ (set out to Ofcom in January 2015), identified a lower limit of 118 working days. However, Openreach then said the lower limit "... should not be viewed as an appropriate minimum standard, particularly given that the overall workstack and tail performance have deteriorated since Openreach set out its projections to Ofcom in January 2015, and so the size of the task in hand has grown in consequence".<sup>833</sup>
- 13.525 In relation to the Year 3 minimum standard Openreach said that although the analysis suggested lower limits of 114 and 118 working days, Ofcom should not set the minimum standard at these theoretical or internal Openreach stretch target values. The minimum standard should be set at a level that represents significant improvement but which is also reasonably achievable. Openreach then suggested 129 working days for the 97<sup>th</sup> percentile.

#### Completed versus placed orders

- 13.526 Openreach considered it wrong to impose the minimum standard on orders that close from the first day of the new charge control period. It considered that this imposes SMP conditions on open orders before the conditions technically come into effect and is particularly problematic in relation to the upper percentile measure as there are likely to be a significant number of orders already being processed given the circa 200 - 215 working day lead time for orders in the upper percentile.
- 13.527 Openreach pointed out that a short term effect of its initiatives to reduce the workstack, is an increase in the average lead times as a significant proportion of the orders on the workstack are older, more difficult orders. Openreach claimed the minimum standard could incentivise Openreach to avoid closing very long lead time orders. Openreach also claimed it was inevitable that current performance would

<sup>&</sup>lt;sup>833</sup> Openreach, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, P19, Paragraph 68,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach\_Q13.13\_service\_response.pdf

continue to deteriorate until the workstack had been reduced to a steady state. Openreach suggested a number of alternatives to avoid this problem:

- lead time minimum standards apply only to orders placed from the first day of the new charge control period with an agreed improvement plan, involving voluntary commitments by Openreach, which would be subject to appropriate oversight and monitoring to clear the outstanding orders in the current work stack;
- reset the time to provide to zero at the start of the charge control period for orders that are in flight at the start of the charge control period which would lead to an appropriate Year 1 minimum standard of around 156 working days; and
- measure compliance against a rolling 12-month period, e.g. only orders placed after 1 May 2015 would count in those orders closing in May 2016, would yield an appropriate minimum standard of 150 working days.
- 13.528 In its further submission dated 9 October 2015, Openreach suggested that Year 1 performance should be set at 234 working days to reflect recent performance assuming the minimum standard continues to apply to closed orders. This could be reduced to 117 working days if orders in-flight at the start of the control period are not included in the minimum standard assessment.
- 13.529 Openreach also reiterated its view that it was not reasonable to include all of the noncustomer delays within the minimum standards, because significant parts of the noncustomer delays (in particular those relating to traffic management and wayleaves) were outside of Openreach's control. It pointed out that such third party delays constitute about 30% to 40% of the overall time to provide at the 97<sup>th</sup> percentile.

# **Openreach Recommendations**

13.530 Openreach concluded its analysis and considerations by suggesting what it considered to be appropriate minimum standard values shown in Table 13.22 below.

Scenario	Year 1 (2016/17) Minimum Standard	Year 2 (2017/18) Minimum Standard	Year 3 (2018/19) Minimum Standard
Option 1: Compliance based on orders completed from 1 April 2016	234	145	129
Option 2: Compliance based on orders placed from 1 April 2016 (Recommended)	117 Supplemented with separate workstack reduction plan based on monitoring.	145	129

# Table 13.22: Appropriate lead time minimum standard values proposed by Openreach (in working days)

Source: Openreach response dated 9 October 2015 to the May 2015 BCMR Consultation

#### Other CPs' responses

13.531 Vodafone agreed with applying the minimum standard limits to the upper and lower percentiles but expressed concern that Openreach could radically improve Category1 delivery using quick wins at the expense of Category 2.2 lead times. Vodafone

suggested monitoring this with KPI reporting on actual average lead times for each order category.834

- 13.532 Six Degrees Group agreed with applying minimum standard limits at the 40<sup>th</sup> and 97<sup>th</sup> percentiles and agreed with setting the levels to 2011 performance levels.<sup>835</sup>
- 13.533 The PAG said the proposed minimum standard appears to be generally sound and represented a substantial improvement over CPs' experiences today. It believed the transition period to be generous, and that this would delay real improvement until Year 2 of the period, but the PAG did not suggest any alternative.<sup>836</sup>
- 13.534 [><

×]<sup>837</sup>

13.535 Hyperoptic agreed with applying minimum standard limits to the lead time mean, lower percentile and upper percentiles measures. However, it was concerned that there would be little incentive to make progress against Category 2 circuits, and suggested an additional percentile where 80% of orders should be delivered within 83 (working) days' lead time, reducing to 75 (working) days to incentivise improvement. Hyperoptic also suggested increasing the lower percentile to 43% in Year 2 to cover the expected increase in Category 1 circuits over time.<sup>838</sup>

13.536 [×

≫]

- 13.537 GTC<sup>839</sup> and Sohonet<sup>840</sup> agreed that it was appropriate to apply minimum standard limits to the lead time mean, lower percentile and upper percentile. They also agreed with the proposed values for these parameters.
- 13.538 TalkTalk said "the TTP target should be designed so that Openreach cannot improve its perceived performance by delaying issuing KCI 1s - as it does now".<sup>841</sup>

2015/responses/Passive\_Access\_Group.pdf

≫1

<sup>&</sup>lt;sup>834</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P60, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf

<sup>&</sup>lt;sup>835</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P12, Paragraphs 2.36-37,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf <sup>836</sup> The PAG, *Response to Ofcom's Business Connectivity Market Review Consultation Paper and* Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P37, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>&</sup>lt;sup>838</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P19, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P16, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf 840 Sohonet Limited, P6, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>2015/</sup>responses/Sohonet Limited.pdf

- 13.539 TalkTalk agreed with applying a minimum standard limit to the lead time upper percentile but did not agree with the use of the lower percentile limit. It argued Openreach would divert resources to comply with the lower percentile and delay the remaining 60% of orders. It further claimed that the data on which the initial lead time minimum standard had been set was out of date, and that Openreach could use the 17 days it was achieving on Category 1 orders to offset worse performance on the other more difficult orders. TalkTalk suggested that the following changes should be considered:
  - the lower percentile should be reversed, e.g. no more than X% of orders should be provisioned in 30 days:
  - lowering the average lead time so that delivery on more difficult orders cannot deteriorate; and
  - setting a second upper percentile limit whereby (say) a maximum of 40% of orders should be provisioned in more than 50 days (the numbers were illustrative and TalkTalk said Ofcom would need to set the actual numbers based on 2011 and 2014 performance).
- 13.540 TalkTalk considered that the proposed lead time targets were too easy for Openreach to achieve. It considered that Openreach could reasonably attain far more demanding targets, and that the proposed Year 1 target lead times should be lower, especially given the improvement programs in place, e.g. DOJ, and that it could deploy more resource. TalkTalk also claimed the Year 3 target is below an efficient level, i.e. that the level at which the marginal additional cost to provide higher quality equals the additional benefit to users. TalkTalk considered that there would be a lack of incentive to improve quality on the more difficult orders requiring civil work.
- 13.541 Sky said we should be imposing more demanding performance targets because the DOJ trial is already achieving material improvements for a large number of orders with expectations that even greater improvements will follow. Sky considered it a retrograde step to base the minimum standard on Openreach's lowest level of achievement recorded in 2014 and to have to wait until 2018 for a return to the acceptable levels of 2011.842
- 13.542 UKCTA said the proposed provisioning minimum standards were not sufficiently challenging and, in particular, that the proposed lead time minimum standard would take until the second year of the review period to achieve a return to 2011 performance levels. It said that the proposals should be much more ambitious.<sup>843</sup>

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sky.pdf

<sup>843</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf

<sup>841</sup> TalkTalk, Business Connectivity Market Review and Leased Line Charge Control TalkTalk response, August 2015, P40, Paragraph 6.2,

<sup>&</sup>lt;sup>842</sup> Skv. Sky's response to Ofcom's Business Connectivity Market Review consultation dated 15 May 2015 and Business Connectivity Market Review consultation on leased lines charge controls and dark fibre pricing dated 12 June 2015, 7 August 2015,

13.543 [×

≫]<sup>844</sup>

13.544 SPEN said that it noted tighter quality of service rules are proposed from April 2017 but, in its opinion, this was too late for the new performance regime to be introduced.<sup>845</sup>

# Our considerations and decisions

- 13.545 No stakeholders disagreed with our proposal to set limits on the average lead times for delivery of all orders, of a lower percentile and of an upper percentile.
- 13.546 Openreach were concerned that a decline in Category 1 orders as a proportion of all orders would affect its ability to achieve the minimum standard lead time we proposed in the lower percentile. It also considered that it would be potentially impossible for it to comply with the upper percentile limit because: (i) in the first year many orders already in its workstack require civil work and potentially exceed the new standard; and (ii) Openreach believed that the minimum standard we proposed for the second year exceeds what it considered are minimum lead time limits that cannot be economically or practically exceeded, limits to which it referred as a "glass floor".
- 13.547 The other CPs that responded generally supported the proposed minimum standard limits. They made a range of comments:
  - about half of the respondents considered the lead time minimum standard values to be either not challenging enough (should be lower) or that they would not deliver improvements soon enough (i.e. that our proposed final targets for minimum performance should be applied sooner);
  - b) two respondents were concerned about the large interval between the lower and upper percentiles we proposed, and suggested: (i) a lead time limit for an additional upper percentile of 80%, starting at 83 days reducing to 75 days; or (ii) increasing the lower percentile over time from its initial 40% to 65% and then to 80%, as well as decreasing the upper percentile to 75 days in Year 3;
  - c) two other CPs were concerned about Openreach complying with the minimum standards by improving performance on the easier orders while allowing orders with longer lead times to be neglected. CPs proposed the following to address this concern: (i) monitoring the mean lead time of each category through the KPIs; (ii) reversing the lower percentile such that no more than X% of orders are completed within 30 days; (iii) reducing the mean lead time minimum standard; and (iv) introducing a second upper percentile such that, for example, a maximum of 40% of orders could be completed in more than 50 days; and
  - d) some of the CPs also pointed out the apparently much improved performance being achieved for orders in the DOJ trial, e.g. 17 working days for Category 1.

≫1

<sup>&</sup>lt;sup>844</sup> [×

<sup>&</sup>lt;sup>845</sup> SPEN, Response of SP Energy Networks to the consultation on the Business Continuity Market Review (BCMR), 6 August 2015, P2-3, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/SP\_Energy\_Networks.pdf

- 13.548 In light of stakeholders' views, we have examined the additional evidence on lead times and performed further investigations to determine whether the identified causes of poor performance limit the level of performance that can be attained and/or place a limit on how quickly improvement can be attained.
- 13.549 In summary, we consider the cause of Openreach's poor performance in provisioning Ethernet services over the period 2011 to 2015 is primarily the result of the level of resource failing to keep pace with the increased volume of accepted orders, which has resulted in any ever-increasing workstack and, in general, ever-increasing leadtimes to complete orders.
- 13.550 We present our considerations in the following areas:
  - recent lead time performance;
  - impact of workstacks and resources on lead time;
  - impact of increased job difficulty on lead times;
  - impact of wayleave and traffic management on lead times;
  - impact of infrastructure build and collapsed/blocked/damaged ducts/man-holes on lead times;
  - Lead times, glass floors and improvement initiatives;
  - Lead time lower percentile compliance and category mix;
  - Year 1 compliance and in-flight orders;
  - trade-off between easy and hard jobs and the gap between lower and upper percentile; and
  - our final conclusions.

# Recent lead time performance

13.551 Overall mean and upper percentile lead time performance has continued to decline compared to the 2014 level of performance that we published in the May 2015 BCMR Consultation, while the lower percentile has improved. A summary of the performance in 2014 and up to October 2015 is presented in Table 13.23 and Figure 13.4 below.

Parameter	2014 performance as reported in 2015 BCMR Consultation <sup>846</sup>	2015 performance for 12 month period ending 31 October 2015 <sup>847</sup>
Lower percentile	30 working days	26 working days
Mean TTP	46 working days	47.5 working days
Upper percentile	159 working days	201 working days

Table 13.23: Summary	of difference in	performance	since the	2015	BCMR
Consultation					

Source: Ofcom analysis of Openreach section 135 response dated 11 November 2015





Source: Ofcom analysis of Openreach section 135 response dated 11 November 2015.

 <sup>&</sup>lt;sup>846</sup> This 2014 performance reflects the first 10 months only of 2014. A slight improvement had occurred for the full 12 month period ending 31 December 2014 which Figure 13.4 illustrates.
 <sup>847</sup> The 2015 mean value will be slightly different to that reported in Annex 12 because the latter covers the first 10.5 months of 2015 not the full 12 month period ending 31 October 2015.

#### Impact of order volumes on workstack and on lead time

13.552 With regard to the upper percentile, Openreach explained that the decline in performance is "principally an effect of a growing workstack, where although Openreach is completing more orders with long lead time than previously, the volume of orders coming in has exceeded the rate at which orders are being completed". Our analysis has revealed that the general impact of the growth in the volume of orders being accepted has been an increase in the workstack, the effect of which has been to increase the time to provide for all orders. As illustrated by Figure A12.26 in Annex 12, the workstack has grown considerably, doubling in size since January 2013. However, the rate at which Openreach was completing orders was, on average, 7% lower than the rate at which it was accepting them, which we consider demonstrates that Openreach's resource increases did not keep up with the increase in accepted orders.

#### Order volumes and resource levels

- 13.553 Having established that the increase in order volumes has impacted the workstack and the lead times for all orders, we considered whether the amount of resource employed on average to complete each order has changed significantly over the period 2011 to 2015. We found that there has been no significant change, leading us to conclude that the average level of resource required to complete each order has not changed significantly<sup>848</sup>.
- 13.554 We also considered the ratio of resource used to volume of orders accepted. Our analysis demonstrated that, on the whole, resource used did not track the increase in the volume of accepted orders<sup>849</sup>.

#### Impact of our quality of service minimum standards on Openreach's resource levels

13.555 As set out in the May 2015 BCMR Consultation, we sought to determine how many existing staff Openreach had available to deploy on Ethernet provision and repair in order to inform our assessment of the impact of our proposed quality of service minimum standards on Openreach's resource levels. However, Openreach was not able to provide such information, explaining in its final response to us on 23 January 2015 (regarding its EAD, EAD LA, EBD and Cablelink products):

"We have been unable to answer these questions. For the period covered by the questions, delivery of the Relevant Products was part of the responsibilities of the Openreach 'Network Investment' organisation. The issue has been that for the period covered by the questions the Network Investment organisation also had other significant responsibilities including, for example, delivery of BDUK and building the Openreach NGA network. Despite running different lines of enquiry it has not been possible to find a way to accurately

<sup>&</sup>lt;sup>848</sup> Where we have observed small changes over the 2011 to 2015 period, our analysis reveals that this due to changes in the category mix whereby a higher proportion of more complex orders slightly increases the average amount of resource required per order (see Table A12.13 in Annex 12). <sup>849</sup> See Table A12.13 and Figure A12.25 in Annex 12.

isolate resources within the Network Investment organisation that are specific to the Relevant Products." <sup>850</sup>

- 13.556 We also estimated what additional FTE would be required to address the volume of incomplete orders at the end of every month or year for the period 2011 to 2014.<sup>851</sup> Our estimates produced a range of between [≫] additional FTE. As also set out in the May 2015 BCMR Consultation, BT informed us of additional staff that it had recruited or planned to recruit as part of its improvement programme. We considered that this additional staff appeared sufficient, taking into account our estimates referred to above, to cover the shortfall between the volume of accepted orders and the volume of completed orders.
- 13.557 We recognise that it is difficult to estimate precisely the efficient level of resource which BT would require over the forward looking period in order to achieve our minimum standards for quality of service. As set out in Volume II, Section 5, we have decided that it is appropriate to allow BT to recover the additional resource costs associated with its current improvement programme. In arriving at this decision we focused on whether BT could demonstrate that the resources were necessary for Ethernet services and that we had confidence that the costs had already been or would be incurred in order to achieve our minimum standards for quality of service.
- 13.558 Since the May 2015 BCMR Consultation, BT has requested that we include additional costs in the 2016 LLCC for extra resource, in addition to the current improvement programme, to handle order volatility and for three additional quality of service work streams: transformation of systems and processes, third party management, and evolving existing resources.<sup>852</sup> As set out in Volume II, Section 5, we do not consider it appropriate to allow these extra resources to be recovered from the charge control. First, BT has not provided clear and complete information to enable us to verify that these extra resources are required over and above its improvement programme and various other improvements that are being developed or already in place. Second, we do not consider that BT has adequately justified that these extra resources are necessary and appropriate in order for BT to meet our minimum service levels and that they represent an efficient level of quality of service expenditure. Consequently, we consider that Openreach has not sufficiently substantiated that this resource is insufficient for it to meet our minimum standards for quality of service.

#### Impact of increased complexity of orders on lead times

13.559 Openreach claims that Category 2.2 (DOJ classification) orders, which require civil infrastructure work, are becoming more complex and taking longer in both urban and rural settings. We investigated whether the length of fibre, cable and duct and the number of man-holes installed have increased, in general for all orders, recognising that the effect of any such increases could be likely to either increase the time taken to complete the relevant order or increase the resource required to complete the relevant order.

<sup>&</sup>lt;sup>850</sup> Openreach response, included in their response dated 23 January 2015 to our 8<sup>th</sup> section 135 notice dated 13 January 2015, to questions 20 to 22 in our 5<sup>th</sup> section 135 notice dated 24 September 2014.

<sup>&</sup>lt;sup>851</sup> Tables 13.18 and 13.19, Section 13 in the May 2015 BCMR Consultation.

<sup>&</sup>lt;sup>852</sup> BT supplementary response to the November 2015 LLCC Consultation.

- 13.560 Regarding whether the effect was to increase resource required to complete orders, as explained above, our analysis has shown that there has been no significant change in the amount of resource employed on average to complete each order over the period 2011 to 2015.
- 13.561 Regarding whether the effect was to increase the time taken to complete the relevant order, in summary, whilst we observed some small increases, we are not persuaded that the effect of these observed increases would cause an impact material enough to consider that the minimum standards could not be achieved.<sup>853</sup> Consequently, we do not consider that the observed increases support Openreach's claim that they would be prevented from achieving the minimum standards for the time to provide for orders that we have imposed.
- Impact of wayleaves and traffic management on lead times
- 13.562 Openreach also claims that wayleave applications and traffic management permissions are extending lead times such that their effect would be to prevent Openreach from complying with the upper percentile value.
- 13.563 Our findings concerning the delays recorded against the deemed consent codes for infrastructure build, traffic management, wayleave and collapsed/blocked/damaged duct/man-holes are presented in Figure A12.10 and associated text in Annex 12.
- 13.564 We recognise that the evidence shows that time taken to progress wayleave applications has increased from about 55 working days to around 65 working days and to progress traffic management permission from about 30 working days to around 70 working days across affected orders.
- 13.565 However, we do not consider it reasonable to assume that these activities should be performed sequentially in the order provisioning process rather, we would expect that where it has been identified that both wayleave applications and traffic management permission are required, they should be carried out in parallel. Based on discussions with CPs and our analysis of the evidence, we also consider more timely submissions for, and subsequent management of, applications and/or permissions by Openreach since these responsibilities cannot be performed by its customers would reduce the observed increases in time taken to progress wayleave applications and traffic management permissions. In our view, this is another example of the allocation of insufficient resource impacting detrimentally on time taken to complete orders, rather than demonstrating an unsurmountable limit on achieving improved times to complete orders.
- 13.566 Further, we consider that the period, on average, of 65 to 70 working days is still considerably less than the proposed upper percentile minimum standards of 159 and 118 working days such that we are not persuaded that the effect of wayleave applications and traffic management permissions would prevent Openreach from complying with the upper percentile value.
- 13.567 Finally, to assist both Openreach, and us, in monitoring compliance with the upper percentile value, we will monitor delay due to traffic management permissions and

<sup>&</sup>lt;sup>853</sup> Our findings concerning the length of fibre, cable and duct and the number of man-holes installed are presented in Figure A12.23 and Figure A12.24 and associated text in Annex 12. We note that Openreach has not provided any evidence relating to the actual physical installation times of these various components or increases in such times to support its claim.

due to wayleave applications (as a proportion of the time take to complete the relevant order) for each category of order through a KPI requiring Openreach to provide us with this information on a monthly basis.

#### Impact of increased incidence of infrastructure build and duct/man-hole issues on lead times

- 13.568 Separately to its claim that the complexity of orders has increased (see above), Openreach also claimed that the increased incidence of need for new duct and the increased incidence of collapsed, blocked and damaged ducts and man-holes are extending lead times such that their effect would be to prevent Openreach from complying with the upper percentile value.
- 13.569 In summary, our analysis of the evidence leads us to conclude that the extent of the observed increase in incidence of need for new duct and/or in the incidence of collapsed, blocked and damaged ducts and man-holes, can be managed by the allocation of sufficient resource in order to contain any impact on the time to complete the relevant order.
- 13.570 We have analysed the incidence of, and delay caused by, the need for new infrastructure<sup>854</sup> and collapsed/blocked/damaged ducts/man-holes<sup>855</sup>. Our findings concerning the level of incidence and delay recorded against these deemed consent codes can be found Annex 12, Figure A12.10 and Table A12.5.
- 13.571 Our analysis of the evidence indicates that the increase in delay caused by the increased incidence of collapsed, blocked or damaged ducts or man-holes was largely consistent with the observed increase in the workstack. As explained above, we consider the cause of Openreach's poor performance in provisioning Ethernet services over the period 2011 to 2015 is primarily the result of the level of resource failing to keep pace with the increased volume of accepted orders, which has resulted in any ever-increasing workstack and, in general, ever-increasing lead-times to complete orders. Consequently, we consider that a significant proportion of the delay caused by collapsed, blocked or damaged ducts or man-holes was likely to be due to waiting for Openreach resource to become available to address those problems.
- 13.572 Concerning our analysis of the impact on the time to complete orders from the "need for infrastructure build", we observe that this was relatively constant at about 20 working days until around January 2014 after which it increased at a reasonably constant rate to 50 working days by late 2015. However, as explained above<sup>856</sup> and in Annex 12, our analysis of the evidence leads us to consider that the time taken to actually carry out the required infrastructure build has not increased significantly over that 2014 to 2015 period. Consequently, we are minded to conclude that the increase of 30 working days has been principally caused by the time taken for Openreach resource to become available to carry out the build.
- 13.573 Regarding the increased incidence of both new infrastructure build and also collapsed, blocked and damaged ducts and man-holes, we recognise that the evidence does show such an increase and also that this may have caused the time

<sup>&</sup>lt;sup>854</sup> Recorded as DC22.

<sup>&</sup>lt;sup>855</sup> Recorded as DC24.

<sup>&</sup>lt;sup>856</sup> Whilst we observed some small increases in the time taken to complete relevant orders, we are not persuaded that the effect of these observed increases would cause an impact material enough to consider that the minimum standards could not be achieved.

to complete affected orders to also increase. However, we continue to consider that appropriate allocation of resource should serve to address the impact of increased incidences of both new infrastructure build and also collapsed, blocked and damaged ducts and man-holes. Consequently, we are not persuaded that it is necessary to amend the upper percentile value.

- 13.574 Finally, we note BT's claims that applying the 2015 levels of incidence of and, more importantly, the levels of delay caused by: (a) the increased need for new duct; and (b) the increased incidence of collapsed, blocked and damaged ducts and man-holes to the time to complete orders in 2011 would increase the upper percentile from 118 to 140 working days.
- 13.575 We do not consider it appropriate to assume the levels of delay arising from the increased need for new duct and the increased incidence of collapsed, blocked and damaged ducts and man-holes should be the same over the forward looking period of the review. As explained above, we consider the increases in the number of working days observed have been principally caused by the absence of sufficient resource to address the problem. We consider we should impose minimum standards which incentivise Openreach to ensure that sufficient resources are available and allocated as opposed to amending those minimum standards to accommodate, and allow for, the impact of Openreach's failure to match the increase in accepted orders with an increase in resource which we have taken into account in Volume II of this statement.

# Lead times, glass floors and improvement initiatives

- 13.576 Openreach reported three analyses which, it claimed, show that the time to provide improvements achievable at the 97<sup>th</sup> percentile are limited. It claimed these analyses show that the achievable lead-times for the 97<sup>th</sup> percentile exceed those we had proposed.
- 13.577 The first analysis estimates that a lead time reduction on the 97<sup>th</sup> percentile of circa 57 working days could be achieved through the implementation of a number of planned initiatives using theoretical lognormal probability distributions to model the tail performance. Openreach estimates the potential improvement in time to provide that each initiative can achieve and then subtracts the estimated improvement from its view of the current 97<sup>th</sup> percentile value of 202 working days<sup>857</sup>. In Openreach's view, this analysis shows that the best possible time to provide in this analysis is 145 working days. Openreach does not, however, say how it identified and quantified the improvements each initiative would make, but we assume that its assessment is based on the collective opinion of the Openreach staff responsible for the initiatives. Openreach says the initiatives will take time to have an effect and does not expect the full benefits to be seen before Year 2 of the control.
- 13.578 The second analysis is described as a bottom up glass floor analysis that looks at a sample of 1,980 orders, assesses the level of dwell/delay at the different stages of the process and then uses subject matter experts to estimate the degree to which the identified delay can be addressed / reduced. This identified 92 working days that can

<sup>&</sup>lt;sup>857</sup> 202 working days was "the average 97th percentile speed performance April 2015 to June 2015 inclusive", Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, page 16, paragraph 52, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach\_Q13.13\_service\_response.pdf</u>

be theoretically addressable, yielding a 97<sup>th</sup> percentile lower limit (glass floor) of 114 working days, having started with 206 working days<sup>858</sup>.

- 13.579 The third analysis is described as a top down glass ceiling analysis which derived the tail performance at the 97<sup>th</sup> percentile from the DOJ future stretch MTTP targets using theoretical lognormal probability distributions. This resulted in a lower limit for the 97<sup>th</sup> percentile of 118 working days.
- 13.580 We have serious concerns regarding the robustness of Openreach's analyses. Regarding the third analysis, Openreach has not provided any objective justification to support the choice of the future targets. Regarding the first and second analyses, again Openreach has not provided any objective justification to explain:
  - i) the extent to which, in their view, the planned initiatives would produce the improvements they identified, or
  - ii) to explain the rationale for choosing the sample of 1,980 orders, or
  - iii) to explain why particular points in the provisioning process were chosen at which to assess the level of dwell/delay, or
  - iv) why performance over a particular time period was chosen.
- 13.581 Moreover, their analyses do not consider the effect of additional resource on the size of the workstack and on the overall time to complete orders that the increase in the workstack has affected. As explained above, we consider the cause of Openreach's poor performance in provisioning Ethernet services over the period 2011 to 2015 is primarily the result of the level of resource failing to keep pace with the increased volume of accepted orders, which has resulted in any ever-increasing workstack and, in general, ever-increasing lead-times to complete orders.
- 13.582 In conclusion, therefore, having considered the available evidence we are not persuaded that the improvements achievable at the 97<sup>th</sup> percentile are limited, as argued by Openreach.

Effect of potential changes in category mix on Openreach's ability to comply with the minimum standard for lead time in the lower percentile

- 13.583 We have investigated the time taken for Openreach to complete orders in past years to inform our consideration of its concern that there could be an insufficient proportion of Category 1 orders for it to meet the minimum standard which we had proposed for lead time in the lower percentile.
- 13.584 Table 13.24 below shows that, in each of the past five years, Openreach completed a significant proportion of orders in Category 2, as well as in Category 1, within lead times shorter than the minimum standard we had proposed for the lower percentile.

<sup>&</sup>lt;sup>858</sup> 206 working days was the average 97th percentile speed performance circa June / July 2015, Openreach supplementary response to Question 13.13 in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", 9 October 2015, page 17, paragraphs 59 to 61, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Openreach\_Q13.13\_service\_response.pdf
# Table 13.24: Breakdown by category of the orders that would have complied in each year with the minimum standard lead time of 30 working days we proposed for the lower percentile

Year	Cat 1	Cat 2	Cat 3	Cat 4	Cat Other
2011	42%	39%	2%	7%	9%
2012	49%	36%	1%	4%	10%
2013	59%	30%	0%	2%	10%
2014	65%	25%	0%	2%	8%
2015	58%	34%	0%	3%	4%

Source: Ofcom analysis of Openreach section 135 response dated 11 November 2015.

13.585 Table 13.25 below shows that, in each of those five years, well over 40% of all orders were completed within the lead time we had proposed as a future maximum for the 40% of orders with shortest lead times.

# Table 13.25: Percentage of the orders that were delivered in past years within the lead time of 30 working days we proposed for the lower percentile minimum standard

Year	All orders	Cat 1	Cat 2	Cat 3	Cat 4	Cat Other
2011	56%	79%	47%	26%	52%	52%
2012	58%	81%	43%	21%	54%	66%
2013	52%	77%	35%	10%	37%	41%
2014	47%	76%	24%	7%	31%	48%
2015	56%	86%	37%	7%	49%	39%

Source: Ofcom analysis of Openreach section 135 response dated 11 November 2015.

13.586 The analyses presented in the tables above show that the minimum standard we proposed for lead time in the lower percentile is reasonable and that Openreach should be able to meet it. Nevertheless, we propose to monitor the situation with a KPI which will measure the volume of orders by category which comply with the minimum standard lead time in the lower percentile.

#### Treatment of orders in the workstack

- 13.587 We are aware that Openreach's workstack of uncompleted orders is currently large, and that a proportion of those orders require significant construction work, with likely long lead times.
- 13.588 In imposing the minimum standards on time to provide, we intend to incentivise Openreach to provide all orders with appropriate speed. We designed those standards around the mix of categories in Openreach's ordinary intake of orders. We recognise that the size of the workstack, as at October 2015, and the proportion of orders with likely long lead times could deny Openreach the opportunity to meet the minimum standards in the first year.<sup>859</sup> We seek to incentivise Openreach to complete in-flight orders quickly but in a manner which does not impose a retrospective regulatory effect which could unreasonably lead to Openreach failing to meet the minimum standards for time to provide in Year 1 because of activities which it had carried out before the regulation was applied.

<sup>&</sup>lt;sup>859</sup> We will assess compliance by calculating the specified measures on all orders which Openreach completes in each year.

- 13.589 We have therefore decided to make an adjustment to the contribution which completion of those orders will make to Openreach's overall time to provide performance in the first year, by applying a discounting factor to the time which will have already elapsed on each order in the workstack by the date the minimum standards come into force. For those orders, we will use the discounted time to provide in assessing compliance with the minimum standards for time to provide in the first year.
- 13.590 To inform our regulatory judgement in setting the value of the discounting factor, we constructed a model forecasting Openreach's provision of the orders in its workstack, based on its provision performance in the year to September 2015. We used the model to estimate that a discounting factor of 75% would allow Openreach to meet the minimum standards for time to provide in the first year in respect of the mix and volume of orders which we forecast that its workstack will contain at the start of that year. However, we also considered that even with a discounting factor of 75%, there was a significant risk that in order to meet the minimum standards for time to provide in the first year. Openreach would not be able to complete all of the in-flight orders.
- 13.591 Consequently, we have decided to set the discounting factor to 80%, rather than the 75% figure which we had derived from our model, to ensure Openreach has the opportunity, and is incentivised, to complete all in-flight orders in the first year.

# Trade-off between jobs with short and long lead times and the gap between lower and upper percentile

- 13.592 A number of CPs were concerned about what they regarded as a large interval between the lower and upper percentiles in the targets we proposed, and the risk that Openreach could achieve them by delivering orders with short lead times more quickly while sacrificing performance in delivering orders with longer lead times, especially those involving civil infrastructure work.
- 13.593 We proposed in the May 2015 BCMR Consultation to address this risk by monitoring, through KPIs gathered every month: (i) the mean lead time of the orders that exceed the upper percentile; and (ii) the maximum lead time of the orders that exceed the upper percentile.
- 13.594 Having considered stakeholders' responses, our view remains that it would not be appropriate at this point in time, to add a limit that further restricts an additional percentage of orders that can exceed a certain time to provide, where this could risk limiting the flexibility we have intentionally afforded BT to make the necessary improvements to, at least, comply with new minimum standards.
- 13.595 Nevertheless, we acknowledge the concern, particularly in light of our own observations that Openreach has been completing many recent Category 1 orders well within 30 working days (i.e. within the maximum lead times we proposed for the lower percentile) and that those orders appear to be receiving priority (which we observe in our discussion on workstacks). We therefore consider it appropriate to introduce additional KPIs to monitor the mean lead time and the composition of orders delivered within the lead time limit we specify for the lower percentile. This will allow us to observe whether a reasonable balance is being maintained between the quick easier orders and the more complex longer orders.

#### Other issues

13.596 TalkTalk said the time to provide minimum standards should be designed so that Openreach cannot improve its perceived performance by delaying issuing order acceptance, as it does now. We are aware that this could be an issue. Consequently we have decided to (i) monitor the proportion of orders accepted and validated within the agreed SLA and (ii) monitor the distribution of the time taken to validate orders that are not validated within the agreed SLA. If we find that the proportion significantly drops or the time taken to validate orders not validated by the agreed SLA significantly increases while good levels of certainty and lead time performance are maintained, we will consider taking further action using our direction-making powers.

#### Conclusions

- 13.597 In our view, delays in provision have occurred principally because Openreach has not dedicated sufficient resources to keep up with the rate of demand over time. We consider that Openreach should be responsible for ensuring that it has sufficient resources to meet reasonable demand.
- 13.598 To ensure that Openreach has appropriate incentives to meet customers' expectations of speed of provision, we have decided to impose the minimum standards requirements for time to provide which we proposed in the May 2015 BCMR Consultation.
- 13.599 In our view, those standards are reasonable and Openreach should be able to meet them. In reaching this view, we have taken into account all factors brought to our attention by stakeholders in their responses to our proposals, including in particular:
  - i) the size, growth and composition of Openreach's current workstack of Ethernet orders and its likely size and composition at the time the minimum standards requirements come into force;
  - ii) the size of the workforce which Openreach has currently available for provisioning Ethernet, and the recruitment of additional staff already underway;
  - iii) the time it takes Openreach to recruit and train new staff;
  - iv) the mix of degrees of difficulty in the orders which Openreach receives and is likely to receive over the period of the review;
  - v) possible increases in the time taken to complete the civil work required on the more complex orders;
  - vi) the increasing delays due to changes in legislation and local councils' practices in relation to traffic management;
  - vii) other factors such as wayleave applications that could extend order completion time;
  - viii) possible fundamental limits that could restrict time to provide returning to at least 2011 levels in the future;
  - ix) deviations in order volumes relative to forecasts; and

- x) Openreach's ability to negotiate with ordering CPs the phasing of large batches of orders.
- 13.600 Given the above conclusions, we believe it is appropriate not to change our proposed lead time minimum standard initial and final metric. Consequently, we have decided that the lead time minimum standard initial and final metrics are as shown in Table 13.26 below.

# Table 13.26: Initial and final metrics for the lead time minimum standard (excluding customer caused delay)

Parameter	Percentile percentage	Initial metric (2014 performance)	Final metric (2011 performance)
Lower percentile	40%	30 working days	29 working days
Mean TTP	Not applicable	46 working days	40 working days
Upper percentile	97%	159 working days	118 working days

# Proposals regarding minimum standards for Ethernet repair in the May 2015 BCMR Consultation

- 13.601 We proposed a backstop minimum standard (set out in Table 13.27 below) to incentivise Openreach to maintain good performance in the repair of Ethernet services while concentrating on improving its provisioning performance.
- 13.602 We proposed a similar approach to the one we adopted in the FAMR, with a minimum standard for repair based on a lower limit of the proportion of repairs that must be completed within the contracted SLA.
- 13.603 Given that the percentage of service restorations within 5 hours had varied between 93.1% and 94.4% for the period 2011 to 2014, we considered it appropriate to propose setting the minimum standard at 94% a slight improvement on 2011 performance but slightly below the best performance over the 2011 to 2014 period.

#### Table 13.27 Proposed minimum standards for fault repair

			New minimum standard		
	2011 performance	Current performance (2014)	Performance over Year 1 (2016/17)	Performance over Year 2 (2017/18)	Performance over Year 3 (2018/19)
% faults fixed within 5 hours	93.1%	94.4% (Jan'14 to Jul'14)	At least 94% of faults fixed within 5 hours	As Year 1	As Year 1

13.604 Stakeholder responses to our April 2014 BCMR CFI did not raise repair performance as a major concern. We also noted that the BDRC Quality of Service Report findings confirmed that end users considered a 5 hour repair time (SLA) for the majority of the Ethernet services to be reasonable whereas longer repair times were considered by the majority to be unreasonable.<sup>860</sup>

- 13.605 Our analysis also indicated that repair performance over the period 2011 to 2014 was consistently acceptable.
- 13.606 We asked stakeholders:

Question 13.14: Do you agree that it is appropriate to set the repair time minimum standard to 94%? Please provide reasoning for your answer. If you do not agree, please also give your proposed alternative.

## Stakeholder responses

- 13.607 [≫]<sup>861</sup>, GTC<sup>862</sup>, Hyperoptic<sup>863</sup>, Six Degrees Group<sup>864</sup> and Sohonet<sup>865</sup> all agreed with our proposal to set the repair minimum standard to 94%.
- 13.608 Sky also agreed that Openreach's performance in repairing faults on Ethernet lines was currently acceptable and also its performance in meeting the repair SLA. [≫

866]

13.609 UKCTA considered that Openreach's repair performance was deficient to some extent. However, it recognised our intent to prevent Openreach from having the opportunity to switch resources from repair to provisioning which was a point its members flagged as requiring attention.<sup>867</sup>

≫]

 <sup>&</sup>lt;sup>860</sup> BDRC Continental, Ofcom Quality of Service: Ethernet Leased Lines 2014, P38-40, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/annexes/QoS report 27th April.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/annexes/QoS report 27th April.pdf</a>
 <sup>861</sup> [>

 <sup>&</sup>lt;sup>862</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P16, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf</u>
 <sup>863</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P20,

<sup>&</sup>lt;sup>863</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P20, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf
<sup>864</sup> Six Degrees Group, Six Degrees One of the state o

<sup>&</sup>lt;sup>864</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P12-13, Paragraph 2.38,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf <sup>865</sup> Sohonet Limited, P6, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Sohonet Limited.pdf

<sup>&</sup>lt;sup>866</sup> Sky, Sky's response to Ofcom's Business Connectivity Market Review consultation dated 15 May 2015 and Business Connectivity Market Review consultation on leased lines charge controls and dark fibre pricing dated 12 June 2015, 7 August 2015, P17, Paragraph 9.3, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sky.pdf

 <sup>&</sup>lt;sup>867</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P3, Paragraphs 1.2-3, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf

13.610 Virgin supported our proposal to focus on delivery rather than fault repair given that the evidence did not support intervention on repair, although it considered that new or more intrusive regulation was not required at all in relation to quality of service.<sup>868</sup>

#### 13.611 [><

×]<sup>869</sup>

- 13.612 The PAG disagreed with our proposal. It said that 94% simply reflected the current performance. It emphasised that the contractual standards Openreach agrees with its wholesale customers should be significantly more ambitious. The PAG also said that the inclusion of "right when tested" within the overall repair statistics gave a false impression of BT's performance. When removed, PAG stated that BT's performance would be lower than 90% and would not meet our minimum standards. The PAG argued that the minimum standard should not include "right when tested".<sup>870</sup>
- 13.613 Vodafone also disagreed and raised the same points as the PAG about the inclusion of what Openreach terms faults which are "right when tested". Vodafone provided confidential details of the repair performance on its circuits. It considered that minimum standards for fault repair should exclude "right when tested". Vodafone considered that standards based on fault repair statistics which exclude faults which were found to be "right when tested" was an appropriate measure of genuine Openreach faults generally requiring an engineering visit. Vodafone considered that targets should incentivise an improvement from the existing performance.<sup>871</sup>

13.614 Openreach noted that:

- our assessment of its repair performance concluded that it was acceptable;
- we wanted to incentivise Openreach to continue to deliver on repair while concentrating on improving its provisioning performance;
- we had acknowledged that stakeholders had not raised repair performance as a major issues;
- our BDRC Quality of Service Report showed that 88% of the leased line users agreed that they had confidence that if there was a fault on their Ethernet line it would be be resolved quickly; and
- we had not identified any specific concern with Openreach's repair performance that needed addressing and that this was absent of any regulation requiring Openreach to achieve or exceed a specified level of performance.

≫]

 <sup>870</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P37, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> <u>2015/responses/Passive\_Access\_Group.pdf</u>
 <sup>871</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015,

 <sup>&</sup>lt;sup>868</sup> Virgin, Virgin Media's response to Ofcom's Business Connectivity Market Review Consultation - May 2015, 10 August 2015, P49, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Virgin\_Media.pdf</u>
 <sup>869</sup> [>

<sup>&</sup>lt;sup>871</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P61, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>

- 13.615 Openreach argued that there was no indication that it would fail to continue to provide consistently high levels of repair performance including once the minimum standards for provision are imposed. It further noted that its repair performance had continued to remain high whilst work was underway to improve provisioning performance.
- 13.616 Openreach considered that there was no need for regulatory intervention and no justification for imposing a minimum standard on repair. It argued that our proposal was inconsistent with the decisions in the June 2014 FAMR Statement where we had said it was proportionate not to introduce precautionary minimum standards to address the risk that the quality of service for other services might suffer as a result of imposing minimum standards.
- 13.617 Openreach argued that our concern that meeting the provisioning standards at the expense of repair could be addressed by a more proportionate remedy, in particular, mandated KPIs. Openreach also noted that the proposed new SMP condition on quality of service could introduce additional regulation if appropriate.
- 13.618 Openreach considered that if, however, we decided to proceed with a minimum standard for repair it should be set at a level below which its performance should not fall and not simply set at the level Openreach currently achieves.
- 13.619 Openreach set out its view that in order to consistently achieve on time performance for repair of 94%, it would have to adopt plans to deliver a level of service well above this to mitigate the risk of non-compliance. Openreach considered that this was therefore too high for a minimum standard intended as a precautionary measure to achieve the level of performance reported to us (93.1% to 94.4% between 2011 and 2014). Openreach argued that a minimum performance standard should be set at 91% and not 94% as proposed.<sup>872</sup>

# Our considerations and decisions

- 13.620 We note that most stakeholders who purchase Openreach's wholesale Ethernet circuits agreed with our proposal to set a repair minimum standard at 94%, which as discussed earlier in this section, would apply over each of the years of this forward-looking review.
- 13.621 Those that disagreed, raised three main points:
  - that we should require an improvement in fault repair performance;
  - that the statistics we used to assess Openreach's performance gave a false impression as they include "right when tested" which should be excluded; and
  - that Openreach should agree more ambitious performance levels in its contractual arrangements with its customers.

<sup>&</sup>lt;sup>872</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P72-73, Paragraphs 402-411, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

- 13.622 Openreach disagreed that it was appropriate to impose any minimum standards on its repair performance. However, if we decided to proceed as proposed, the minimum standard should be 91%.
- 13.623 We remain of the view that, as the evidence set out in our May 2015 BCMR Consultation (and repeated in Annex 12) shows, Openreach's repair performance has been relatively stable over the 2011 to 2014 period. Our evidence looked at fault reports relative to installed volumes, the proportion of faults classified "fault not found" as well as performance to the 5 hour SLA. We also included end users' experiences and expectations for Ethernet fault repair in the research we commissioned and published in the BDRC Quality of Service Report.
- 13.624 We have decided not to exclude fault repairs which are classified as "right when tested" as some CPs suggested. It is not clear to us on what basis it would be appropriate to exclude Openreach activities which result in a "right when tested" response to fault reports.
- 13.625 We note Openreach's references to the position we took in relation to precautionary interventions in relation to our quality of service interventions in the last FAMR. However, we consider the circumstances here are different to those considered in the last FAMR.
- 13.626 We consider that the types of end users and applications that wholesale CISBO products support, which include enterprise ICT / business critical applications as well as broadband and mobile data connectivity for the mass market, mean that reliability is critical and where a problem arises a fast fix is paramount. We refer, in particular, to the evidence set out in the BDRC Quality of Service Report in which service features were ranked by relative importance which we have reproduced in Annex 12. Reliability was top; more than twice as important as the next ranked attribute of 'Responsiveness to faults'. We also refer to the report's findings that end users consider a 5 hour repair time for the majority of Ethernet services to be reasonable whereas longer repair times were considered by the majority to be unreasonable.<sup>873</sup>
- 13.627 Furthermore, we remain concerned that absent our intervention, there is a risk that Openreach might improve provisioning performance at the expense of repair.
- 13.628 We consider that ensuring effective repair performance is best secured by imposing an *ex ante* minimum standard of repair performance requirement on Openreach. We are not persuaded by Openreach's argument that a KPI remedy would be appropriate. Such a measure would only potentially allow us to detect a deterioration which would then require further assessment before any remedy could be proposed and imposed to address performance.
- 13.629 We are also not persuaded by Openreach's argument that our minimum standard value of 94% would be too high. Openreach's performance against its 5 hour repair SLA is fairly stable over the period, fluctuating at around an average of 94% and never falling below 91% when viewed monthly. However, the annual measure, which would be used for minimum standard compliance assessment, has never been below 93% and has exceeded 94% since the start of 2013. This is shown in Figure A12.19 at Annex 12.

<sup>&</sup>lt;sup>873</sup> BDRC Quality of Service Report, pages 44-47, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/annexes/QoS\_report\_27th\_April.pdf

13.630 We therefore consider that a minimum standard of 94% faults attended to within the 5 hour SLA is an appropriate and proportionate value to apply, on an annual basis, to achieve the aims of mitigating the risk that, absent our intervention, Openreach might improve provisioning performance at the expense of repair, and of ensuring that Openreach continues to provide an effective level of repair performance.

# Decisions on the implementation of quality of service remedies

#### Introduction

- 13.631 In this sub-section we set out our further reasoning and decisions as to the regulatory instruments and other measures which we consider are appropriate and proportionate to remedy our above concerns regarding the quality of service provided by Openreach to its customers and their end users.
- 13.632 We set out:
  - A new quality of service SMP service condition (notified at Annex 35), which
    requires BT, in complying with the network access conditions we have decided to
    impose, to comply with any such quality of service requirements as we may from
    time to time direct;
  - a direction on minimum performance standards (notified at Annex 35), which imposes defined minimum performance standards on BT in the delivery of certain Ethernet services, including the level at which the minimum standards are set over each of the three years of the forward looking period of this market review;
  - a direction on transparency as to quality of service (notified at Annex 35), which requires BT to provide specified KPIs; and
  - a direction relating to the SLGs (notified at Annex 35), which requires that BT's terms and conditions continue to provide compensation for delays in provisioning and fault repair.

#### A new quality of service SMP services condition

#### Aim and effect of the regulation

- 13.633 In competitive markets the quality of service of leased lines services would be based on the commercial judgement of individual companies and could be expected to meet the requirements of end users of the services, as providers would be incentivised to meet customer requirements in order to maximise sales. However, where a provider has SMP, competition cannot be expected to be an effective constraint and the dominant provider would have the ability and incentive to offer inadequate quality of service in order to increase profits.
- 13.634 In addition, vertically integrated SMP operators have the ability to favour their own downstream businesses over third party CPs by differentiating on price or terms and conditions. This discrimination can also take the form of variations in quality of service (either in service provision and maintenance or in the quality of network service provided by the dominant provider to external providers compared to its own retail operations). This has the potential to distort competition at the retail level by placing third party CPs at a disadvantage in terms of the services they can offer consumers to compete with the downstream retail businesses of the vertically integrated operator.

#### Our proposals

- 13.635 In the May 2015 BCMR Consultation we notified our proposal to impose a new quality of service SMP services condition in each of the following wholesale markets in which we provisionally found BT to hold SMP:
  - the wholesale market for low bandwidth TISBO in the UK excluding the Hull area, • at bandwidths up to and including 8Mbit/s;
  - the wholesale market for CISBO in the London Periphery area; and
  - the wholesale market for CISBO in the UK excluding the CLA, the London Periphery area and the Hull area.
- 13.636 The new SMP condition provides for Ofcom to direct BT, subject to the requirements in section 49 of the Act that any such directions are objectively justifiable, nondiscriminatory, proportionate and transparent, to comply with quality of service requirements.

13.637 We asked stakeholders:

Question 13.15: Do you agree with our proposal to set a new SMP services condition which provides for Ofcom to direct BT to comply with all such quality of service requirements in relation to network access provided by BT pursuant to our proposed general and specific network access requirements? If not, please explain why.

#### Stakeholders' responses

13.638 [×	] <sup>874</sup> , [×	] <sup>875</sup> , Hyperopt	tic <sup>876</sup> , Sohonet <sup>877</sup> , the
PAG <sup>878</sup> ,	Six Degrees Group <sup>879</sup> , Vodafe	one <sup>880</sup> , [×	] <sup>881</sup> , GTC <sup>882</sup> ,

<sup>874</sup> [×

<sup>875</sup> ſ⊁

≫1

×1

<sup>876</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P20, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf Sohonet Limited, P7, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P37, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

2015/responses/Passive\_Access\_Group.pdf <sup>879</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P13, Paragraph 2.39,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six Degrees.pdf <sup>880</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015,

P61, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u> <sup>881</sup> [>< ≫1

<sup>882</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P15, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf

<sup>2015/</sup>responses/Sohonet Limited.pdf

Openreach<sup>883</sup>, UKCTA<sup>884</sup> and KCOM<sup>885</sup> agreed with the proposal. No stakeholder disagreed with our proposal.

- 13.639 Vodafone provided detailed submissions prepared by Towerhouse LLP on our proposed legal instruments.<sup>886</sup>
- 13.640 Virgin agreed that there is scope for improvement in Openreach's quality of service and highlighted its particular concerns regarding the provision of Cablelink. However, whilst Virgin considered it was right to ensure BT meets its delivery obligations and does not discriminate between the level of service it delivers to its own operations and its competitors, it considered that we should take fuller account of the wider implications of regulatory intervention. Virgin considered it would be inappropriate to over regulate to the extent this would negatively affect competition with competing infrastructure providers.
- 13.641 In summary, Virgin did not consider that new or more intrusive regulation of quality of service was required and that our focus should be confined to refining aspects of existing remedies which are not delivering. It further considered that we should wait until the remedies adopted in the FAMR have had time to take effect and for us to assess their effectiveness. Finally Virgin stated that BT should be able to recover its reasonable costs of meeting improved service levels<sup>887</sup>.
- 13.642 UKCTA asked that we provide further details as to how any fines would be used for enforcement, including the level of such fines.<sup>888</sup> KCOM also wanted to better understand how compliance monitoring and enforcement action would work in practice.<sup>889</sup>
- 13.643 In agreeing with our proposal to set a new quality of service SMP services condition, Openreach recognised that the condition would allow us to intervene and set further regulation if necessary but also to change existing directions if exogenous and unforeseeable market factors prevent Openreach from achieving the minimum standards imposed.
- 13.644 However, Openreach sought clarity about how we would propose to make changes to a direction if so required. In particular, it asked:

```
http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf
```

 <sup>885</sup> KCOM, Business Connectivity Market Review KCOM response, 31 July 2015, P18, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/KCOM.pdf</u>
 <sup>886</sup> Towerhouse LLP, Vodafone–Errors in Ofcom Draft BCMR Legal Instruments, 22 September 2015,

<sup>886</sup> Towerhouse LLP, Vodafone–Errors in Ofcom Draft BCMR Legal Instruments, 22 September 2015, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>

2015/responses/virgin\_vieuia.pui
 <sup>888</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P4, Paragraph 1.9-10
 http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf

<sup>&</sup>lt;sup>883</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P74-75, Paragraphs 412-418,

<sup>&</sup>lt;sup>884</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P4, Paragraph 1.9, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf</u>
<sup>885</sup> KCOM, Business Connectivity, Market Consultations/bcmr-2015/responses/UKCTA.pdf

<sup>2015/</sup>responses/Vodafone\_Summary\_of\_BCMR\_Instrument\_Errors.pdf <sup>887</sup> Virgin, Virgin Media's response to Ofcom's Business Connectivity Market Review Consultation -May 2015, 10 August 2015, P49, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Virgin\_Media.pdf

<sup>&</sup>lt;sup>889</sup> KCOM, *Business Connectivity Market Review KCOM response*, 31 July 2015, P18, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/KCOM.pdf

- that we set out the way in which a direction would be altered and the circumstances which would lead to this;
- the process by which we would consider a change to a direction and the timescales involved;
- that we provide examples of circumstances that would cause us to consider a change to a direction;
- that any change should require consultation; and
- whether any decision around a change in direction is appealable.<sup>890</sup>

#### Our considerations and decisions

- 13.645 We have decided to impose a new quality of service SMP service condition (notified at Annex 35), which requires BT, in complying with the network access conditions we have decided to impose, to comply with any such quality of service requirements as we may from time to time direct.
- 13.646 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 request 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. Section 87(6)(b) further provides that such SMP conditions may also include a condition requiring the dominant provider to publish, in such manner as Ofcom may from time to time direct, all such information as they may direct for the purposes of securing transparency in relation to such matters. 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 condition will assist in securing that network access is provided within a reasonable period of time.
- 13.647 With regard to Virgin's comments, as set out in this section and Annex 12, our assessment of the evidence clearly shows that Openreach's service performance in the provision of Ethernet services has deteriorated materially and is inadequate. The regulatory measures we have imposed are, for the reasons we have set out, appropriate and proportionate to address Openreach's incentives to meet levels of quality of service that will deliver significant improvements in Ethernet service provisioning for downstream providers and customers.
- 13.648 In response to UKCTA and KCOM's comments about how we would conduct any enforcement action, we explained in the May 2015 BCMR Consultation, that our approach to the enforcement of, amongst other things, SMP services conditions set under section 45 of the Act is set out in our published guidelines for the handling of

<sup>&</sup>lt;sup>890</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P74-75, Paragraphs 412-418, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf</u>

competition complaints and complaints concerning regulatory rules.<sup>891</sup> With regard to UKCTA's request for details on how any fines would be used for enforcement, we refer (as we did in the May 2015 BCMR Consultation) to our Penalty Guidelines.<sup>892</sup>

- 13.649 In relation to Openreach's requests for clarity about the process for making changes to a direction, we refer to the provisions of section 49 and, with regard to appeals, section 192 of the Act.
- 13.650 We have taken account of the detailed submissions prepared by Towerhouse LLP for Vodafone on our legal instruments.

#### Legal tests

- 13.651 In deciding to impose this new SMP services condition, we have taken into account the factors set out in section 87(4) of the Act. In particular, we consider that the imposition of a condition which provides for Ofcom to direct BT to comply with such requirements as we consider to be necessary to ensure, amongst other things, an appropriate level of quality of service in the provision of network access so as to secure effective competition in the long term.
- 13.652 We have considered our duties under section 3 of the Act. We consider that, by ensuring that BT provides such entitlements as we may direct as regards quality of service (in particular the minimum performance standards and transparency of performance metrics we have decided to impose as set out below) in relation to the provisioning of Ethernet services and repair of faults, the condition will further the interests of consumers in relevant markets by promoting competition.
- 13.653 We have considered the Community requirements set out in section 4 of the Act. We consider that the condition 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.
- 13.654 We also consider that the condition meets the criteria in section 47(2) of the Act. The condition is:
  - objectively justifiable, in that its purpose is to ensure that we can intervene where appropriate to ensure that key services supporting network access are of an acceptable quality of service. The evidence available to us indicates that in the absence of other effective incentive mechanisms further regulation is necessary to secure an appropriate level of service by BT and the condition addresses this issue;
  - not unduly discriminatory, as it is imposed only for BT and no other operator has been found to hold a position of SMP in the wholesale markets;

<sup>891</sup> Ofcom, Enforcement Guidelines, Ofcom's guidelines for the handling of competition complaints and complaints concerning regulatory rules, Guidelines, 25 July 2012, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/draft-enforcement-guidelines/annexes/Enforcement\_guidelines.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/draft-enforcement-guidelines/annexes/Enforcement\_guidelines.pdf</a>.
 <sup>892</sup> Ofcom, Penalty guidelines - s.392 Communications Act 2003, 3 December 2015,

<sup>&</sup>lt;sup>os2</sup> Ofcom, *Penalty guidelines - s.392 Communications Act 2003*, 3 December 2015, <u>http://www.ofcom.org.uk/content/about/policies-guidelines/penalty/Penalty\_guidelines\_2015.pdf</u>

- proportionate, in that we have identified the need for further regulation and the condition enables us to target specifically those areas for which regulation is required but with sufficient flexibility to address future uncertainties. We consider that the condition is the least onerous means of effectively achieving the objective we have identified of securing a minimum level of quality of service in the delivery of key aspects of network access and associated transparency measures to provide for both compliance with the standards and to complement other interventions to address discriminatory conduct. We have demonstrated that without effective intervention the level of service by Openreach has fallen below what we consider to be acceptable levels; and
- transparent, in that, in relation to what it is intended to achieve, it is the clear intention of the condition to ensure that we can direct BT to provide a level of assured quality of service in relation to key factors of importance to CPs that buy these wholesale inputs and it is clear what those standards are.
- 13.655 For the reasons set out above, we consider that the quality of services SMP services condition is appropriate to address the concerns we have about network access, in line with section 87(1) of the Act.

#### Consistency with the BEREC Common Position

13.656 In making these decisions we have also taken utmost account of the BEREC Common Position.<sup>893</sup> In relation to the objective of achieving a reasonable quality of access products (operational aspects), the BEREC Common Position identifies, among other things, as best practice that NRAs should require SMP operators to provide a defined level of service (BP22) to address the concern that access products may not be of reasonable quality and service levels may not be comparable between that provided to third parties and to the SMP operator's own downstream operations.

#### Direction imposing minimum performance standards for Ethernet services

#### Aim and effect of regulation

- 13.657 In competitive markets the quality of service of leased lines services would be based on the commercial judgement of individual companies and could be expected to meet the requirements of end users of the services, as providers would be incentivised to meet customer requirements in order to maximise sales. However, where a provider has SMP, competition cannot be expected to be an effective constraint and the dominant provider would have the ability and incentive to offer inadequate quality of service in order to increase profitability.
- 13.658 *Ex ante* regulation may therefore be desirable to specify the quality of service provided by the dominant provider.

<sup>&</sup>lt;sup>893</sup> BEREC Common Position on best practice in remedies imposed as a consequence of a position of Significant Market Power in the relevant markets for wholesale leased lines, BoR (12) 126, <u>http://berec.europa.eu/eng/document\_register/subject\_matter/berec/regulatory\_best\_practices/comm\_on\_approaches\_positions/1096-revised-berec-common-position-on-best-practices-in-remedies-as-a-consequence-of-a-smp-position-in-the-relevant-markets-for-wholesale-leased-lines.</u>

# Our proposals

- 13.659 In the May 2015 BCMR Consultation we notified our proposal to impose a direction imposing minimum performance standards for Ethernet services pursuant to the new quality of service SMP services condition in each of the following wholesale markets in which we provisionally found BT to hold SMP:
  - the wholesale market for CISBO in the London Periphery area; and
  - the wholesale market for CISBO in the UK excluding the CLA, the London Periphery area and the Hull area.
- 13.660 The proposed direction requires BT to comply with minimum performance standards in respect of the provision and repair of Ethernet services as notified in Annex 7 of the May 2015 BCMR Consultation.
- 13.661 We asked stakeholders:

Question 13.16: Do you agree that it is appropriate to assess compliance with the proposed minimum standards on an annual basis? If not, please explain why.

## Proposal to assess compliance annually

Stakeholders' responses

- 13.662 GTC<sup>894</sup> and Sohonet<sup>895</sup> agreed with our proposal.
- 13.663 Six Degrees Group hoped that an annual assessment would be sufficient but considered that 6 monthly assessments may be better to monitor the effectiveness of the new requirements.<sup>896</sup>

13.664 [×

≫l<sup>897</sup>

13.665 The PAG disagreed and considered that compliance assessment should be quarterly and that fines should be applied automatically rather than through a process of investigation. It argued that this would ensure Openreach has the appropriate resources all year round.<sup>898</sup>

<sup>898</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P38, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Passive\_Access\_Group.pdf

 <sup>&</sup>lt;sup>894</sup> GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P17, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf</u>
 <sup>895</sup> Sohonet Limited, P7, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>

 <sup>&</sup>lt;sup>895</sup> Sohonet Limited, P7, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sohonet\_Limited.pdf</u>
 <sup>896</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity

<sup>&</sup>lt;sup>896</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity Market Review 2015, 23 July 2015, P13, Paragraph 2.40,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf
<sup>897</sup> [><

- 13.666 TalkTalk considered that there was a case for considering shorter compliance periods such as each 3 months. It considered that the impact of weather on the loading of Openreach's copper engineering workforce was the main rationale for annual compliance assessments for copper services and that this has much less impact on Ethernet services. TalkTalk added that shorter compliance periods were beneficial in identifying and addressing non-compliance quickly.
- 13.667 Hyperoptic were concerned that annual compliance was too infrequent to have the desired impact on Openreach's delivery behaviour and also recommended quarterly measures.<sup>899</sup>
- 13.668 [><

<sup>900</sup>[><

- 13.669 Vodafone set out its reasons as to why compliance should be assessed on a quarterly basis.<sup>901</sup> However, Vodafone subsequently modified its response indicating that its intention was not that Openreach should be necessarily held to account every quarter but that CPs should have visibility of its performance with regard to its regulatory obligations.<sup>902</sup>
- 13.670 Openreach supported our proposal to assess compliance with the proposed minimum standards on an annual basis. In addition to the reasons we set out, Openreach argued that shorter assessment periods would require it to resource its delivery teams to an inefficiently high level which it would expect to recover through its regulated prices it charges for Ethernet services.<sup>903</sup>

#### Our considerations and decisions

- 13.671 Whereas we note that some CPs argued for a shorter period, quarterly being the most popular<sup>904</sup>, the rationale provided by CPs did not, in the main, address the practical concerns we had set out in our May 2015 BCMR Consultation as the reason for proposing an annual assessment.
- 13.672 TalkTalk did set out arguments as to why a year-long period to smooth out peaks and troughs due to weather could be largely discounted for Ethernet quality of service. We had not suggested that weather was a particular factor in our thinking. Rather, the combination of relatively low volumes of Ethernet orders combined with ordering cycles, seasonality and the mix of order complexity meant that more frequent monitoring was, in our view, likely to skew results.

≫]

<sup>&</sup>lt;sup>899</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P20, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf</u> <sup>900</sup> [3

 <sup>&</sup>lt;sup>901</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P62, <a href="http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf">http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</a>
 <sup>902</sup> Email from Karen Wray of Vodafone to Warwick Izzard and Derek Stagg of Ofcom dated 6 November 2015.

<sup>&</sup>lt;sup>903</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P76-78, Paragraphs 419-428,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>904</sup> Some CP's suggested other periods such as monthly and six monthly.

- 13.673 We therefore remain of the view that it is appropriate to review Openreach's compliance with our minimum standards on an annual basis.
- 13.674 With regard to Vodafone's comments, we set out decisions regarding transparency and KPI requirements below.

#### Proposal to direct BT to comply with our minimum performance standards

13.675 We asked stakeholders:

Question 13.17: Do you agree with our proposals to direct BT to comply with minimum performance standards for setting initial contractual delivery dates, delivery against initial contractual delivery dates, fault repair performance and overall mean time to provide? If not, please explain why and set out your proposed alternative.

#### Stakeholders' responses

13.676 Sohonet<sup>905</sup>, Six Degrees Group<sup>906</sup>, GTC<sup>907</sup> agreed with our proposals. The PAG also agreed save in relation to its proposed improvements in response to other consultation questions.908

13.677 [><

**≫1**<sup>909</sup>

13.678 Hyperoptic agreed with our overall proposals but referred to its suggestions to tighten up controls above the lower percentile. It also proposed that we enforce order progress standards in a form and to a timescale agreed by industry.<sup>910</sup>

13.679 [×

**≫l**911

13.680 Vodafone agreed that we had set an appropriate framework for the minimum performance standards for both provisioning and repair. It considered that our standards represent the worst case rather than the expected standard of performance. Vodafone believed it was right that contractual targets should contain higher targets with the regulatory obligations providing a safety blanket and that we

2015/responses/Passive\_Access\_Group.pdf <sup>909</sup> [×

×1

<sup>&</sup>lt;sup>905</sup> Sohonet Limited, P7, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sohonet\_Limited.pdf 906 Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity

Market Review 2015, 23 July 2015, P13, Paragraph 2.41,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six Degrees.pdf GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P17, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf <sup>908</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and

Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P38, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>&</sup>lt;sup>910</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P21, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf

should be clear with BT that its ambition and operational plans should be for levels in excess of the minimum. Vodafone also considered it important that the deemed consent changes imposed in the BCMR are reflected in Openreach's contract within a minimal period (3 months).<sup>912</sup>

- 13.681 Vodafone provided detailed submissions prepared by Towerhouse LLP on our proposed legal instruments.913
- 13.682 Openreach stated that it understood our view that we need to introduce minimum standards in order to ensure Ethernet services are delivered to consistently acceptable levels. Openreach set out a number of aspects of our proposals which it agreed with in particular the main considerations being in relation to speed of delivery and certainty of delivery.
- 13.683 However, Openreach had a number of concerns which it had set out in its responses to Question 13.10 to 13.14. In particular it considered that:
  - the Year 1 certainty target should be 72%;
  - the Year 3 certainty target of 90% is too high;
  - the proposal to link speed and certainty measures would, in relation to the existing provisioning process, cause failure against the standard where any delay arises after KCI3 and also undermines the whole DOJ approach to provisioning:
  - the proposals to include all of the non-customer caused delay on 'Openreach's clock' is inherently unfair since it includes factors which are outside of Openreach's control;
  - the lower percentile proposals are subject to risk of failure due to changes in the category mix which is outside Openreach's control; and
  - the upper percentile proposals are likely to be difficult to achieve and need to be revised to better account for current levels of performance and realistic improvement plans.
- 13.684 Openreach also set out its arguments about the proposal to measure compliance based on completed rather than placed orders and the impact this has on order inflight before the standards take force.
- 13.685 In relation to repair, Openreach considered that there is any need to impose minimum standards but, if we decide to proceed with this, the level should be set at 91% with an appropriate allowance for MBORC (2.5%).914

<sup>&</sup>lt;sup>912</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review, July 2015, P62, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf <sup>913</sup> Towerhouse LLP, Vodafone–Errors in Ofcom Draft BCMR Legal Instruments, 22 September 2015, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

<sup>2015/</sup>responses/Vodafone\_Summary\_of\_BCMR\_Instrument\_Errors.pdf <sup>914</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P79-81, Paragraphs 429-439,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

#### Our considerations and decisions

- 13.686 Section 87(3)(a) of the Act authorises the setting of SMP services conditions which require a dominant provider to give such entitlements as Ofcom may from time to time direct, as respects the provision of network access to the relevant network. Section 87(5)(b) provides that such conditions may include provision 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. Section 87(6)(b) further provides that such SMP conditions may also include a condition requiring the dominant provider to publish, in such manner as Ofcom may from time to time direct, all such information as they may direct for the purposes of securing transparency in relation to such matters.
- 13.687 The issues raised by stakeholders above concern the setting of our minimum standards rather than their implementation by way of the proposed direction notified in the May 2015 BCMR Consultation. Our responses to these issues and our reasoning and evidence for our conclusions are set out in the preceding subsections.
- 13.688 We have taken account of the detailed submissions prepared by Towerhouse LLP for Vodafone on our legal instruments.

#### Legal tests

- 13.689 We have set out above our reasons as to why we consider the SMP services condition regarding quality of service meets the relevant tests set out in the Act.
- 13.690 For the reasons set out above and summarised below, we are further satisfied that the direction on minimum standards for Ethernet services (as notified and set out in Annex 35) meets the relevant tests set out in the Act.
- 13.691 We consider that the direction we have decided to impose on BT to comply with quality of service requirements in the form of minimum standards for Ethernet services, meets our duties in the Act including our general duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the direction is aimed at promoting competition and securing efficient and sustainable competition for the maximum benefit of consumers by ensuring that BT provides a minimum level of performance in key areas of importance to its customers and, having regard to the opinions of consumers in the relevant markets, their end users.
- 13.692 Section 49 of the Act requires that we must be satisfied that our direction is objectively justifiable, non-discriminatory, proportionate and transparent. We consider that the direction on minimum standards direction is:
  - objectively justifiable, in that it aims to ensure that BT provides its customers with a minimum level of quality of service performance over the market review period which we consider, in light of our assessment of BT's past performance, is justifiable in terms of a necessary entitlement to access seekers in relation to the provision of network access (in particular addressing Openreach's performance in the speed and certainty in its provision of wholesale Ethernet services to CPs) and also for the purposes of ensuring that Openreach's performance in fault repair remains at acceptable levels;
  - not unduly discriminatory, as it is imposed only on BT and no other operator has been found to hold a position of SMP in these markets;

- proportionate, because it only directs BT to comply with the minimum measures which we consider are required to ensure that it provides at least a minimum level of provisioning and fault repair performance which we consider is reasonable and appropriate in the circumstances; and
- transparent, in that it is clear in its intention that BT is required to provide a level of quality of service above the minimum standards we have decided to impose that it is directed to provide.
- 13.693 For the reasons set out above, we consider that the minimum performance standard direction is appropriate to address the concerns we have identified and in line with section 87 of the Act.

## Consistency with the BEREC Common Position

13.694 In making these decisions, we have also taken utmost account of the BEREC Common Position. In relation to the objective of achieving a reasonable quality of access products (operational aspects), we have noted above that the BEREC Common Position identifies, among other things, as best practice that NRAs should require SMP operators to provide a defined level of service (BP22) to address the concern that access products may not be of reasonable quality and service levels may not be comparable between that provided to third parties and to the SMP operator's own downstream operations.

#### Decisions regarding transparency as to quality of service

#### Aim and effect of regulation

- 13.695 In competitive markets the quality of service of leased lines services would be based on the commercial judgement of individual companies and could be expected to meet the requirements of end users of the services, as providers would be incentivised to meet customer requirements in order to maximise sales. However, where a provider has SMP, competition cannot be expected to be an effective constraint and the dominant provider would have the ability and incentive to offer inadequate quality of service in order to increase profitability.
- 13.696 In addition, vertically integrated SMP operators have the ability to favour their own downstream business over third party CPs by differentiating on price or terms and conditions. This discrimination can also take the form of variations in quality of service (either in service provision and maintenance or in the quality of network service provided by the dominant provider to external providers compared to its own retail operations). This has the potential to distort competition at the retail level by placing third party CPs at a disadvantage in terms of the services they can offer consumers to compete with the downstream retail business of the vertically integrated operator.
- 13.697 *Ex ante* regulation may therefore be desirable to provide transparency about the quality of service provided by the dominant provider.

# Our proposals

- 13.698 We explained in the May 2015 BCMR Consultation that BT is currently subject to a requirement to publish such quality of service information that Ofcom may from time to time direct.<sup>915</sup> We proposed not to re-impose this SMP condition.
- 13.699 We set out proposals to direct BT to provide quality of service information in the form of key performance indicators (KPIs) pursuant to the new quality of service SMP services condition in each of the following wholesale markets in which we provisionally found BT to hold SMP:
  - the wholesale market for CISBO in the London Periphery area; and
  - the wholesale market for CISBO in the UK excluding the CLA, the London Periphery area and the Hull area.
- 13.700 The proposed direction was notified in Annex 7 of the May 2015 BCMR Consultation.
- 13.701 Our proposed KPI Direction provides for transparency of quality of service information for reasons which are not limited to addressing concerns regarding discriminatory conduct.
- 13.702 We believed that there are a number of reasons why, in this review, it is appropriate to direct BT to provide specified performance metrics.
- 13.703 Firstly, we had proposed to direct BT to comply with minimum performance standards over the course of this forward looking review. There is therefore a requirement for us to monitor BT's compliance with these standards and also provide for transparency of BT's compliance with these measures for both CPs and end users.
- 13.704 Secondly, we considered that it was also appropriate to monitor and provide visibility of BT's performance in areas which we had not proposed to intervene by imposing *ex ante* minimum standards but which may nevertheless be of potential concern to us, CPs and/or end users.
- 13.705 Thirdly, we considered that requiring BT to publish performance metrics by customer furthers our proposed remedies to address concerns regarding discriminatory conduct and enable CPs to determine whether the service they receive from BT is equivalent to that provided by BT to its own retail divisions.

# Proposed KPIs

13.706 We proposed directing BT to provide a comprehensive set of quality of service performance statistics. Of these we proposed that BT publish a subset of the main KPIs on its wesbite intended to provide transparency to end users and other interested parties as to the performance achieved by Openreach in terms of key aspects of service delivery – namely, how long it takes for Ethernet services to be installed, delivery date certainty and fault repair performance. These reflect the key service issues identified by end users in the BDRC Quality of Service Report we commissioned as part of this review.

<sup>&</sup>lt;sup>915</sup> BT SMP Condition 8 in BCMR 2013.

- 13.707 Whilst we recognised that Openreach KPIs will not necessarily map on to the actual experience of end users (as Openreach operates at the wholesale level and the service end users receive will also reflect the performance of their own retail CP or other parties in the supply chain), we nevertheless considered that they will provide a useful means of making consumers aware of Openreach's underlying performance both nationally and at a regional level. In light of our regulation which requires Openreach to provide the same product or service to all CPs (including BT) on the same timescales, terms and conditions (including price and service levels) by means of the same systems and processes, and includes the provision to all CPs (including BT) of the same commercial information about such products, services, systems and processes, its performance affects all downstream CPs (whether they are divisions within BT Group or not) equivalently insofar as they consume such wholesale inputs from Openreach. We also noted that Openreach already publishes some statistics on its website on its performance in providing and repairing Ethernet services.
- 13.708 Table 13.28 below, sets out the KPIs we proposed are recorded, collated and made available by Openreach to (as identified in the accompanying notes to the table) the public, its customers (the CPs) and to Ofcom on a monthly basis and which we considered were reasonable and necessary in relation to, in particular, compliance monitoring and transparency to complement our proposed measures to address potential discriminatory behaviour. Where we proposed that KPIs are broken down by CP, we proposed requiring that BT makes available such per CP KPIs to the relevant CP, whereas all KPIs are to be made available to us.

KPI Direction	KPI requirement	All Orders (i) (iii)	KPIs split by (ii) (iv)	Num. & den. (v)
KPI (i)	Average time to provide Mean Time To Provide (MTTP) excluding customer caused delays of completed orders for each month	Y (P)	R (P) CP	Y*
KPI (ii)	Fault repair performance The percentage of registered faults in each month that were fixed within 5 hours	Y (P)	R (P) CP	Y
KPI (iii)	<b>Delivery date certainty</b> The percentage of completed orders within each month that are completed by their initial contractual delivery date excluding customer caused delays	Y (P)	R (P) CP	Y
KPI (iv)	Time To Provide (TTP) lower percentile limit The percentage of completed orders within each month that are completed by the lower percentile limit excluding customer caused delays	Y (P)	R (P) CP	Y
KPI (v)	<b>TTP upper percentile limit</b> The percentage of completed orders within each month that exceed the upper percentile limit excluding customer caused delays	Y (P)	R (P) CP	Y

#### Table 13.28: Proposed KPIs (see table notes (i) to (v) below)

KPI (vi)	<b>Initial contractual delivery date MTTP</b> The mean initial contractual delivery date (CDD) excluding customer caused delays of completed orders for each month	Y	R CP	Y*
KPI (vii)	Initial CDD lower percentile The percentage of completed orders within each month where the initial CDD issued for those orders does not exceed the TTP lower percentile limit excluding customer caused delays	Y	R CP	Y
KPI (viii)	Initial CDD upper percentile The percentage of completed orders within each month where the initial CDD issued for those orders exceeds the TTP upper percentile limit excluding customer caused delays	Y	R CP	Y
KPI (ix)	Monitoring the tail The MTTP excluding customer caused delays for completed orders within each month where the TTP of those orders exceeded the TTP upper percentile limit	Y	R CP PC	Y*
KPI (x)	Monitoring the tail extremities The maximum TTP excluding customer caused delays of completed orders within each month	Y	R CP PC	
KPI (xi)	Order validation The percentage of completed orders within each month that were validated within the applicable SLA	Y	СР	Y
KPI (xii)	<b>Performance in issuing initial CDDs</b> The percentage of completed orders within each month where the initial CDD was issued within the applicable SLA	Y	СР	Y
KPI (xiii)	<b>Performance against final CDD</b> The percentage of completed orders within each month that were completed by their final CDD	Y	СР	Y
KPI (xiv)	<b>Changes to CDDs</b> The percentage of completed orders within each month that were subject to a CDD excluding customer caused changes	Y	СР	Y
KPI (xv)	Average number of changes to CDDs The average number of changes to the CDD after its first issue excluding customer caused changes for completed orders within each month that were subject to a CDD change after the initial CDD was issued.	Y	СР	Y*
KPI (xvi)	<b>New orders</b> The volume of orders validated and accepted each month overall, by order category and by CP	Y	СР	

KPI (xvii)	Orders completed The volume of orders completed each month	Y	R CP PC	
KPI (xviii)	<b>Volume of faults</b> The volume of faults registered on BT OSS during the relevant month	Y	R CP	
KPI (xix)	<b>Cablelink MTTP</b> The MTTP excluding customer caused delays of completed Cablelink orders for each month	Y	СР	Y*

#### Table notes:

- i) "Y" means yes, the KPI is required and must be provided. "(P)" adjacent to either Y or R means the KPI for all orders or the regional subset of orders must be published to the public on an Openreach website.
- ii) "R" means the KPI must be provided for the eight current general manager field engineer regions<sup>916</sup> used for the delivery of Ethernet services. "CP" means the KPI must be provided for each CPs' orders.<sup>917</sup> "PC" means the KPI must be provided for each of the applicable provision categories.
- iii) "All Orders" refers to the total of provision orders for EAD, EAD LA and Cablelink or a specifically defined subset of these for the whole of the UK (i.e. all regions).
- iv) For the avoidance of doubt we require one, two or three separate series of values as appropriate when we ask for the KPI values to be split by region, CPs or provision category. We are not requesting a two or three dimensional matrix of values when we ask for the KPI values to be split by two or three of the factors identified by regions, CPs or provision category.
- v) Num. and den. mean numerator and denominator respectively. For the *average* values (marked as '\*'), we require for each month the numerator representing the sum of the product of the time values (or number of changes) and the quantities of product exhibiting that time values (or number of changes) while for the denominator we require the volume of products over which the average is taken.
- 13.709 We asked stakeholders:

Question 13.18: Do you agree with our proposals to direct BT to provide the KPIs we have specified? If not, please explain why, and set out your proposed alternative.

<sup>&</sup>lt;sup>916</sup> We refer to an email from Openreach dated 22 April 2015 enclosing a map of the current Ethernet field general manager patches and identifies eight regions: (1) Northern Ireland, (2) North East & Scotland, (3) Midlands & North West, (4) Wales, Marches & Northern Home Counties, (5) East of England, (6) London, (7) South East, and (8) South West.

<sup>&</sup>lt;sup>917</sup> For practical purposes, each CPs' orders should be taken to mean the top nine CPs by order volume and a tenth category aggregating all remaining CPs.

# Stakeholders' responses

13.710 Sohonet<sup>918</sup>, Six Degrees Group<sup>919</sup> and GTC<sup>920</sup> agreed with our proposals.

13.711 [×

×]<sup>921</sup>

13.712 [×

<sup>922</sup>[×

- 13.713 Hyperoptic agreed with our proposals but referred to its response to question 13.13 in which it proposed a further 'Middle Percentile' to ensure Category 2-4 orders are also improved.<sup>923</sup>
- 13.714 BT (in its separate response from Openreach) supported our proposal to require publication of Ethernet KPIs. It said that our proposals chimed with Openreach's existing strategy to be transparent in relation to underlying service performance.<sup>924</sup>
- 13.715 Whereas we note SFT did not respond specifically to our KPI proposals, we note that it expressed concern about Openreach's delivery of effective service in Scotland in particular rural businesses.<sup>925</sup>
- 13.716 The PAG was concerned that services such as OSA were not covered by our standards or KPIs. Specifically, in relation to transparency the PAG was unclear why we had proposed that only a subset of KPIs ((i) to (v)) were required to be published. It considered that our rationale for publication to provide transparency to end users and other interested parties applied equally to all KPIs and the additional

<sup>921</sup> [≻

922 [>

≫]

×]

<sup>&</sup>lt;sup>918</sup> Sohonet Limited, P7, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Sohonet\_Limited.pdf

<sup>&</sup>lt;sup>919</sup> Six Degrees Group, *Six Degrees Group response to Ofcom Business Connectivity Market Review 2015*, 23 July 2015, P13, Paragraph 2.42,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf 920 GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P17, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf 921 rsc

<sup>&</sup>lt;sup>923</sup> Hyperoptic, *Response to Business Connectivity Market Review May 2015*, 31 July 2015, P21, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf</u>

<sup>&</sup>lt;sup>924</sup> BT, *BT*'s response to Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines" Summary and Part A: response to Ofcom's overall approach and consultation questions, 31 July 2015, P9, Paragraph 1.30,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/BT\_Part\_A.pdf <sup>925</sup> SFT, Ofcom Business Connectivity Market Review Response from Scottish Futures Trust, August 2015, P6, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Scottish Futures Trust.pdf

transparency would be helpful and increase confidence in the quality of service regime.<sup>926</sup>

- 13.717 Sky considered that our proposed set of KPIs would provide comprehensive evidence of Openreach's performance against the standards. However, Sky considered that Openreach should also be required to publish KPIs covering Mean Time Between Failure for each individual Ethernet and OSA circuit as well as aggregated for each CP so a comparison could be made to the industry average.
- 13.718 Sky made a more general point that transparency and monitoring as a means of encouraging improved quality of service could be improved if Openreach was required to report regularly and extensively to its customers.<sup>927</sup>
- 13.719 TalkTalk argued that KPIs should be reported separately for each product in order to help identify discrimination (noting in particular variants of EAD will BT purchases proportionally more of) and to help ensure BT is not gaming the standards by only improving quality for products to which targets apply.
- 13.720 TalkTalk said that KPIs should be separately provided for BT CPs and non-BT CPs to identify and therefore help avoid discrimination. It also said it was not clear whether the KPIs will be measured based on accepted or completed orders noting that some orders accepted in one year would be completed the next year.<sup>928</sup>
- 13.721 Although not specifically in response to KPIs, we note that TalkTalk expressed concerns about Openreach gaming and manipulating the time taken to validate orders, saying that Openreach had openly stated that it was 'throttling' orders into the pipeline to reduce pressure on planning. It suggested that Openreach's activities could be prevented by applying the standards from order submission rather than validation.<sup>929</sup>
- 13.722 Vodafone listed the following points about KPIs which it considered should be added or amended:
  - monitoring the tail should include the volume and percentage of work in progress (WIP);
  - order validation and performance to issuing CDDs would require monitoring in real time otherwise the metrics we proposed could not be identified before they had happened;

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>929</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P46, Paragraph 6.34-35,

<sup>&</sup>lt;sup>926</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P38, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Passive\_Access\_Group.pdf

<sup>2015/</sup>responses/Passive\_Access\_Group.pdf <sup>927</sup> Sky, Sky's response to Ofcom's Business Connectivity Market Review consultation dated 15 May 2015 and Business Connectivity Market Review consultation on leased lines charge controls and dark fibre pricing dated 12 June 2015, 7 August 2015, P17, Paragraph 9.5-6,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sky.pdf <sup>928</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P47, Paragraph 6.39-40,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf

- average number of changes to CDD should include the measurement of the minimum and maximum number of date changes per order;
- KPI update frequency post KCI 3 to require statistics on all KCIs in any existing process;
- repeat fault rates to require statistics on the number of circuits going faulty within 28 days;
- Dead on Arrival (DOA) rates to require the number of DOA faults raised per month and annually;
- Mean Time To Repair to require the reporting of the average out of service time on all genuine Openreach faults (excluding customer clears);
- fault rate requiring the percentage of the install base experiencing a fault; and
- repairs impacted by MBORC.
- 13.723 Vodafone also listed other KPIs in its response that it had proposed in industry negotiations to identify jeopardy circuits which it considered be added to our KPIs.<sup>930</sup>
- 13.724 Vodafone provided detailed submissions prepared by Towerhouse LLP on our proposed legal instruments.<sup>931</sup>
- 13.725 Openreach said it was supportive of transparency referring to its own suite of voluntary publications. As regards our proposals, Openreach was generally supportive subject to some comments:
  - KPIs to be made public should be "derived" from the information required in the main KPI set to provide for more flexibility when targeting a public audience an approach Openreach and Ofcom had adopted in the FAMR;
  - public KPIs should be published quarterly;
  - we should allow Openreach 15 working days after the end of each relevant month to send out the KPIs;
  - that any change to the regional split may require clear definition and additional time to create and test reporting mechanisms;
  - we have not found BT to have SMP in the CLA and on certain routes which should be excluded from the KPI requirements;
  - that Openreach will be parallel running different provisioning processes from which the KPIs will need to be aggregated;

 <sup>&</sup>lt;sup>930</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P63-64, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>
 <sup>931</sup> Towerhouse LLP, Vodafone–Errors in Ofcom Draft BCMR Legal Instruments, 22 September 2015, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>2015/responses/Vodafone Summary of BCMR Instrument Errors.pdf

- that Openreach will require time to build new reporting specifications on EMP: and
- that we should be amenable to backdated KPIs where required reports may be • delayed and where this is possible.932

#### Our considerations and decisions

- 13.726 Section 87(3)(a) of the Act authorises the setting of SMP services conditions which require a dominant provider to give such entitlements as Ofcom may from time to time direct, as respects the provision of network access to the relevant network. Section 87(5)(b) provides that such conditions may include provision 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. Section 87(6)(b) further provides that such SMP conditions may also include a condition requiring the dominant provider to publish, in such manner as Ofcom may from time to time direct, all such information as they may direct for the purposes of securing transparency in relation to such matters.
- 13.727 We have considered stakeholders' comments regarding the KPIs which we should require Openreach to provide and summarise our decisions in Table 13:29 below.

СР	KPI	Decision	Reason
[⊁]	[⊁]	Reject	We do not consider [≫] would be appropriate or proportionate.
[×]	[×]	Reject	We do not consider this would be appropriate or proportionate.
Hyperoptic	Suggested Middle Percentile.	Reject	We do not consider this would be appropriate or proportionate.
SFT	Expressed concern about Openreach's delivery of effective service in Scotland in particular rural businesses.	Accepted	We have decided to report specified KPIs by nation / region (including Scotland) as we proposed.
PAG	OSA not covered by KPIs.	Accepted	We have decided Openreach should provide certain KPIs in respect of its optical products.
	All KPIs public.	Rejected	We do not consider this would

<sup>&</sup>lt;sup>932</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response. P82-84. Paragraphs 440-457.

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

			be appropriate or proportionate.
Sky	Suggested publishing Mean Time Between Failure (MTBF) for each individual Ethernet and OSA circuit as well as aggregated for each CP so a comparison could be made to the industry average.	Rejected	We do not consider this would be appropriate or proportionate.
TalkTalk	Suggested KPIs should be reported separately for each product to help identify discrimination.	Rejected	We do not consider this would be appropriate or proportionate.
	Suggested KPIs should be separately provided for BT CPs and non-BT CPs to identify discrimination.	Accepted	We have decided Openreach should provide certain KPIs by BT / non-BT CPs.
Vodafone	Suggested monitoring the tail should include the volume and percentage of WIP. Also suggested real time monitoring between order validation and CDD issue otherwise poor performance could not be identified before it had happened.	Rejected	We do not consider this would be appropriate or proportionate.
	Suggested measurement of the minimum and maximum number of CDD changes per order.	Rejected	We do not consider this would be appropriate or proportionate.
	Suggested measurement of update frequency of all KCIs (post KCI3) in any existing process.	Rejected	We do not consider this would be appropriate or proportionate.
	Suggested measurement of number of circuits going faulty within 28 days of repair to indicate level of repeat faults.	Rejected	We do not consider this would be appropriate or proportionate.
	Suggested measurement of number of Dead on Arrival (DOA) faults per month and	Rejected	We do not consider this would be appropriate or proportionate.

	annually		
	annually.		
	Suggested measuring the average out of service time on all genuine Openreach faults (excluding customer clears) to indicate Mean Time To Repair.	Rejected	We do not consider this would be appropriate or proportionate.
	Suggested measuring percentage of the installed base experiencing a fault.	Accepted	We have decided Openreach should provide the size of the installed base.
	Suggested measuring repairs impacted by MBORC.	Rejected	We do not consider this would be appropriate or proportionate.
Openreach	Suggested KPIs to be made public should be "derived" from the information required in the main KPI set.	Accepted	We consider this request reasonable, it would be disproportionate to require a completely different set of KPIs to be collected and processed.
	Suggested public KPIs should be published quarterly.	Accepted	We consider this request reasonable and consistent with FAMR KPIs.
	Suggested it be allowed 15 working days after the end of each relevant month to send out the KPIs.	Accepted	We consider this request reasonable and consistent with FAMR KPIs.
	Suggested any change to the regional split should be clearly defined by geographies etc.	Accepted	We have decided the KPIs will be reported for the following regions: Scotland Northern Ireland Wales England - North England - West England - East.

- 13.728 In summary, we have decided to impose the nineteen KPI requirements we proposed in the May 2015 BCMR Consultation with the exception of KPI (x) 'Monitoring the Tail Extremities' in Table 13.28 above which we have replaced with different requirements set out below. Further, we have modified KPI (vi) 'Initial contractual delivery date MTTP' in Table 13.28 above to that shown in KPI (viii) in Table 13.30 below.
- 13.729 In light of our further review and with regard to the comments made by stakeholders' in response to the May 2015 BCMR Consultation, we have decided that it is appropriate and proportionate to impose further KPI requirements.

- 13.730 In light of the reported changes to Openreach's service delivery organisation, we have decided to change the national / regional breakdown. We consider that these changes provide a clearer view of performance in Scotland, Wales, Northern Ireland and three regions of England relative to our proposals in the May 2015 BCMR Consultation and in a manner which is not unduly burdensome on Openreach in light of its organisational changes.
- 13.731 In respect of the breakdown of KPIs, we have decided that it is appropriate to require BT to provide a split by BT and non-BT CPs for the purposes of providing transparency concerning potential discriminatory conduct.
- 13.732 We have also decided, in light of our decisions regarding the treatment of orders validated but not completed prior to our minimum standards coming into force at paragraph 13.591 above, to require Openreach to include performance information concerning in-flight orders as set out in Annex 35. We consider this additional information is necessary and proportionate for the purposes of, in particular, monitoring lead time minimum standard compliance in Year 1.
- 13.733 We have further decided that it is appropriate to require Openreach to provide certain performance information in respect of the provision and repair of its optical products for the purposes of transparency. Whereas we have decided not to include these products within our minimum standards, we are nevertheless concerned (as a number of CPs commented) that Openreach could deprioritise its quality of service in respect of these products as set out in paragraph 13.241 above.
- 13.734 We have decided that it is appropriate to require Openreach to provide further information regarding the performance and composition of orders in relation to the lower percentile. As set out in paragraph 13.586 above, we are concerned that Openreach may prioritise so-called Category 1 orders – i.e. orders characterised by short lead-times – at the expense of more orders with longer lead-times. We therefore consider it appropriate to require Openreach to provide us with information which will allow us to observe whether a reasonable balance is being maintained between lead time performance of these types of orders.
- 13.735 We have decided to replace KPI (x) 'Monitoring the Tail Extremities' in Table 13.28 above, with KPI (x) and (xi) in Table 13.30 below. For the reasons set out in the previous paragraph, we are particularly concerned about lead time performance and composition of orders in the tail. We therefore consider it proportionate and necessary to require Openreach to provide us with this enhanced information.
- 13.736 We have further decided to require Openreach to provide enhanced information concerning orders which are not validated within the applicable SLA as shown in KPI (xiii) in Table 13.30 below. As set out in paragraph 13.596 above, we are concerned that Openreach may, as a result of our minimum standards, be incentivised to delay order acceptance.
- 13.737 Alongside our decision to impose a requirement on Openreach to provide us with the average number of changes to CDDs (KPI (xvii), we have also decided to impose KPI (xviii) which requires Openreach to provide information on the average delay due to CDD changes excluding customer caused delay. This is because we consider it appropriate to require details of the delays associated with those CDD changes.
- 13.738 For the reasons set out in paragraph 13.264 above, we are concerned that excluding customer caused delay from our minimum standards may lead to incentives to attribute delays to customers. We have therefore decided that it is appropriate to

monitor the delays attributed by Openreach to the customer by the requirement in KPI (xix) in Table 13.30 below.

- 13.739 For the reasons set out in paragraph 13.567 above, we have decided to require Openreach to provide information as set out in KPI (xxvi) and (xxvii) in Table 13.30 below, to enable the monitoring of delays relating to traffic management and wayleaves.
- 13.740 At paragraph 13.346 *et seq* above, we set out our reasoning for requiring Openreach to provide us with information concerning forecasting as set out in KPI (xxiv) and (xxv) in Table 13.30 below.
- 13.741 We have decided that, in order to assess and monitor the extent of faults across its network, it is necessary and appropriate to require Openreach to provide information as to the size of the installed base of its Ethernet services as set out in KPI (xxviii) in Table 13.30 below.

KPI Direction	KPI requirement	UK	Split by Reg.	Split by CP	Split by Prov. Cat.	Split by BT / non- BT	Num. & den.	In- flight	OSA/ OSEA
KPI (i)	Mean time to provide (MTTP) The average Time To Provide (TTP) excluding customer caused delays of completed orders for each month	Y (P)	Y (P)	Y	Y	Y	Y*	Y	Y
KPI (ii)	Fault repair performance The percentage of registered faults in each month that were responded to within 5 hours	Y (P)	Y (P)	Y		Y	Y		Y
KPI (iii)	Delivery date certainty The percentage of completed orders within each month that are completed by their initial CDD excluding customer caused delays	Y (P)	Y (P)	Y	Y	Y	Y		Y
KPI (iv)	TTP lower percentile limit The percentage of completed orders within each month that are completed by the lower percentile limit excluding customer caused delays	Y (P)	Y (P)	Y		Y	Y	Y	Y
KPI (v)	Monitoring the TTP lower percentile performance The MTTP excluding customer caused delays for completed orders	Y	Y	Y	Y		Υ*	Y	

#### Table 13.30: Final KPI requirements (see table notes below)

	within each month where the TTP of those orders does not exceed the TTP lower percentile limit								
KPI (vi)	Monitoring the TTP lower percentile composition The number of completed orders within each month that are completed by the lower percentile limit excluding customer caused delays	Y		Y	Y			Y	
KPI (vii)	TTP upper percentile limit The percentage of completed orders within each month that exceed the upper percentile limit excluding customer caused delays	Y (P)	Y (P)	Y		Y	Y	Y	Y
KPI (viii)	Mean initial contractual delivery period The average initial contractual delivery period excluding customer caused delays of completed orders for each month	Y	Y	Y	Y	Y	Y*		Y
KPI (ix)	Monitoring the tail The MTTP excluding customer caused delays for completed orders within each month where the TTP of those orders exceeded the TTP upper percentile limit	Y	Y	Y	Y	Y	Y*	Y	
KPI (x)	Monitoring the percentile TTP of the tail extremities The percentile TTP excluding customer caused delay for completed orders within each month corresponding to the following percentiles:	Y	Y	Y	Y			Y	

KPI (xi)	Monitoring the composition of the tail extremities The number of completed orders which exceed the following TTP percentiles for all completed orders within the month, excluding customer caused delays: 95 <sup>th</sup> 96 <sup>th</sup> 96 <sup>th</sup> 97 <sup>th</sup> 98 <sup>th</sup> 99 <sup>th</sup> 99 <sup>th</sup> 99.5 <sup>th</sup>	Y	Y	Y			Y	
KPI (xii)	Order validation The percentage of completed orders within each month that were validated within the applicable SLA	Y	Y		Y	Y		Y
KPI (xiii)	Monitoring the order validation tails The number of completed orders within each month that were not validated within the following periods: applicable SLA applicable SLA plus 1 working day applicable SLA plus 2 working days applicable SLA plus 5 working days applicable SLA plus 5 working days applicable SLA plus 10 working days	Y	Y					
KPI (xiv)	Performance in issuing initial CDDs The percentage of completed orders within each month where the initial CDD was issued within the applicable SLA	Y	Y			Y		
KPI (xv)	Performance against final CDD The percentage of completed orders within each month that were completed by their final CDD	Y	Y			Y	Y	

KPI (xvi)	Changes to CDDs The percentage of completed orders within each month that were subject to a CDD change excluding customer caused changes	Y		Y			Y	Y	
KPI (xvii)	Average number of changes to CDD The average number of CDD changes experienced by each completed order which is subject to a CDD change within the month, excluding customer caused changes and where the average is taken over the number of orders which are subject to a CDD change.	Y		Y	Y	Y	Υ*	Y	
KPI (xviii)	Average delay due to CDD changes The average delay due to CDD changes experienced by each completed order which is subject to a CDD change within the month, excluding customer caused changes and where the average is taken over the number of orders which are subject to a CDD change.	Υ		Υ	Υ	Υ	Υ*	Y	
KPI (xix)	Mean customer caused delay The average delay caused by customers in completed orders each month	Y		Y	Y		Y*	Y	
KPI (xx)	<b>New orders</b> The number of orders validated and accepted each month	Y		Y					
KPI (xxi)	Orders completed The number of orders completed each month	Y	Y	Y	Y	Y		Y	
KPI (xxii)	Volume of faults The number of faults registered on BT OSS during the relevant month	Y	Y	Y					

KPI (xxiii)	<b>Cablelink MTTP</b> The MTTP excluding customer caused delays of completed Cablelink orders for each month	Y		Y		Y*	Y	
KPI (xxiv)	Order volume forecast from CPs The number of orders forecast each month received by Openreach from CPs	Y		Y				
KPI (xxv)	Openreach aggregated order volume forecast The consolidated and aggregated number of orders forecast by Openreach each month for the purpose of setting its order completion targets and resource levels	Y						
KPI (xxvi)	Monitoring traffic management notices The percentage of the TTP of each completed order subject to a traffic management notice activity that is apportioned to traffic management notice activity, averaged across all completed orders subject to a traffic management notice.	Y	Y		Y	Y	Y	
KPI (xxvii)	Monitoring wayleave applications The percentage of the TTP of each completed order subject to a wayleave application that is apportioned to wayleave application activity, averaged across all completed orders subject to a wayleave application.	Y	Y		Υ	Y	Y	
KPI (xxviii)	Size of the installed base of Relevant Ethernet Services The total number of installed Relevant Ethernet Services at the end of the each month.	Y	Y	Y				
#### Table notes:

- i) "Y" in a column means yes, the KPI is required and must be provided as indicated by the column headings in the following ways:
- "UK" means the KPI should be provided for the whole of the UK;
- "Split by Reg." means the KPI must be provided for each of the following regions: Scotland; Wales; Northern Ireland; England – North; England – West and England – East;
- "Split by CP" means the KPI must be provided for each CP's orders;<sup>933</sup>
- "Split by Prov. Cat." means the KPI must be provided for each of the applicable provision categories; and
- Split by BT / non-BT means the KPI must be provided separately for an aggregate of BT businesses that are downstream customers of Openreach and for an aggregate of all other CPs that are downstream customers of Openreach.
- ii) "(P)" adjacent to a Y means the KPI must be made publicly available, split according to the column heading, by means of publication on an Openreach website on a quarterly basis.
- iii) For the avoidance of doubt we only require one, two, three or four separate series of values, as appropriate, when we ask for the KPI values to be split by region, CPs, provision category and BT/non-BT.
- iv) "Num. & den." mean numerator and denominator respectively. For the *average* values (marked as \*), we require for each month the numerator representing the sum of the product of the time values (or number of changes) and the quantities of product exhibiting that time values (or number of changes) while for the denominator we require the volume of products over which the average is taken.
- v) "In-flight" means, those orders that were validated and accepted but were not completed before our direction imposing minimum standards came into force, must be included in the KPI for the month in which they are completed with a discount applied to the amount of the KPI that accrued before the direction imposing minimum standards came into force, as defined in the KPI direction.
- vi) "OSA / OSEA" means the KPIs identified by a Y in the OSA / OSEA columns should be provided separately for Openreach's optical product portfolio and not split as described in (i) above but only provided for the UK as a whole and without regard to (iv) and (v) above.
- 13.742 In relation to the wholesale market for low bandwidth traditional interface symmetric broadband origination (TISBO) in the UK excluding the Hull Area at bandwidths up to including 8Mbit/s, BT already publishes a set of KPIs that have been agreed with industry and the OTA2. Given this agreement, we do not consider it necessary to issue a direction specifying the quality of service information that BT must publish in relation to wholesale TI products and services. The new quality of service SMP

<sup>&</sup>lt;sup>933</sup> For practical purposes, each CPs' orders should be taken to mean the top nine CPs by order volume and a tenth category aggregating all remaining CPs.

services condition will function to address BT's ability and incentive to behave unilaterally by allowing us to require the publication of specific information if satisfactory agreements cannot be reached in future.

13.743 We have taken account of the detailed submissions prepared by Towerhouse LLP for Vodafone on our legal instruments.

#### Legal tests

- 13.744 We have set out above our reasons as to why we consider the SMP service condition regarding quality of service which we have decided to impose meets the relevant tests set out in the Act.
- 13.745 For the reasons set out above and summarised below, we are further satisfied that the KPI Direction (as notified and set out in Annex 35) which we have decided to impose meets the relevant tests set out in the Act.
- 13.746 We consider that the KPI Direction we have decided to impose in the wholesale market for CISBO in the London Periphery area and the wholesale market for CISBO in the UK excluding the CLA, the London Periphery area and the Hull area, meets our duties in the Act including our general duties under section 3, and all the Community requirements set out in section 4 of the Act. In particular, the direction 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. Furthermore and, having regard to the opinions of consumers in the relevant markets, it provides visibility to consumers as regards BT's performance in the provision and maintenance of wholesale Ethernet services upon which they (and their retail providers) in many cases rely.
- 13.747 Section 49 of the Act requires that we must be satisfied that our directions are objectively justifiable, non-discriminatory, proportionate and transparent. We consider the KPI Direction we have decided to impose is:
  - objectively justifiable, in that it aims to provide transparency as to the quality of service performance by BT which we consider, in light of our assessment of the dominant provider's past performance, is justified both in terms of a necessary entitlement to access seekers in relation to the provision of network access (in particular Openreach's performance in the speed and certainty in its provision of wholesale Ethernet services to CPs) and for the purposes of ensuring compliance with the minimum standards we have decided to impose on BT. We also consider that such transparency requirements are justified as a necessary element in our aim of preventing undue discrimination in the provision of service and to ensure that BT offers adequate quality of service by requiring BT to publish quality of service information about the service it provides to itself and other providers;
  - not unduly discriminatory, as it is imposed only for BT and no other operator has been found to hold a position of SMP in these markets;
  - proportionate, because it only requires BT to publish the minimum information we consider is required to effectively monitor BT's quality of service performance and comply with the remedies we consider are necessary to impose in relation to minimum standards of performance and non-discriminatory behaviour; and

- transparent, in that it is clear in its intention that BT is required to publish quality of service information.
- 13.748 For the reasons set out above, we consider that the KPI Direction we have decided to impose is appropriate to address the concerns we have identified and in line with section 87 of the Act.

## The BEREC common position

13.749 In making these decisions we have also taken utmost account of the BEREC Common Position, in particular the contents of BP24 in relation to the objective of achieving a reasonable quality of access products.<sup>934</sup>

## Decisions for a direction relating to service level guarantees (SLGs)

## Our proposals

- 13.750 In the May 2015 BCMR Consultation, we proposed to re-impose the existing SLG Direction in the same form as is currently in force, such that BT is required to continue to include the provisions specified within it in its terms and conditions going forward.
- 13.751 We notified our proposed SLG direction in Annex 7 of the May 2015 BCMR Consultation pursuant to the general network access condition in each of the following wholesale markets in which we provisionally found BT to hold SMP:
  - the wholesale market for CISBO in the London Periphery area; and
  - the wholesale market for CISBO in the UK excluding the CLA, the London Periphery area and the Hull area.
- 13.752 We recognised that until any new SLA and SLGs have been agreed or are otherwise resolved by reference to Ofcom, it was appropriate to maintain the existing SLG Direction. We undertook that if we were notified by the OTA2 that an agreement had been reached, we would consider further (at that time) what response might be necessary and appropriate as regards any SLG Direction in force at that time in accordance with the provisions and procedures detailed in section 49 of the Act.
- 13.753 We asked stakeholders:

Question 13.19: Do you agree with our proposals to maintain the existing SLG Direction? If not, please explain why, and set out your proposed alternative.

#### Stakeholder responses

- 13.754 All stakeholders who responded to this question either agreed or did not disagree with our proposals.
- 13.755 Vodafone also noted that the direction was broader in application than current discussions focused on EAD provisioning.<sup>935</sup>

<sup>&</sup>lt;sup>934</sup> BoR (12) 126.

- 13.756 Vodafone provided detailed submissions prepared by Towerhouse LLP on our proposed legal instruments.<sup>936</sup>
- 13.757 Openreach made some comments about the SLG Direction itself but neither agreed nor disagreed with our proposal about its re-imposition. The specific points which Openreach raised were:
  - we need to include a provision in the SLG Direction to enable its dis-application from Openreach's legacy Ethernet portfolio some of which have already been withdrawn from new supply and it intends to reduce support from 1 April 2018; and
  - within our legal instruments we had not proposed to implement caps on the provision and repair SLG schemes for the entirety of the Ethernet products which Openreach assumed was an error which would be corrected.<sup>937</sup>

#### Our considerations and decisions

- 13.758 With regard to Openreach's comments, we have intentionally refrained from amending the existing SLG Direction or imposing a new direction at this time to maintain the *status quo* and allow industry to focus on securing mutually agreed SLAs and SLGs.
- 13.759 However, as explained further below, where we are notified by the OTA2 that new SLAs and SLGs have been agreed, or conversely where we are notified that new SLAs and SLGs have *not* been agreed, we will consider what response might be necessary and appropriate as regards the SLG Direction in force, in accordance with the provisions and procedures detailed in section 49 of the Act. We expect to receive such notification from the OTA2 on or before the 6 month period discussed below.
- 13.760 We have taken account of the detailed submissions prepared by Towerhouse LLP for Vodafone on our legal instruments.

## Legal tests

- 13.761 We are satisfied that the SLG Direction (as set out in Annex 35) meets the relevant tests set out in the Act.
- 13.762 First, we have considered our duties under section 3 and all the Community requirements set out in section 4 of the Act. In particular, the conditions are aimed at promoting competition and securing efficient and sustainable competition for the maximum benefits for consumers by the implementation of an SLG regime that will incentivise BT to provide good quality of service to CPs.

2015/responses/Vodafone\_Summary\_of\_BCMR\_Instrument\_Errors.pdf <sup>937</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P85, Paragraphs 458-462,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf

 <sup>&</sup>lt;sup>935</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P64, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf</u>
 <sup>936</sup> Towerhouse LLP, Vodafone–Errors in Ofcom Draft BCMR Legal Instruments, 22 September 2015, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u>2015/responses/Vodafone\_Summary of RCMR\_Instrument

- 13.763 Secondly, section 49 of the Act requires directions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The conditions are:
  - objectively justifiable, in that it requires BT to adopt an SLG regime that will incentivise it to deliver good quality of services to CPs;
  - not unduly discriminatory, as it only applies to BT and no other operator has been found to hold a position of SMP in these markets;
  - proportionate, since it only seeks to incentivise good quality of service that would adversely affect competition and ultimately cause detriment to end users; and
  - is transparent, in that the conditions are clear in what they are intended to achieve.
- 13.764 For the reasons set out above, we consider that the SLG Direction we have decided to impose is appropriate to address the concerns we have identified and in line with section 87 of the Act.

## The BEREC common position

13.765 In making these decisions we have also taken utmost account of the BEREC Common Position, in particular BP23 in relation to the objective of achieving a reasonable quality of access products.<sup>938</sup> We therefore consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

# Decisions for service level agreement (SLA) and service level guarantee (SLG) negotiations

## May 2015 BCMR Consultation proposals

- 13.766 In the May 2015 BCMR Consultation we proposed the adoption of the same contract negotiation principles and SLA/SLG assessment criteria which we had used in the FAMR for future contract negotiations between Openreach and its customers in relation to SLAs/SLGs for the provision of wholesale Ethernet leased lines.
- 13.767 The proposed principles and criteria are set out in Tables 13.31 and 13.32 below respectively.

<sup>&</sup>lt;sup>938</sup> BoR (12) 126.

	Principles	
Principle 1	The OTA2 should facilitate all negotiations to create or change an SLA/SLG and that this negotiation will allow input from all affected parties.	
Principle 2	The OTA2 will, using stated criteria, assess whether a request for negotiations on a new SLA/SLG or change to an existing SLA/SLG (and related contract terms) should be facilitated through this negotiation process.	
Principle 3	No negotiations over the content of an SLA/SLG should extend beyond 6 months, with regular reporting to Ofcom. If, in the opinion of the OTA2, negotiations cannot be successfully concluded or have not been concluded within 6 months, then the OTA2, as part of its final report to Ofcom, will set out its view on whether and on what basis Ofcom should initiate a review.	
Principle 4	Provision should continue according to the terms of an appropriate, pre- existing SLA/SLG until such time as a new SLA/SLG can be agreed	

## Table 13.31: Proposed principles for the contract negotiation process

#### Table 13.32: Criteria for the assessment of SLA/SLG requests

	Detail
Criterion 1	The request does not duplicate an existing request that is either being considered by the OTA2 or is under discussion within an existing industry forum.
Criterion 2	The request could provide an adequate material benefit for the CP or industry and that any negative impact of the request not being addressed cannot be easily mitigated without the reasonable support of Openreach.
Criterion 3	The request does not seek to address a CP deficiency that should more appropriately be addressed by the CP(s) themselves.
Criterion 4	The request has adequate scale and support across industry or from those CPs addressing a recognised end customer group to which the request relates.

#### 13.768 We asked stakeholders:

Question 13.20: Do you agree with our proposals regarding the conduct of, and principles and criteria to be applied from now on, to contractual negotiations concerning SLAs/SLGs for the provision of Ethernet services? If not, please explain why, and set out your proposed alternative.

## Stakeholders' comments

13.769 Sohonet<sup>939</sup>, Hyperoptic<sup>940</sup>, [><]<sup>941</sup>, Six Degrees Group<sup>942</sup> and GTC<sup>943</sup> all agreed with our proposals. The PAG agreed that 6 months was a reasonable timeframe to reach agreement on implementing the SLG framework.944

<sup>&</sup>lt;sup>939</sup> Sohonet Limited, P7, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Sohonet Limited.pdf <sup>940</sup> Hyperoptic, Response to Business Connectivity Market Review May 2015, 31 July 2015, P21,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Hyperoptic.pdf 941 [34  $\approx$ 

<sup>&</sup>lt;sup>942</sup> Six Degrees Group, Six Degrees Group response to Ofcom Business Connectivity

- 13.770 BT (in its separate response from Openreach) supported our proposal to let the existing SLA/SLG schemes be managed via a process of facilitated industry negotiation. BT considered that this process had worked well following its introduction in the FAMR and we were right to propose the same in the BCMR market.945
- 13.771 Virgin considered that we must take account of, and ensure consistency with the approach taken to quality of service in the FAMR. As an example, Virgin noted that our proposal to adopt the same approach to contract negotiation was appropriate in both assuring consistency and devolving the working level application of the requirement to industry in conjunction with the OTA2.946

13.772 [×

≫l<sup>947</sup>

- 13.773 UKCTA said that it agreed with Ofcom that SLGs are inadequate to incentivise performance and said it supported our view that the SLA/SLG regime was at risk of being circumvented by the uncontrolled use of deemed consent. UKCTA could not therefore understand why we had not proposed to intervene directly in the SLA/SLG regime but leave it to industry to negotiate. It considered that BT had the incentive and opportunity to manipulate contract negotiations to aid itself and prevent reforms to improve the situation. UKCTA considered this was a key area where we should intervene and urged us to reconsider.948
- 13.774 TalkTalk noted that we accepted that BT holds a more powerful negotiating position than other CPs. Whilst it considered the principles and process for SLA/SLG negotiation partially addressed this imbalance, TalkTalk considered BT could still impose unfair terms on CPs which could be further addressed by:
  - Ofcom publicly indicating more willingness to intervene in cases of deadlock;
  - our being willing to overturn previously imposed conditions; and

Market Review 2015, 23 July 2015, P14, Paragraph 2.44,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Six\_Degrees.pdf GTC, Business Connectivity Market Review - Response by GTC to Ofcom's main consultation document, 3 August 2015, P17, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/GTC.pdf <sup>944</sup> The PAG, Response to Ofcom's Business Connectivity Market Review Consultation Paper and

Leased Line Charge Controls and Dark Fibre Pricing Consultation Paper, 31 July 2015, P38, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-

2015/responses/Passive\_Access\_Group.pdf 945 BT, BT's response to Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines" Summary and Part A: response to Ofcom's overall approach and consultation questions, 31 July 2015, P9, Paragraph 1.30,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/BT\_Part\_A.pdf 946 Virgin, Virgin Media's response to Ofcom's Business Connectivity Market Review Consultation -May 2015, 10 August 2015, P49, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Virgin\_Media.pdf

[×

≫1

<sup>948</sup> UKCTA, Business Connectivity Market Review Leased Lines Charge Control Review of BT's cost attribution methodologies: UKCTA Response to Ofcom, 7 August 2015, P4-5, Paragraphs 1.11-12, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/UKCTA.pdf

- allowing backdating of revised SLGs.
- 13.775 TalkTalk also considered that the 6 month deadline was tight and that 9 months might be more appropriate.<sup>949</sup>
- 13.776 KCOM also welcomed the specification of principles for SLA and SLG negotiations but remained concerned that this would not provide a sufficiently robust framework to ensure a level playing field in negotiations. KCOM considered that Openreach contracts are not the same as normal commercial contracts in that quality of service provisions are not as detailed and comprehensive nor do they require delivery to the standards customers expect. KCOM considered our intervention would be required and that we should reconsider our role in these negotiations.<sup>950</sup>
- 13.777 Vodafone agreed with the framework for agreeing changes to SLAs/SLGs over the market review period and considered it helpful.
- 13.778 However, Vodafone argued that our minimum standards and KPIs should be reflected through new contracts with Openreach. It considered that we should set expectations about contractual certainty that new processes or SLAs might provide. Vodafone considered that the contractual arrangements and regulatory framework should be linked and, where differences arise, these should be planned. It considered it likely that assistance would be required from Ofcom or the OTA to minimise the list of issues on which the parties cannot agree.
- 13.779 Vodafone suggested that Ofcom had identified the misuse of deemed consent and that we must apply clear guidance on when an activity can be attributed to the purchaser of the service and when the provisioning clock can be stopped. Vodafone understood from the May 2015 BCMR Consultation that BT was only permitted to the stop the clock/apply deemed consent as a result of issues from the purchaser/end customer. BT was not permitted to stop the clock/apply deemed consent and wayleaves. Vodafone considered that our guidance must be unambiguous.<sup>951</sup>
- 13.780 TalkTalk made similar comments that the approach to deemed consent should align with the approach for exclusions for minimum service standards and that non-customer caused delay do not lead to deemed consent. TalkTalk said that it saw no cogent reason for SLGs to differ from that for minimum standards and that we should make clear that the approach for deemed consent should follow that for minimum standards.<sup>952</sup>
- 13.781 Openreach agreed with our proposals for changing existing SLA/SLG schemes or introducing new schemes. It considered that the negotiation process adopted in the

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf <sup>950</sup> KCOM, Business Connectivity Market Review KCOM response, 31 July 2015, P18,

<sup>952</sup> TalkTalk, Business Connectivity Market Review and Leased Line Charge Control TalkTalk response, August 2015, P48, Paragraph 6.43,

<sup>&</sup>lt;sup>949</sup> TalkTalk, *Business Connectivity Market Review and Leased Line Charge Control TalkTalk response*, August 2015, P48, Paragraph 6.44-45,

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/KCOM.pdf <sup>951</sup> Vodafone, *Response to Ofcom's Consultation: Business Connectivity Market Review*, July 2015, P64-65, http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Vodafone.pdf

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/TalkTalk.pdf

FAMR had worked well and should enable both CPs and Openreach to table proposals which Openreach asked that we explicitly recognise.<sup>953</sup>

13.782 Openreach referred to the two sets of analysis it had commissioned from WIK-Consult in relation to the Ethernet SLA/SLG schemes. One report concerned a European benchmark of Ethernet SLA/SLG schemes<sup>954</sup> and the other, a more detailed assessment of provision SLA/SLG schemes across certain European countries and an assessment of the incentive properties of SLA/SLGs.<sup>955</sup>

## Our considerations and decisions

- 13.783 Most CPs including Openreach agreed with our proposals regarding the conduct of, and principles and criteria to be applied, to contractual negotiations concerning SLAs/SLGs for the provision of Ethernet services.
- 13.784 We consider the principles we proposed for the contract negotiation process and criteria for the assessment of SLA/SLG requests in relation to Ethernet leased lines services remain reasonable and appropriate. We therefore encourage Openreach and CPs, under the oversight of the OTA2, to progress SLA/SLG negotiations by reference to the framework we have specified.
- 13.785 If the OTA2 reports to us that, after an appropriate period of time has elapsed (within the 6 month period outlined above), new SLA and SLGs have still not been successfully concluded, or where negotiations have clearly broken down, we will consider what action is required which may include formal intervention by modifying the existing SLG Direction.

http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-2015/responses/Openreach.pdf <sup>954</sup> Wik-Consult Report, Commissioned by BT, *Ethernet leased lines – A European benchmark, November 2014*, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Openreach\_Appay\_A\_Ethernet\_leased\_lines\_pdf

<sup>&</sup>lt;sup>953</sup> Openreach, Openreach response to service-related questions in Ofcom's consultation document "Business Connectivity Market Review: Review of competition in the provision of leased lines", consultation response, P86-87, Paragraphs 463-472,

<sup>2015/</sup>responses/Openreach\_Annex\_A\_Ethernet\_leased\_lines.pdf <sup>955</sup> Wik-Consult, Ethernet provision: Options for Openreach SLA/G regime, 27 March 2015, <u>http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr-</u> 2015/responses/Openreach Annex B Options for Openreach SLA and SLG regime.pdf

## Section 14

# Remedies for the Hull area

# Introduction

- 14.1 In this section we set out our decisions to impose a number of remedies on KCOM in the following markets:
  - the retail market for low bandwidth Traditional Interface (TI) leased lines in the Hull area, at bandwidths up to and including 8Mbit/s;
  - the retail market for Contemporary Interface (CI) leased lines in the Hull area;
  - the wholesale market for low bandwidth Traditional Interface Symmetric Broadband Origination (TISBO) in the Hull area, at bandwidths up to and including 8Mbit/s; and
  - the wholesale market for Contemporary Interface Symmetric Broadband Origination (CISBO) in the Hull area.
- 14.2 The SMP remedies we have decided to impose are based on the nature of the competition problems we have identified that arise from our market analysis and SMP assessment (set out in Sections 6 and 7).
- 14.3 We consider that these remedies achieve our statutory duties and satisfy the relevant legal tests. In reaching these decisions, we have also taken account of our regulatory experience from the two previous market reviews, recent developments in these markets, views expressed by stakeholders in response to the April 2014 BCMR CFI, the May 2015 BCMR Consultation and the May 2015 BCMR Very Low Bandwidth Leased Lines Consultation, and expected developments over the course of the review period of three years.

# **Summary of decisions**

14.4 Table 14.1 summarises the remedies that we have decided to impose on KCOM in each leased lines market in the Hull area.

Markets (all in the Hull area)	Remedies
Wholesale market for low bandwidth TISBO and Wholesale market for CISBO	<ul> <li>Requirement to provide network access on reasonable request and on fair and reasonable charges, terms and conditions</li> <li>Requirement not to discriminate unduly</li> <li>Requirement to publish a reference offer, including charges, terms and conditions</li> <li>Requirement to notify changes to charges, terms and conditions</li> <li>Requirement to notify changes to technical information</li> <li>Requirements for accounting separation</li> <li>Requirement to produce a pricing transparency report</li> </ul>
Retail market for low bandwidth TI leased lines and Retail market for CI leased lines	<ul> <li>Requirement to supply retail leased lines on reasonable request and on fair and reasonable charges terms and conditions</li> <li>Requirement not to discriminate unduly</li> <li>Requirement to publish a reference offer, including charges, terms and conditions</li> <li>Cost accounting obligations</li> <li>Requirement to produce a pricing transparency report</li> </ul>

## Table 14.1: Summary of remedies we are imposing on KCOM by market

- 14.5 This set of remedies contains the following changes to the package of remedies put in place in 2013:
  - Amendments to facilitate the withdrawal of retail Very Low Bandwidth (VLB) TI leased lines (i.e. leased lines at bandwidths below 2Mbit/s):
    - o removing the obligation to supply new retail VLB TI leased lines; and
    - adding a requirement for KCOM to give 2 years' notice to customers before withdrawing any existing services at bandwidths below 2Mbit/s.
  - Amendments to provide greater transparency of KCOM's prices:
    - requiring KCOM to charge the prices it publishes in its wholesale and retail Reference Offers (RO). This removes the flexibility afforded to KCOM in the BCMR 2013 to offer bespoke discounts, but would continue to allow KCOM to offer published discounts; and
    - a new requirement for KCOM to produce a Pricing Transparency Report for the retail markets and the wholesale markets in which we are imposing regulation in the Hull area.
  - Amendments to improve our visibility of KCOM's costs and returns in the markets in which we are imposing regulation in the Hull area:

- amending the list of wholesale network components to which KCOM is required to attribute costs in its regulated financial statements; and
- imposing new retail cost accounting obligations, which will require KCOM to submit to Ofcom financial information on the regulated retail markets.
- Amendments to remove regulations that are no longer required:
  - removing of the requirements for KCOM to send Ofcom copies of notifications of changes to technical information; and
  - removing the requirement for KCOM to include in wholesale ROs and notifications of changes to charges, terms and conditions, the amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP.
- Amendments to ensure the availability of ROs and technical change notifications:
  - altering the requirement for KCOM to publish ROs both retail and wholesale
     and notifications of changes to technical information on its website, to
     require the information to be publicly accessible, i.e. without password access.
- 14.6 In addition, we set out our decision to manage the risk of excessive pricing by monitoring KCOM's charges against suitable benchmarks.

# **Structure of this Section**

- 14.7 This Section is structured as follows:
  - Developments since the BCMR 2013 we describe the competition related developments that are relevant to our assessment of remedies.
  - Remedies for the wholesale markets we set out the remedies we have decided to impose in the wholesale leased lines markets in the Hull area. For each remedy, we describe our proposals set out in the May 2015 BCMR Consultation, our consideration of responses to the consultation and our decision. We also discuss our approach to addressing the risk of excessive pricing.
  - Remedies for the retail markets we set out the remedies we have decided to impose in the retail leased lines markets in the Hull area. For each remedy, we describe our proposals set out in the May 2015 BCMR Consultation, our consideration of responses to the consultation and our decision. We also discuss our approach to addressing the risk of excessive pricing.

## **Developments since the BCMR 2013**

14.8 As we discussed in Section 6 of this statement, there have been a limited number of competition-related developments since the BCMR 2013 in the Hull area. We consider them to be relevant to the remedies as they suggest that during the review period there might be some limited increase in competitive activity, both at the retail level by CPs using wholesale inputs purchased from KCOM, and at the wholesale level from CPs using their own infrastructure. In summary, these developments are that:

- BT has increased its presence in the Hull area by installing a multi-service edge node at its Anson Exchange in the centre of Hull;
- CityFibre has completed the first phase of a 62km fibre access network in the Hull area to provide dark fibre to mobile base stations operated by MBNL, and has announced its intention to expand this network to provide services to other industry sectors<sup>956</sup>; and
- a small number of CPs operating fixed-wireless networks have expressed an interest in competing in the retail leased lines markets using KCOM's wholesale products.
- 14.9 We still consider that these markets will not be effectively competitive in the course of this next review period. They are, however, significant as they indicate a potential for increased competition in the longer term, something we consider would likely deliver better outcomes for consumers in the Hull area.
- 14.10 In light of these developments we have decided to amend aspects of the retail and wholesale remedies to ensure that they afford sufficient protection to allow competition to develop. We set out our decisions with regards to remedies below.

# **Remedies for the wholesale leased lines markets**

- 14.11 In Section 7 we have described the competition problems that arise in each of the wholesale leased lines markets that we have decided to identify. In particular we explained that in the absence of *ex ante* regulation, KCOM would have the incentive, and its SMP would afford it the ability, to engage in a variety of behaviours that are harmful to competition. This may include, although is not limited to: behaviours that would favour its own downstream retail business over rivals in the relevant retail markets, maintaining some or all prices at an excessively high level, or imposing a margin squeeze. In Section 7 we also explained our general approach to specifying remedies to address these competition problems.
- 14.12 In this subsection we set out our considerations and reasoning in respect of the general remedies we have decided to impose in the wholesale leased lines markets. We assess each of the general remedies in turn by setting out:
  - the remedy imposed in the BCMR 2013;
  - the aim and effect of the regulation;
  - the proposals set out in the May 2015 BCMR Consultation;
  - stakeholders' responses to our proposals;
  - our further considerations, reasoning and decisions; and
  - our consideration of the relevant legal tests for imposing the regulation.

<sup>&</sup>lt;sup>956</sup> CityFibre press releases 14 November 2014 and 31 March 2015.

## Requirement to provide network access on reasonable request

#### Aim and effect of the regulation

14.13 In markets where we have found a CP to have SMP, the level of investment required by other CPs (OCPs) to replicate the SMP provider's network and build sufficiently large access networks to compete is a significant barrier to entry. The costs of developing such an extensive network infrastructure would be very significant, and with the SMP operator already having developed its extensive infrastructure and having largely sunk the costs of doing so, OCPs would unlikely be able to recover their investment costs. As such, in our view, an obligation requiring the SMP operator to make access to its network facilities available to OCPs on reasonable request is fundamental to promoting competition in downstream markets. We consider that, in the absence of such a requirement, the SMP operator would have both the incentive and ability to refuse access at the wholesale level, thereby favouring its own retail operations. This would hinder sustainable competition in the corresponding downstream markets, ultimately against end-users' interests.

#### Our proposals set out in the May 2015 BCMR Consultation

- 14.14 In the BCMR 2013 we required to provide network access on reasonable request and to provide such access as soon as it is reasonably practicable. KCOM was required to provide this network access on fair and reasonable terms, conditions and charges, or on such other terms, conditions and charges that Ofcom may from time to time direct.
- 14.15 In the May 2015 BCMR Consultation we proposed to impose the same SMP condition for the next BCMR period.

#### Stakeholders' responses to our proposals

- 14.16 KCOM said that it did not see a need for an obligation for it to supply new wholesale VLB services, firstly, because Ofcom had proposed that it should no longer be required to provide VLB retail services, and secondly because all of the VLB services it supplies to CPs are supplied on retail terms. KCOM proposed that the network access obligation should therefore mirror the corresponding retail obligation, i.e. that KCOM should no longer be required to provide new VLB wholesale services and should be able to withdraw these services after a specified notice period.<sup>967</sup>
- 14.17 KCOM also raised concerns about the impact of our approach to product market definition on the scope of the proposed retail and wholesale remedies. KCOM said that we had simply proposed the same product market definitions for the Hull area as for the Rest of the UK (RoUK) and had not taken account of differences between the product markets in the Hull area and the RoUK. As a result the proposed retail and wholesale remedies would impose new obligations for KCOM to supply services that it does not currently offer, in particular:
  - wholesale Ethernet First Mile (EFM) services; and
  - very high bandwidth (VHB) (greater than 1Gbit/s) retail CI and wholesale CISBO services.

<sup>&</sup>lt;sup>957</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p11

14.18 In KCOM's view, we had not provided any justification for requiring it to supply these services.<sup>958</sup>

## Our decision

#### Obligation to supply network access on reasonable request

14.19 We have decided to impose an SMP condition requiring KCOM to provide network access where a third party reasonably requests it in respect of each of the wholesale leased lines markets in the Hull area in which we have found that KCOM has SMP. We consider that, in the absence of such a requirement, KCOM would have both the incentive and ability to refuse access at the wholesale level, thereby favouring its own retail operations. This would hinder sustainable competition in the corresponding downstream markets, ultimately against end-users' interests.

## Scope of the obligation

- 14.20 We discuss KCOM's comments about our approach to market definition in more detail in Section 6. In summary, as in the BCMR 2013, we have defined the same wholesale product markets in all parts of the UK, although the definition of some product markets has changed since 2013. Hence, we need to consider what remedies to apply in the new product markets in the Hull area in the light of market conditions there. However, the obligations we are imposing on KCOM do not simply follow from the adoption of new product market definitions in the way KCOM suggests.
- 14.21 To be clear, we are not imposing any regulation which would require KCOM to offer a wholesale EFM service. We have modified the SMP conditions to make this clear. We also note that the regulations imposed in the Wholesale Local Access market would enable CPs to request local loop unbundling facilities from KCOM, which CPs could use in order to provide leased line services using EFM technology.
- 14.22 With regards to VHB CI services, we acknowledge that KCOM does not currently supply any VHB retail CI or wholesale CISBO services. However, given that such services are now well established in the UK generally, we consider that demand may emerge in the Hull area during this review period and that KCOM would be in a position to meet that demand. In view of our SMP findings and the competition problems we have identified, we consider it essential that the general remedies we have specified to address these problems should also apply to VHB wholesale CISBO services. This will enable other CPs to obtain VHB wholesale CISBO services from KCOM to enable them to compete with KCOM at the retail level.
- 14.23 We consider that an obligation to provide specific types of wholesale product is not currently warranted. In the absence of clear demand for a specific type of wholesale product, there is a risk that a product we may specify would not be used, or that it would not meet CPs' requirements. We consider that opportunities for competition are currently best met by continuing to rely on a general obligation for KCOM to provide network access on reasonable request, which allows CPs to request wholesale products (and associated interconnection and accommodation facilities) as and when required. This obligation would also allow KCOM to recover the efficiently incurred costs associated with any new product requested.

<sup>&</sup>lt;sup>958</sup> Ibid, pages 2, 3 and 10

14.24 Similarly, we have decided not to impose a passive remedy, such as dark fibre, in the Hull area. We do not consider that there is sufficient demand for passive remedies or wholesale services more generally in the Hull area to warrant such an intervention. In coming to this decision, we note that the EU Civil Infrastructure Directive (CID) is expected to come into effect in the UK in summer 2016. The CID will introduce a requirement for all utility networks to meet reasonable requests for access to their infrastructure from public communications network operators made with a view to deploying high speed electronic communications networks – although it does not require the provision of dark fibre.

#### Very low bandwidth services

14.25 We do not consider it necessary to amend the SMP condition to facilitate the withdrawal of wholesale VLB services in the Hull area. The SMP condition, which requires KCOM to provide network access on reasonable request, already affords KCOM the flexibility to withdraw legacy wholesale services.

#### Fair and reasonable charges, terms and conditions

- 14.26 We consider that the general network access obligation should be supported by an obligation to provide such network access on fair and reasonable terms and conditions, to address the risk that KCOM might supply on unfair terms or conditions which could otherwise prevent or restrict competition.
- 14.27 We also consider that the general network access obligation should be supported by an obligation to offer fair and reasonable charges to address the risk of excessive pricing. As we discuss in more detail in paragraphs 14.146 14.163 below, we have also decided to monitor KCOM's charges against a benchmark of BT's charges as an alternative to a charge control.

#### Power to make directions

14.28 We have decided 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, conditions and charges for providing third parties with network access. The SMP condition includes 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.

## Legal tests

- 14.29 For the reasons set out below, we are satisfied that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 14.30 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 87(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.

- 14.31 When considering the imposition of conditions under Section 87(3) of the Act in a particular case, we must take into account six factors set out in Section 87(4) of the Act, including *inter alia*:
  - the technical and economic viability of installing and using other facilities, including the viability of other network access products whether provided by the dominant provider<sup>959</sup> or another person<sup>960</sup>, that would make the proposed network access unnecessary;
  - the feasibility 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); and
  - the need to secure effective competition, including where it appears to us to be appropriate, economically efficient infrastructure based competition, in the long term.
- 14.32 In deciding 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 competition, including economically efficient infrastructure based competition, in the long term in each of the wholesale access markets. The requirements for KCOM to meet only reasonable network access requests also ensure that due account is taken of the feasibility of providing the network access, and of the investment made by KCOM initially in providing the network.
- 14.33 We are also required to ensure that the condition satisfies the tests set out in section 88 of the Act as the requirement places controls on network access pricing, insofar as charges are required to be fair and reasonable. 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 distortion. We have discussed above that we consider that, in the absence of price regulation requiring prices to be 'fair and reasonable', KCOM may price excessively.
- 14.34 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.
- 14.35 We consider that a fair and reasonable charges obligation will prevent KCOM from charging excessively high prices. In this way, this condition supports the aim of improved efficiency. We also consider that the provision of network access on fair

<sup>&</sup>lt;sup>959</sup> In this instance, KCOM

<sup>960</sup> i.e. other CPs

and reasonable terms will promote sustainable competition by ensuring that other CPs can effectively compete at the retail level.

- 14.36 We consider that our decision to impose this SMP condition meets our duties under sections 3 and all the Community requirements in section 4 of the Act. In particular, in each of the wholesale access markets the condition is aimed at promoting competition and securing efficiency and sustainable competition for the maximum benefit of consumers by facilitating the development of competition in downstream markets.
- 14.37 Section 47(2) of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it facilitates and encourages access to KCOM's network and therefore promotes competition to the benefit of consumers;
  - not unduly discriminatory, as will only be imposed on KCOM and no other CP has been found to hold a position of SMP in these markets;
  - proportionate, since it is targeted at addressing the market power that we have found 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 provide access to its networks in order to facilitate effective competition.
- 14.38 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

## The BEREC Common Position

14.39 We have also taken utmost account of the BEREC Common Position in reaching our decisions, including BP5 and BP36 that appear to us to be particularly relevant in this context.<sup>961</sup> We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

## Requirement not to discriminate unduly

## Aim and effect of the regulation

14.40 Article 8(1) of the 2002 EC Directive on access to, and interconnection of, electronic communications networks and associated facilities (the Access Directive)<sup>962</sup> requires Member States to ensure that national regulatory authorities are empowered to impose certain obligations where an operator is designated as having SMP. These include, under Article 10 of the Access Directive, obligations of non-discrimination. Article 10(1) provides that a national regulatory authority may: "*impose obligations of* 

<sup>&</sup>lt;sup>961</sup> BoR (12) 126, *BEREC* common position on best practice in remedies imposed as a consequence of a position of significant market power in the relevant markets for wholesale leased lines, 26 November 2012,

http://berec.europa.eu/files/document\_register\_store/2012/11/BoR\_(12)\_126\_Draft\_WLL\_CP\_2012.11. 26.pdf.

<sup>&</sup>lt;sup>20.pdf</sup><sub>962</sub> EC, Directive 2002/19/EC of the European Parliament and of the Council of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities, www.eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:108:0007:0020:EN:PDF.

non-discrimination, in relation to interconnection and/or access". Article 10(2) further provides:

"[o]bligations of non-discrimination shall ensure, in particular, that the operator applies equivalent conditions in equivalent circumstances to other undertakings providing equivalent services, and provides services and information to others under the same conditions and of the same quality as it provides for its own services, or those of its subsidiaries or partners".

- 14.41 Article 10 of the Access Directive is implemented into UK law by section 87(6)(a) of the Act which gives us a power to impose "a condition requiring the dominant provider not to discriminate unduly against particular persons, or against a particular description of persons, in relation to matters connected with network access to the relevant network or with the availability of the relevant facilities". We consider any conditions imposed pursuant to this power require equivalence as per Article 10(2).
- 14.42 A non-discrimination obligation is intended as a complementary remedy to the network access obligation, principally to prevent the dominant provider from discriminating in favour of its own downstream divisions and to ensure that competing providers are placed in an equivalent position. Without such an obligation, the dominant provider is incentivised to provide the requested wholesale network access service on terms and conditions that discriminate in favour of its own downstream divisions. For example, KCOM may decide to charge its competing providers more than the amount charged to its own downstream units or it might strategically provide the same services but within different delivery timescales. Both these behaviours could have an adverse effect on competition.
- 14.43 Non-discrimination can have different forms of implementation. A strict form of nondiscrimination – i.e. a complete prohibition of discrimination – would result in the SMP operator providing exactly the same products and services to all CPs (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. Essentially, the inputs available to all CPs (including the SMP CPs' own downstream divisions) would be provided on a truly equivalent basis, an arrangement which has become known as 'Equivalence of Inputs', or EOI. An EOI obligation removes any degree of discretion accorded to the nature of the conduct. The concept of EOI was first identified in the Strategic Review of Telecoms in 2004/05 as one of our key policy principles to ensure that regulation of the telecommunication markets is effective. Following on from this review, a specific form of EOI was implemented in 2005 by means of the BT Undertakings.
- 14.44 On the other hand, a less strict implementation of non-discrimination a no undue discrimination obligation may allow for flexibility and result in a more practical and cost-effective implementation of wholesale inputs, in cases where it is economically justified. As part of this review, we have considered what form of non-discrimination obligation would be appropriate in each of the wholesale leased lines markets in the Hull area, and our consultation proposal is set out below.

#### Our proposals set out in the May 2015 BCMR Consultation

14.45 In the BCMR 2013 we required not to discriminate unduly in relation to the provision of network access.

14.46 In the May 2015 BCMR Consultation, we proposed to impose the same SMP condition for the next BCMR period.

#### Stakeholder responses to our proposals

14.47 Further to its comments about the need for the obligation to supply wholesale VLB services,<sup>963</sup> KCOM said that it did not believe an obligation not to discriminate unduly is necessary for these services.<sup>964</sup>

## Our decision

- 14.48 We have decided that imposing an EOI obligation on KCOM would be disproportionate and unjustified in respect of the scale and competitive conditions in the wholesale leased lines markets in the Hull area. We have therefore decided to impose an SMP condition prohibiting undue discrimination. This will ensure that there is appropriate non-discrimination protection to remedy the incentive and ability for KCOM to engage in discriminatory pricing and/or non-pricing practices.
- 14.49 Whilst we acknowledge that wholesale VLB services are legacy services and that KCOM is formulating plans to withdraw them, we do not consider that VLB services should therefore be removed from the scope of this obligation. Wholesale VLB services are likely to remain in operation throughout the market review period since KCOM has not yet finalised its plans for service withdrawal and will need to give extended notice to allow for migration to alternative services. We therefore consider that it is appropriate to maintain the obligation to address the risk of unduly discriminatory conduct.

#### Legal tests

- 14.50 We are satisfied that the SMP condition (as set out in Annex 35) meet the relevant tests set out in the Act.
- 14.51 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.
- 14.52 We have considered our duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the condition is aimed at promoting competition and securing efficient and sustainable competition for the maximum benefits for consumers by preventing KCOM from leveraging its SMP through discriminatory behaviour into downstream markets.
- 14.53 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it provides safeguards to ensure that competitors, and hence consumers, are not disadvantaged by KCOM discriminating unduly in favour of its own downstream activities or between different competing providers;

<sup>&</sup>lt;sup>963</sup> See paragraph 14.16

<sup>&</sup>lt;sup>964</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p11

- not unduly discriminatory, in that it is only imposed on KCOM and no other operator has been found to hold a position of SMP in these markets;
- proportionate, in that it only seeks to prevent undue discrimination; and
- transparent, in that the condition is clear in what it is intended to achieve.
- 14.54 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

## The BEREC Common Position

14.55 We have taken utmost account of the BEREC Common Position,<sup>965</sup> including BP8, BP10 and BP10a which appear to us to be particularly relevant in this case. We consider that measures we have decided to impose are consistent with the best practice set out in the BEREC Common Position.

## Transparency and notification obligations

- 14.56 We have decided that KCOM should be subject to a set of obligations designed to promote transparency, reduce the risk of undue discrimination and ensure that CPs are able to make effective use of the dominant providers' network access. The obligations which are discussed in more detail below are:
  - a requirement to publish a Reference Offer;
  - a requirement to notify changes to charges, terms and conditions in advance; and
  - a requirement to notify changes to technical information in advance.

## Requirement to publish a reference offer

## Aim and effect of the regulation

- 14.57 A requirement to publish an RO has three main purposes:
  - to assist transparency for the monitoring of potential anti-competitive behaviour;
  - to give visibility to the terms and conditions on which other providers purchase wholesale services; and
  - to enable the monitoring of wholesale prices.
- 14.58 This helps to ensure stability in markets as, without it, incentives to invest might be undermined and market entry less likely.
- 14.59 The publication of an RO would potentially allow for quicker negotiations, avoid possible disputes and give confidence to those purchasing wholesale services that they are being provided on non-discriminatory terms. Without this, market entry might be deterred to the detriment of the long term development of competition and hence consumers.

<sup>&</sup>lt;sup>965</sup> BoR (12) 126, see footnote 960 above

- 14.60 Moreover, in conjunction with the non-discrimination obligation, the effect of this obligation is to prevent an SMP operator from:
  - bundling leased lines together with other non-SMP products or services i.e. making the sale of a retail leased line conditional on the sale of another product or service, including as part of a package incorporating another product or service; and
  - offering bespoke prices in order to secure business contracts against competition from other CPs. The SMP operator would still be permitted to offer discounts, but the terms of any such discounts would have to be published in the RO and available to all customers.

#### Our proposals set out in the May 2015 BCMR Consultation

- 14.61 In the BCMR 2013 we required KCOM to publish an RO in relation to the provision of network access. In the May 2015 BCMR Consultation, we proposed that KCOM should continue to be required to publish an RO for each of the wholesale leased line markets in the Hull area. The proposed condition would require the published RO to include as a minimum such matters as:
  - 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;
  - Service Level Agreements and Service Level Guarantees; and
  - to the extent that KCOM uses the service in a different manner to CPs or uses similar services, KCOM is required to publish an RO in relation to those services.
- 14.62 This proposed condition would also prohibit KCOM from departing from the terms, conditions or charges set out in the RO. It would also require KCOM to comply with any directions Ofcom may make from time to time under the condition.
- 14.63 We proposed to make three amendments to the condition imposed in the BCMR 2013:
  - i) To remove the flexibility for KCOM to offer bespoke discounts by requiring it to publish its wholesale charges in its RO and not to depart from those charges. We proposed this change as we considered that there was a need to improve pricing transparency to support the development of competition and minimise the risk of discriminatory conduct by KCOM.
  - ii) To remove the requirement for KCOM to include in its RO an amount applied to each network component with the relevant usage factors for each network

component or combination of such components, reconciled in each case to the charge payable by a CP. We no longer considered that this information was required in order to assist CPs in monitoring potential discriminatory behaviour by KCOM, or to provide transparency that would allow CPs to make better informed purchasing decisions. This is a change we have already made in other markets, namely the fixed narrowband services markets<sup>966</sup> and the fixed access markets.967

iii) To add a requirement for KCOM to publish its ROs on *publicly available* websites, i.e. those that do not require password access, to ensure full transparency for other CPs and ourselves.

## Stakeholders' responses to our proposals

- 14.64 Further to its comments about the need for the obligation to supply wholesale VLB services,<sup>968</sup> KCOM said that it did not believe that an obligation to publish a RO is necessary for these services.969
- 14.65 Notwithstanding the comment above, KCOM added that our proposal to remove its flexibility to offer bespoke prices was not problematic as all the wholesale services it provides are already charged at published prices. KCOM also noted that this proposal goes some way towards addressing our transparency concerns.

## Our decision

- 14.66 We consider that the reference offer obligation imposed in the BCMR 2013 has been largely effective in meeting the aims of the regulation detailed above. Therefore we consider it appropriate to impose the obligation with the three amendments listed above in each of the wholesale leased lines markets in the Hull area identified in this market review.
- 14.67 We consider that imposing a requirement to publish an RO is necessary to achieve these aims and effects in each of the wholesale markets where we have found KCOM to hold SMP. This remedy complements the network access and nondiscrimination requirements we have decided to impose on KCOM to address the competition concerns arising from their SMP in each of the wholesale leased lines markets in the Hull area.
- 14.68 Whilst we acknowledge that wholesale VLB services are legacy services and that KCOM is formulating plans to withdraw them, we do not consider that VLB services should be removed from the scope of this obligation. Wholesale VLB services are likely to remain in operation throughout the market review period since KCOM has not yet finalised its plans for service withdrawal and will need to give extended notice to allow for migration to alternative services. We therefore consider that it is

<sup>67</sup> Ofcom, Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30: Volume 1: Statement on the markets, market power determinations and remedies, 26June 2014, http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-marketreviews-2014/statement-june-2014/volume1.pdf, paragraph 10.250

<sup>&</sup>lt;sup>966</sup> Ofcom, Review of the fixed narrowband services markets: Statement on the markets, market power determinations and remedies, 26 September 2013, http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final Statement.pdf, paragraphs 5.480 and 10.229.

<sup>&</sup>lt;sup>969</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p11

appropriate to maintain the obligation to promote transparency, reduce the risk of undue discrimination and ensure that CPs are able to make effective use of KCOM's wholesale leased lines services.

- 14.69 The main amendment is to remove the flexibility granted to KCOM in the last review to offer bespoke prices for wholesale leased line services. In the BCMR 2013 we observed that there was relatively little wholesale competition to KCOM. Given this, in the BCMR 2013 our view was that the main impact of requiring KCOM not to deviate from published prices would be to restrict its ability to offer discounts to large CPs, and this might lead to higher prices for them. We therefore concluded that KCOM should have some flexibility to price discriminate and offer discounts where it is efficient to do so. We allowed KCOM to offer these bespoke discounts by requiring it to publish only its maximum prices in its reference offer. This was in order to provide some transparency about its wholesale pricing and to allow us to monitor wholesale prices.
- 14.70 In view of the improved prospects for competition in the Hull area (as discussed above in paragraph 14.8), we consider it appropriate to improve pricing transparency and remove KCOM's flexibility to offer bespoke discounts, in order to support the development of competition and minimise the risk of discriminatory conduct by KCOM.
- 14.71 Furthermore, as we discuss in more detail in paragraphs 14.146 14.163 below, we consider there is a risk that KCOM may set excessive prices for wholesale leased lines services in the Hull area. To address this risk we have decided to monitor KCOM's charges against a benchmark of BT's charges as an alternative to a charge control. In relation to this we consider that removing KCOM's flexibility to offer bespoke discounts is also necessary to enable us to monitor of KCOM's wholesale charges more effectively.
- 14.72 We have therefore decided to remove the flexibility for KCOM to offer bespoke discounts by requiring it to publish its wholesale charges in its reference offer and not to depart from those charges.
- 14.73 The effect of the amended condition is to require KCOM to apply the published charges to every new access agreement that it enters into after the condition comes into force. KCOM will be able to offer discounts, but the terms of these discounts will have to be published in the RO and made available to all customers.
- 14.74 The SMP condition also includes two other amendments to the condition currently in force:
  - For the reasons discussed above, we have removed the requirement for KCOM to include in its RO an amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP.
  - We have specified that KCOM must publish its ROs on *publicly available* websites, i.e. those that do not require password access, to ensure full transparency for other CPs and ourselves.

#### Legal tests

14.75 For the reasons set out below, we are satisfied that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.

- 14.76 We consider that the SMP condition satisfies our duties under section 3, and all the Community requirements set out in section 4, of the Act.
- 14.77 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 RO. Finally, section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the RO as may be directed form time to time.
- 14.78 The requirement to publish a Reference Offer will, in combination with a requirement not to discriminate unduly, facilitate service interoperability and allow CPs to make informed decisions about future entry into the relevant market. Further, the obligation will enable buyers 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 CPs in the relevant market 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.
- 14.79 We also consider that the condition meets the Community requirements set out in section 4 of the Act. In particular, the condition promotes competition, and encourages the provision of network access and service interoperability for the purpose of securing efficiency and sustainable competition for the maximum benefit for consumers. The publication of an RO will mean that other CPs will have the necessary information readily available.
- 14.80 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it requires that terms and conditions are published in order to encourage competition, provide stability in markets and allow monitoring of anti-competitive behaviour;
  - not unduly discriminatory, in that it is only imposed on KCOM and no other operator has been found to hold a position of SMP in these markets;
  - proportionate, in that only information that is considered necessary to allow providers to make informed decisions about competing in downstream markets is required to be provided; and
  - transparent, in that it is clear in its intention to ensure that KCOM publishes details of its service offerings.
- 14.81 Article 9(4) of the Access Directive requires that where network access obligations are imposed, national regulatory authorities shall ensure the publication of an RO containing at least the elements set out in Annex II to that Directive we are satisfied that this requirement is met.
- 14.82 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

## The BEREC Common Position

14.83 In reaching our decisions we have also taken utmost account of the BEREC Common Position,<sup>970</sup> including BP16, BP16b to BP16d, and BP22 to 23d which appear to us to be particularly relevant in this case. We consider that our decisions are consistent with the best practice set out in the BEREC Common Position.

## Requirement to notify changes to charges, terms and conditions

## Aim and effect of the regulation

- 14.84 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 buy 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. Notification of changes therefore helps to ensure stability in markets, without which incentives to invest might be undermined and market entry made more difficult.
- 14.85 A potential disadvantage to change notifications is that they can subdue competition in downstream markets, if CPs follow the SMP operator's prices rather than act dynamically to set competitive prices. We do not consider, on balance, that this consideration undermines the rationale for imposing a notification of charges condition.
- 14.86 In wholesale leased lines markets where competitors rely on the provision of wholesale access products and services to enable them to compete in downstream markets, we consider that the advantages of notifying charges are likely to outweigh any potential disadvantages.
- 14.87 In certain circumstances it may also be appropriate to require the notification of changes to terms and conditions, where this will also ensure transparency and provide advanced warning of changes, in order to allow competing providers sufficient time to plan for them. Again, this assists in providing stability in markets, without which incentives to invest might be undermined and market entry made more difficult.
- 14.88 This remedy complements the network access and non-discrimination requirements on dominant providers to address the competition concerns arising from a position of SMP in the wholesale leased lines markets.

## Our proposals set out in the May 2015 BCMR Consultation

- 14.89 In the BCMR 2013 we required KCOM to give advanced notice before making changes to charges, terms and conditions for the provision of existing or new network access in each of the wholesale leased lines markets in the Hull area. We refer to these notifications as 'change notices'. The following notification were applied in the BCMR 2013:
  - 28 days' notice for charges, terms and conditions relating to new service introductions;

<sup>&</sup>lt;sup>970</sup> BoR (12) 126, see footnote 960 above.

- 28 days' notice for price reductions; and
- 90 days' notice for all other changes to prices, terms and conditions.
- 14.90 We proposed in the May 2015 BCMR Consultation to impose the same SMP condition for the next BCMR period, but with one amendment, namely to remove the requirement on KCOM to include in its change notices an amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP. We no longer considered that this information is required in order to assist CPs in monitoring potential discriminatory behaviour by KCOM, or to provide transparency that would allow CPs to make better informed purchasing decisions.

#### Stakeholder responses to our proposals

14.91 We did not receive any comments on this proposal.

#### Our decision

- 14.92 We have decided to impose the obligation on KCOM to notify of changes to its charges, terms and conditions. We refer to these notifications as 'change notices'. We have decided that the following notification periods should apply:
  - 28 days' notice for charges, terms and conditions relating to new service introductions;
  - 28 days' notice for price reductions; and
  - 90 days' notice for all other changes to prices, terms and conditions.
- 14.93 In deciding to retain these notifications periods, we have considered the following relevant factors:
  - In relation to the 90-day period for changes to existing services, the investment required to use wholesale leased line services is significantly greater and requires CPs to build more complex networks than for most of the services in other markets to which we have applied the same notification requirement with a 28-day notice period.
  - Wholesale leased line services support multiple downstream services. This
    means that changes to wholesale leased line services are likely to have a greater
    impact on CPs than changes to downstream services and will also be more
    complex to assess. Typically this might involve modelling the impact of the new
    charges on the cost of providing downstream services, securing internal approval
    for a pricing revision and notifying end-users (which may be subject to a minimum
    notice period, typically 28 days).
  - Too short a notification period would risk that CPs would have insufficient time to react to changes to wholesale terms and could, for instance, be left financially exposed by changes to wholesale prices.
  - There should be no risk of financial exposure for CPs when prices are reduced, so a 28-day notification period is appropriate.

14.94 In addition, we have decided to remove the requirement on KCOM to include in its change notices an amount applied to each network component with the relevant usage factors for each network component or combination of such components, reconciled in each case to the charge payable by a CP. We no longer consider that this information is required in order to assist CPs in monitoring potential discriminatory behaviour by KCOM, or to provide transparency that would allow CPs to make better informed purchasing decisions. This is a change we have already made in other markets, namely the fixed narrowband services markets<sup>971</sup> and the fixed access markets.<sup>972</sup>

#### Legal tests

- 14.95 For the reasons set out below, we are satisfied that the condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 14.96 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 change notices.
- 14.97 We considered that the condition satisfies our duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the condition is aimed at promoting competition, and securing efficient and sustainable competition for the maximum benefits for consumers. This is achieved by ensuring that CPs are notified in advance about changes to terms, conditions and charges sufficiently in advance to allow them to make informed decisions about competing in downstream markets.
- 14.98 Section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP 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 about competing in downstream markets;
  - not unduly discriminatory, as it will only be imposed on KCOM and no other operator has been found to hold a position of SMP in these markets;
  - proportionate, as 90 days is considered the minimum period necessary to allow competing providers to plan for changes to existing network access, and 28 days would be sufficient for new network access and price reductions; and
  - transparent, in that it is clear in its intention to ensure that KCOM provides notification of changes to its terms, conditions and charges.

<sup>&</sup>lt;sup>971</sup> Ofcom, *Review of the fixed narrowband services markets: Statement on the markets, market power determinations and remedies*, 26 September 2013, http://stakebolders.ofcom.org.uk/biparies/consultations/mmr-2013/statement/Final\_Statement.pdf

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/Final Statement.pdf, paragraphs 5.480 and 10.229. <sup>972</sup> Ofcom, *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange* 

<sup>&</sup>lt;sup>912</sup> Ofcom, Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30: Volume 1: Statement on the markets, market power determinations and remedies, 26June 2014, <u>http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/fixed-access-market-reviews-2014/statement-june-2014/volume1.pdf</u>

14.99 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

## Requirement to notify changes to technical information

#### Aim and effect of the regulation

- 14.100 Complementary to the requirement to publish an RO, which includes technical information, the aim of this regulation is to provide advanced notification of changes to technical characteristics. This ensures that CPs have sufficient time to respond to changes that may affect them. For example, a CP may need to introduce new equipment, or modify existing equipment or systems, to support a new or changed technical interface. Similarly, a CP may need to make changes to their network in order to support changes in the points of network access or configuration.
- 14.101 We consider this remedy is important in wholesale leased lines markets to ensure that CPs who compete in downstream markets are able to make effective use of existing or, where applicable, new wholesale services . Technical information therefore includes new or amended technical characteristics, including information on network configuration, locations of the points of network access and technical standards (including any usage restrictions and other security issues).

#### Our proposals set out in the May 2015 BCMR Consultation

- 14.102 In the BCMR 2013 we required KCOM to publish, in advance, changes to technical information in each of the wholesale leased lines markets in the Hull area. We refer to these notifications as 'technical change notices'.
- 14.103 The condition imposed in the BCMR 2013 requires the notification of new technical information within a reasonable period of time, but not less than 90 days in advance of providing new wholesale services or amending existing technical terms and conditions.
- 14.104 In the May 2015 BCMR Consultation, we proposed to continue to require KCOM to notify changes to technical information at least 90 days in advance of providing new wholesale services or amending existing technical terms and conditions. We proposed to remove the requirement for KCOM to send copies of its technical change notices to Ofcom, but to add the requirement for KCOM to publish these notices on *publicly available* websites, i.e. those that do not require password access.

#### Stakeholders' responses to our proposals

14.105 We did not receive any comments on this proposal.

#### Our decision

14.106 We have decided that these requirements continue to be necessary to give providers sufficient time to prepare for such changes. We have therefore decided to impose an SMP condition requiring KCOM to give notice of changes to technical information. The condition requires the notification of new technical information within a reasonable time period, but not less than 90 days in advance of providing new wholesale services or amending existing technical terms and conditions. We consider that 90 days is the minimum time that competing providers need to modify their

network to support a new or changed technical interface, or support a new point of access or network configuration.

- 14.107 The requirement to give notification within a reasonable time period may mean that a period of notification in excess of 90 days may be appropriate in certain circumstances. For example, if KCOM were to make a major change to its technical terms and conditions, a period of more than the 90-day minimum notification period may be necessary in order to enable competing providers, who purchase affected wholesale services, sufficient time to prepare and support such changes without disruption and detriment to their businesses and customers.
- 14.108 The SMP condition includes two amendments to the condition currently in force. We have removed the requirement for KCOM to additionally send copies of the notices to Ofcom. We have also added a requirement for KCOM to publish any technical change notice on *publicly available* websites, i.e. those that do not require password access, to ensure full transparency for other CPs and ourselves.

#### Legal tests

- 14.109 For the reasons set out below, we are satisfied that the SMP condition (as set out in Annex 35) meets the relevant tests set out in the Act.
- 14.110 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 a notice of changes to technical information.
- 14.111 We consider that the SMP condition satisfy our duties under section 3, and all the Community requirements set out in section 4, of the Act. In particular, the condition is aimed at promoting competition and securing efficient and sustainable competition for the maximum benefits for consumers by ensuring that providers have sufficient notification of technical changes to TISBO and CISBO services to enable them to compete in downstream markets.
- 14.112 Secondly, section 47 of the Act requires conditions to be objectively justifiable, nondiscriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it enables providers to make full and effective use of network access to be able to compete in downstream markets;
  - not unduly discriminatory, in that it is only imposed on KCOM and no other operator has been found to hold a position of SMP in these markets;
  - proportionate, in that 90 days is the minimum period that Ofcom considers is necessary to allow competing providers to modify their networks; and
  - transparent, in that it is clear in its intention that KCOM notify changes to technical information in advance.
- 14.113 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

# **Requirements for accounting separation**

## Aim and effect of the regulation

14.114 Accounting separation obligations require an SMP operator to report separately for each of the relevant markets and services, and account separately for internal and external sales. This allows Ofcom and other CPs to monitor the activities of the SMP operator to ensure that it does not discriminate unduly in favour of its own downstream businesses. In practice, this obligation requires the SMP operator to produce financial statements that reflect the performance of the regulated wholesale markets as though they were separate businesses.

## Our proposals set out in the May 2015 BCMR Consultation

- 14.115 In the BCMR 2013 we imposed accounting separation obligations on KCOM. These obligations were originally imposed in the July 2004 (KCOM) Notification<sup>973</sup> and were re-imposed in 2013, subject to a number of modifications made in that statement.<sup>974</sup>
- 14.116 In the May 2015 BCMR Consultation we proposed to amend the list of wholesale network components that KCOM must attribute costs to within its financial reports (for each of the wholesale leased lines markets), but in other respects to re-impose the same accounting obligations. The proposed amendment added the following components to the list of network components:
  - local loop infrastructure;
  - exchange to exchange infrastructure;
  - electronics;
  - field provision;
  - field maintenance;
  - back-office provision;
  - back-office maintenance;
  - sales and product management;
  - other; and
  - net current assets.

<sup>&</sup>lt;sup>973</sup> Ofcom, The regulatory financial reporting obligations for BT and Kingston Communications, Final statement and notification, 22 July 2004, p57-79

http://stakeholders.ofcom.org.uk/binaries/consultations/fin\_reporting/statement/finance\_report.pdf <sup>974</sup> Annexes to March 2013 BCMR Statement, Annex 7,

http://stakeholders.ofcom.org.uk/binaries/consultations/business-connectivity/statement/annexes1-7.pdf, paragraphs 26 – 27

#### Stakeholders' responses to our proposals

- 14.117 KCOM commented that we provided no justification for the adding of new network components, nor did we conduct a review of the current list and whether the network components remain relevant. KCOM said that it would like to discuss the proposed amendments with Ofcom as implementing the changes is likely to require significant resource and expense with little discernible benefit.<sup>975</sup>
- 14.118 KCOM subsequently explained that it would need to make major changes to its regulatory accounting systems to report against the proposed network components. It therefore asked Ofcom to amend the condition to give it time to make these changes.

#### Our decision

- 14.119 We consider that these obligations are necessary to monitor KCOM's activities with regard to its non-discrimination obligations. We have therefore decided to impose the accounting separation obligations in each of the wholesale leased lines markets in which we have found that it has SMP.
- 14.120 With regards to KCOM's comments about the need to amend the list of wholesale network components that KCOM must attribute costs to within its financial reports, we note that the list of network components imposed in the BCMR 2013 does not reflect the main cost elements of leased lines services. Accordingly, we consider it is appropriate to amend the list of network components as we proposed in the May 2015 BCMR Consultation to provide us with better visibility of KCOM's wholesale leased line costs. This expanded list of components will better enable us to monitor KCOM's activities and ensure that it complies with the non-discrimination obligations and the obligation to ensure that its charges are fair and reasonable.
- 14.121 Following discussions with KCOM we understand that KCOM will need some time to make changes to its regulatory accounting systems to report against the revised network components. We have therefore amended the condition to require KCOM to report against the new network components in its 2017/18 regulatory financial statements.

## Legal tests

- 14.122 For the reasons set out below, we are satisfied that the SMP condition and the modified direction relating to the network components (as set out in Annex 35) meet the various tests set out in the Act.
- 14.123 Sections 87(7) and 87(8) of the Act, authorises Ofcom to impose appropriate accounting separation obligations on a dominant provider in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities. That is to say, 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.
- 14.124 We consider that this SMP condition and the direction amending the list of network components meet our duties under sections 3 and 4 of the Act. We consider that the imposition of accounting separation obligations promotes competition in relation to the provision of electronic communications networks and services, ensuring the

<sup>&</sup>lt;sup>975</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p13

provision of network access and service interoperability for the purposes of securing efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of 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. Our decision to amend KCOM's list of network components seeks to ensure that the presentation and usability of the Regulatory Financial Statements is improved. This decision therefore seeks to ensure that Regulatory Financial Statements remain relevant, thereby increasing transparency. Ultimately, this promotes competition.

- 14.125 With regard to the Community requirements set out in section 4 of the Act, we believe that the SMP condition and the direction meet the requirements. Specifically, we believe section 4(8) is met, where the obligation has the purpose of securing efficient and sustainable competition in the markets for electronic communications networks and services, by helping to ensure that dominant providers comply with other obligations in particular non-discrimination requirements.
- 14.126 We also consider that this SMP condition meets Section 47(2) of the Act which requires conditions to be objectively justifiable, non-discriminatory, proportionate and transparent. We consider the SMP 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 CP which we propose to find has 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 potentially discriminatory behaviour by KCOM; and
  - transparent, in that it is clear that the intention is to monitor compliance with specific remedies and the particular accounting separation requirements of KCOM are clearly documented within the SMP Conditions.
- 14.127 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.
- 14.128 We have considered the direction amending the list of network components against the tests set out in section 49(2) of the Act and have concluded that it is:
  - objectively justifiable, because the amended list of network components will enable Ofcom to more effectively monitor compliance and enforce KCOM's obligations;
  - not unduly discriminatory, because BT is the only other SMP provider which has regulatory accounting obligations and we have decided to issue an updated list of network components for BT to enable it to prepare its Regulatory Financial Statements;
  - proportionate, because our decision is necessary for the list of network components to remain relevant and fit for purpose; and

- transparent, because it is clear that our decision seeks to ensure that KCOM's list of network components remains fit for purpose.
- 14.129 We consider that our decision to amend KCOM's list of network components is not of EU significance<sup>976</sup>, in particular because given the nature and limited extent of regulatory accounting requirements and on the basis of the analysis and impact assessment we set out in the May 2015 BCMR Consultation, these requirements would not affect trade between Member States. We have not therefore included the proposed direction in this statement and will issue the direction amending KCOM's list of network components in our final statement following the EU consultation.

## Requirement to produce a pricing transparency report

#### Aim and effect of the regulation

- 14.130 In a competitive market, prices could be expected to be cost reflective. However, where a provider has SMP, competition cannot be expected to provide effective constraints and *ex ante* regulation may be desirable to prevent charges from being set at an excessive level. A requirement to produce a Pricing Transparency Report (PTR) and submit it to Ofcom will provide us with information about the prices that are being paid by customers for wholesale leased lines. This information will enable us to monitor prices against a suitable benchmark and determine whether prices are in excess of reasonable levels.
- 14.131 Moreover, a PTR enables the monitoring of the SMP operator's compliance with its other SMP Conditions, such as the obligation to publish a RO and not depart from the charges, terms and conditions set out within it, and the obligation not to discriminate unduly.

#### Our proposals set out in the May 2015 BCMR Consultation

- 14.132 We proposed to impose an SMP obligation requiring KCOM to produce a PTR that would be sent to Ofcom on an annual basis. The PTR would list all the wholesale leased lines that are provided by KCOM (both internal and external sales) that fall within any of the regulated wholesale leased lines markets in the Hull area, accompanied by the following information about each leased line:
  - the product type, interface, bandwidth and circuit orientation;
  - the connection charge paid by the customer;
  - the date on which the current rental charge was agreed; and
  - the amount and frequency of the rental charge paid by the customer.

<sup>&</sup>lt;sup>976</sup> As defined under section 150A(2) of the Communications Act 2003, the cumulative criteria that must be satisfied in order for a proposal to be of EU significance include the criterion that the proposal would, in Ofcom's opinion, affect trade between Member States (see section 150A(2)(d)).

## Stakeholders' responses to our proposals

14.133 KCOM considered that our proposal would impose an unnecessary compliance burden which was neither proportionate nor justified in light of the new price publication obligation that would give Ofcom visibility of all its wholesale prices.<sup>977</sup>

## Our decision

- 14.134 As we discuss in more detail in paragraphs 14.146 14.163 below, we consider there is a risk that KCOM may set excessive prices for wholesale leased lines services in the Hull area. To address this risk we have decided to impose an obligation requiring KCOM to ensure that its charges are fair and reasonable and also to monitor KCOM's charges against a benchmark of BT's charges as an alternative to a charge control.
- 14.135 We consider it necessary to take steps to improve pricing transparency to enable us to monitor KCOM's charges effectively. As we discuss in paragraphs 14.69 14.72 above, the changes to the RO obligations will improve pricing transparency by requiring KCOM to publish its charges for new contracts in its RO and prevent it from offering unpublished bespoke discounts. The requirement to provide a PTR will provide us with information about KCOM's charges for individual contracts, including those that were entered into before the revised RO obligation comes into force and which may therefore be on different terms to those published in KCOM's RO. We therefore consider that a requirement to produce a PTR is also necessary to provide transparency so that we can monitor KCOM's wholesale charges effectively. Moreover, the PTR will enable us to monitor KCOM's compliance with its other SMP Conditions, such as the obligation to publish a RO and not depart from the charges, terms and conditions set out within it, and the obligation not to discriminate unduly.
- 14.136 We intend to review KCOM's wholesale leased line charges at least on an annual basis and we therefore consider it proportionate to impose an obligation for KCOM to supply this information annually. Moreover, in view of the difficulty that KCOM had in supplying us with accurate information about its wholesale leased lines in response to our request during this review, we consider that an *ex ante* obligation is likely to be more efficient for both KCOM and Ofcom.<sup>978</sup>
- 14.137 We have therefore decided to impose an SMP obligation requiring KCOM to produce a PTR for Ofcom on an annual basis.
- 14.138 In addition, to enable us to interpret the information in the PTR more easily, we have decided to require KCOM to also provide for each leased line the minimum term of the rental charge where one has been agreed. KCOM will therefore be required to include in its PTR the following information about each leased line:
  - the product type, interface, bandwidth and circuit orientation;
  - the connection charge paid by the customer;

 <sup>&</sup>lt;sup>977</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p11
 <sup>978</sup> In August 2014 we issued KCOM with a formal information request asking for a list of its wholesale leased lines and their charges, which KCOM supplied in September 2014. In February 2015 KCOM conceded that the information provided wasn't accurate. In March 2015 we reissued the formal information request, which KCOM responded to in April 2015.

- the date on which the current rental charge was agreed; and
- the amount and frequency of the rental charge paid by the customer, and the term that that charge has been agreed for, if such as fixed or minimum term has been agreed.

#### Legal tests

- 14.139 We are satisfied that the SMP condition (as set out in Annex 35) meets the various tests set out in the Act.
- 14.140 Section 87(6)(b) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish information for the purpose of securing transparency in relation to matters connected with network access to the relevant network.
- 14.141 We have had regard for to our duties under section 3, and all the Community requirements set out in section 4, of the Act. We note that the SMP condition is aimed at providing transparency about the prices that KCOM charges to enable us to monitor wholesale charges.
- 14.142 Section 47 of the Act requires conditions to be objectively justifiable, not unduly discriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it enables the monitoring of KCOM's wholesale charges, as well as monitoring KCOM's compliance with the other obligations, specifically the obligation to publish a RO and not to depart from the charges, terms and conditions set out within it, and the obligation not to unduly discriminate;
  - not unduly discriminatory, as only KCOM, and no other operator, has been found to hold a position of SMP in these markets and would therefore have the ability and incentive to exploit customers by withholding or misusing information;
  - proportionate, since it is targeted at addressing the SMP that we have found KCOM holds in these markets. This obligation supports the other SMP conditions imposed to address KCOM's SMP in this market by providing transparency on retail pricing as a safeguard against excessive pricing, and ensure compliance KCOM's compliance with its other SMP Conditions; and
  - transparent, in that the SMP condition is clear in its intention and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.
- 14.143 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

#### Interconnection and accommodation remedies

14.144 Interconnection and accommodation services fall within the scope of the network access obligations that we have decided to impose on KCOM in these markets.<sup>979</sup>

<sup>&</sup>lt;sup>979</sup> Network access is defined in sections 151(3) and (4) of the Act and includes interconnection services and/or any services or facilities that would enable another CP to provide electronic
KCOM will therefore be required to meet reasonable requests for interconnection and accommodation services in relation to wholesale services in these markets.

14.145 Given the lack of demand for interconnection and accommodation services, we have decided not to oblige KCOM to provide specific interconnection or accommodation products at this time. In the absence of a clear demand for a specific type of product, there is a risk that a product we might specify would not be used or that it would be not meet CPs' requirements. We consider that opportunities for competition are currently best met by continuing to rely on a general obligation for KCOM to meet reasonable requests for interconnection and accommodation services, which allows CPs to request products as and when required. This obligation would also allow KCOM to recover the efficiently incurred costs associated with any new product requested.

#### Benchmarking of KCOM's wholesale charges

#### Approach proposed in the May 2015 BCMR Consultation

- 14.146 In the May 2015 BCMR Consultation, rather than impose *ex ante* controls such as a charge control or a cost orientation obligation to address the risk of excessive pricing by KCOM, we proposed that a more proportionate approach, which would also have good incentive properties, would be to impose an obligation for KCOM to ensure that its charges are fair and reasonable and to monitor KCOM's wholesale charges against a suitable benchmark.
- 14.147 We proposed that BT's wholesale charges were a suitable initial benchmark as they are subject to a CPI-X charge control designed to bring BT's revenues into line with its forecast costs over the period of the charge control. We proposed that if any concerns were raised from our initial analysis of KCOM's wholesale prices against this benchmark, we would consider what steps might be appropriate to deal with the concerns.
- 14.148 In connection with these proposals we considered it necessary to take steps to improve pricing transparency to enable us to monitor KCOM's charges effectively. We proposed two measures in this regard:
  - Firstly, we proposed to remove the flexibility for KCOM to offer unpublished bespoke discounts by requiring it to publish its wholesale charges in its RO and not to depart from them.
  - Secondly, we proposed to require KCOM to provide us with a PTR on an annual basis. This would enable us to monitor charges for contracts that pre-date the amended RO obligation and which may therefore be offered on different terms.

#### Stakeholders' responses to our proposals

14.149 KCOM welcomed our acknowledgement that KCOM and BT have adopted differing pricing structures for wholesale leased line services and may also have differing approaches to recovering costs. However, it had concerns about our proposal to

communications services or electronic communication networks. We consider that a requirement to provide network access would, therefore, include any ancillary services as may be reasonably necessary for a Third Party to use the services.

benchmark its wholesale charges against BT's if in the future we had concerns about the reasonableness of its charges. In particular:

- KCOM questioned whether BT's wholesale charges would be an appropriate benchmark, given that in a determination to resolve various disputes between CPs and BT between 2004/5 and 2008/9 Ofcom had used DSAC as one of the main standards to determine whether BT was overcharging for leased lines services. Moreover, KCOM argued that there may be circumstances where BT is undercharging (below DLRIC), again making BT's charges an unsuitable benchmark.
- KCOM argued that technical differences between KCOM's network and BT's (including architecture, scale and utilisation) would make meaningful comparison difficult;
- KCOM argued that BT's charge controls, and hence its charges, may take market-specific factors into account which would not be relevant to KCOM;
- KCOM argued that the charge control enables BT to rebalance charges depending on demand for services and costs. This makes it not ideal as a comparator for another CP's charges, as they might face entirely different demand and cost conditions; and
- KCOM pointed out that it has adopted a different pricing structure from BT for leased line services.
- 14.150 KCOM said that it would expect that, should Ofcom feel there is a need to consider the reasonableness of its wholesale charges, Ofcom would give appropriate consideration to these factors.<sup>980</sup>
- 14.151 Vodafone commented that the lack of competition in the Hull area has enabled KCOM to charge higher prices than elsewhere in the UK for its services. By way of example, Vodafone said that Openreach offers a 100Mbit/s Ethernet Access Direct Local Access service for £1,605 per annum, whereas KCOM offers a similar service at c. £15,000 per annum. Vodafone suggested that we should impose a requirement on KCOM to charge prices equivalent to those of BT.<sup>981</sup>

#### Our decision

#### Risk of excessive pricing

- 14.152 In a competitive market, charges could be expected to be cost reflective. However, where a provider has SMP, competition cannot be expected to provide effective constraints and *ex ante* regulation may be desirable to prevent charges from being set at an excessive level.
- 14.153 As we explain in Section 6, whilst there are prospects for competitive entry in the wholesale leased lines markets in the Hull area, we consider that competition will not be sufficiently strong to constrain KCOM in the market review period and we

 <sup>&</sup>lt;sup>980</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p11-13
 <sup>981</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review. Non Confidential Version, July 2015, p66

therefore consider that KCOM would have the ability to charge excessive prices to the detriment of end-users.

#### Potential charge control remedies

- 14.154 The general remedies we have decided to impose, in particular the requirement to offer network access on fair and reasonable terms, conditions and charges, the prohibition against undue discrimination and requirement to publish a reference offer, in our view only do a limited amount to address KCOM's incentive to charge excessive prices in the Hull area. We therefore consider that further measures are needed.
- 14.155 Whilst in principle a charge control is likely to be effective in controlling KCOM's prices and would have good incentive properties, we always seek to impose the minimum necessary remedy to achieve the aim pursued, in light of available evidence. In this regard, we note that KCOM has not previously been subject to a charge control in these markets, and that we have not received any formal complaints from customers and competitors. We therefore consider that a charge control would at this stage be disproportionate to the aim of preventing excessive prices, especially because there are likely to be significant costs to Ofcom and KCOM of formulating and monitoring a charge control.
- 14.156 We have also considered the alternative of imposing a cost orientation obligation to address the risk of excessive pricing. However, we have concluded that a cost orientation obligation in the present circumstances would be disproportionate for similar reasons discussed above in relation to a charge control. In addition, we consider that such an obligation, if used as the primary control on KCOM's prices, would not provide the necessary incentive for KCOM to incur its costs efficiently that we think would be required for this remedy to be effective.

# Monitoring KCOM's charges against a suitable benchmark as an alternative to a charge control remedy

- 14.157 We consider that monitoring KCOM's wholesale charges against a suitable benchmark, in conjunction with an obligation to offer fair and reasonable charges will have good incentive properties and will have a lower regulatory burden than *ex ante* controls, such as a charge control or a cost orientation obligation. In this regard we note that we adopted this approach in the previous market review. Following the June 2012 BCMR Consultation, KCOM offered a voluntary commitment to reduce its wholesale leased lines prices over 3 years. Our analysis indicates that these reductions brought KCOM's published wholesale charges broadly into line with BT's by April 2016 once differences in circuit configuration are taken into account. For example, KCOM's current annual rental charge for a wholesale 100Mbit/s Ethernet Direct Access Service (EDAS) same/adjacent exchange circuit is £3,409.20 and that the annual rental charge for Openreach's EAD service (the closest comparator in terms of circuit configuration) is £2,400 plus main link charges of £372 per km.
- 14.158 We consider that BT's wholesale charges are a suitable benchmark for assessing KCOM's wholesale charges. Firstly, this is because the services provided by KCOM have the same technical characteristics as those provided by BT and we therefore consider that KCOM's wholesale charges should be fairly closely aligned to BT's charges for broadly comparable charge-controlled products; and secondly, because BT's charges are subject to CPI-X charge controls. The controls are designed, amongst other things, to: drive BT's revenues into line with its forecast costs over the period of the control; and to incentivise BT to incur its costs efficiently, with a view to

producing an outcome similar to that we might expect from an efficient operator in a hypothetically competitive market. We would expect KCOM's charges in the Hull area to reflect similar outcomes.

- 14.159 Benchmarking is not a formal charge control mechanism and would not prevent KCOM setting its charges at a level that would recover its efficiently incurred costs. Rather, it is a tool to facilitate initial analysis of KCOM's charges. We would seek to produce a benchmark of a representative group of wholesale products, most likely broadly in line with the charge control baskets we have specified for the TI and Ethernet charge controls for BT. If our initial analysis gave rise to concerns, for example if KCOM's wholesale charges are significantly higher than BT's or do not exhibit a similar trend to BT's charges under the charge controls, we would undertake more detailed analysis to determine whether it would be appropriate to take other factors into account in our assessment of KCOM's charges.
- 14.160 We acknowledge that KCOM and BT have adopted differing pricing structures for their wholesale leased lines services and may also have differing approaches to recovering their costs (for example, the balance between connection and rental charges). We also acknowledge that our charge controls generally afford BT some flexibility to set the level of individual charges in relation to costs – in most cases, within the limit of baskets and sub-caps. However, we consider that, notwithstanding these differences, a meaningful price comparison can be produced, provided the comparison is constructed so as to assess the overall level of charges for the respective leased line services, rather than to mechanistically compare individual charges.
- 14.161 Although we have in the past used DSAC as a first order test of whether an individual charge is excessive, this test was typically applied in the context of charge control baskets set on the basis of FAC. A benchmark based on the DSAC of BT's charges would not therefore reflect the outcome of a competitive market and would in our view be an unsuitable benchmark.

#### Our decision

- 14.162 Having considered stakeholders' comments, we have decided to adopt our proposal to monitor KCOM's wholesale charges against a benchmark of BT's wholesale charges, in conjunction with an obligation to offer fair and reasonable charges. If in future we have concerns about the reasonableness of KCOM's wholesale charges using such a comparison, we would undertake more detailed analysis to determine what measures might be appropriate to deal with such concerns.
- 14.163 For this approach to be fully effective, it is important there is transparency about KCOM's wholesale charges to enable us to monitor them. Under the current arrangements KCOM has the flexibility to offer bespoke discounts, so we have limited visibility of the charges actually paid by wholesale customers. We therefore consider there is a need for further measures to improve pricing transparency to ensure that we can monitor KCOM's charges effectively:
  - Firstly, as we discuss in paragraphs 14.69 14.72 above, we have decided to remove the flexibility for KCOM to offer unpublished bespoke discounts by requiring it to publish its wholesale charges in its RO and not to depart from them.
  - Secondly, as we discuss in more detail in paragraphs 14.130 14.138 above, we have decided to require KCOM to provide us with a PTR on an annual basis. This will enable us to monitor charges for wholesale contracts that pre-date the

amended reference offer obligation and which may therefore be offered on different terms.

# **Remedies for the retail leased lines markets**

- 14.164 We apply regulation at the wholesale level with the aim of addressing our competition concerns both at the wholesale level and at the retail level. However, in circumstances where we consider our wholesale regulation to be insufficient to address our competition concerns in the downstream markets, we also impose retail regulation. Indeed, under section 91(2) of the Act, we may only impose retail remedies where wholesale regulation is insufficient to allow us to fully perform our duties in relation to the market situation in the relevant retail market. Under section 91 of the Act, where wholesale regulation in the upstream market would not suffice to achieve our duties and objectives with regard to the relevant retail market, the sorts of SMP conditions authorised or required by sections 87 to 89 of the Act may be set in that retail market.
- 14.165 As we explain in Section 6, we consider that the remedies we have decided to impose in the relevant upstream markets in the Hull area would not fully address the identified competition problems over the period of the review. The effect of this would be that, absent *ex ante* regulation of retail markets, the SMP provider in this case KCOM would have the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers. Moreover, this would be combined with the incentive to engage in a variety of behaviours that would distort competition in the relevant retail market or harm consumers, including:
  - To unreasonably refuse to supply certain types of service if such a strategy would serve to further its commercial interests.
  - To discriminate unduly against particular retail customers or groups of customers by, for instance, varying its prices, terms or quality of service to serve its own commercial interests.
  - To charge excessive prices for retail services.
- 14.166 We therefore consider that KCOM should be subject to a package of retail market measures to prevent it engaging in these behaviours and to assist us in monitoring KCOM's behaviour over the review period.
- 14.167 In this subsection, we set out our considerations and reasoning in respect of the remedies we have decided to impose to address the identified competition problems in the retail leased lines markets in the Hull area.

14.168 We assess each remedy in turn by setting out:

- The current remedies;
- the aim and effect of the regulation;
- the proposals set out in the May 2015 BCMR Consultation;
- stakeholder responses to our proposals;
- our further considerations, reasoning and decisions; and

• our consideration of the relevant legal tests for imposing the regulation.

#### Requirement to supply retail leased lines

#### Aim and effect of the regulation

- 14.169 In competitive markets retail customers have a choice of suppliers and, if refused service from one provider, would have other suppliers from which they could obtain the same or a similar service. In a market where a provider has SMP, the lack of alternative suppliers creates a risk that the SMP provider could unreasonably refuse to supply certain types of service or customer groups if such a strategy served its commercial interests. An obligation to supply retail leased lines on reasonable request addresses this risk by requiring all services presently offered, as well as all new services, to be supplied upon reasonable request, regardless of any commercial interests.
- 14.170 Additionally, the obligation requires services to be provided on fair and reasonable terms, conditions and charges and hence addresses the risk of an SMP provider charging excessive prices.

#### Our proposals set out in the May 2015 BCMR Consultation

- 14.171 In the BCMR 2013 we required KCOM to supply retail leased lines on reasonable request. These leased lines were to be provided on fair and reasonable terms, conditions and charges, or such other terms, conditions and charges that Ofcom may from time to time direct. KCOM was also required to comply with any directions Ofcom may make from time to time under the condition.
- 14.172 In the May 2015 BCMR Consultation, we proposed to impose the same SMP condition for the next BCMR period, but with two amendments to enable KCOM to withdraw these services if it so wishes. These changes were:
  - not to require KCOM to supply new VLB TI services; and
  - to require KCOM to supply existing very low bandwidth TI services until it gives end-users and Ofcom notice of at least two years' of their withdrawal.

#### Stakeholders' responses to our proposals

- 14.173 KCOM said that no evidence had been provided to justify retail remedies. There have been no allegations of refusal to supply, excessive pricing or undue discrimination. Notwithstanding this view, KCOM welcomed our proposal to remove the obligation to supply new VLB leased lines.<sup>982</sup>
- 14.174 Moreover, KCOM raised concerns about the impact of our approach to product market definition on the scope of the proposed retail and wholesale remedies. KCOM said that we have not followed our usual approach to market definition and had instead defined wholesale markets first and then moved onto retail market definition in the light of wholesale market regulation. The main impact of this change being that we had proposed the same product market definitions for the Hull area as the RoUK and had not identified differences between the product markets in the Hull area and

<sup>&</sup>lt;sup>982</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p8-10

the RoUK. As a result the proposed retail remedies would impose a new obligation for KCOM to supply services that it does not currently offer, in particular:

- retail EFM services; and
- VHB retail CI services.
- 14.175 In KCOM's view, we had not provided any justification for requiring it to supply these services.<sup>983</sup>
- 14.176 Vodafone said that its comments about BT on end-of-life service migration were also relevant to VLB services in the Hull area.<sup>984</sup> In light of these comments it proposed that KCOM should be required to give 3 years' notice before withdrawing VLB services.<sup>985</sup>

#### Our decision

- 14.177 In both of the retail markets in which we have found that KCOM has SMP we have decided to impose an obligation on KCOM to supply retail leased lines on reasonable request, and to supply them on fair and reasonable terms, conditions and charges, or on terms, conditions or charges that Ofcom may from time to time direct. We consider that in the absence of such a requirement there is a risk that KCOM could unreasonably refuse to supply certain types of service or customer groups, or to supply them on unreasonable charges, terms of conditions if such a strategy served its commercial interests.
- 14.178 The obligation to ensure that prices are fair and reasonable addresses the risk that KCOM might charge excessive prices. As we discuss in more detail in paragraphs 14.256 14.268 below, we have also decided to monitor KCOM's prices against a suitable benchmark as an alternative to a charge control.
- 14.179 We consider that an obligation to provide specific types of retail product is not currently warranted. In the absence of clear demand for a specific type of retail product, there is a risk that it would not be used or that it would not meet customers' requirements. We consider that opportunities for competition are currently best met by continuing to rely on a general obligation for KCOM to provide retail leased lines on reasonable request, which allows customers to request retail products as and when required. This obligation would also allow KCOM to recover the efficiently.

#### Scope of the obligation to supply retail leased lines

14.180 We discuss KCOM's comments about our approach to market definition in more detail in Section 6. In summary, when considering the need for retail remedies, retail markets must be defined on the basis that regulation in the relevant upstream wholesale markets applies. Retail market definition in the presence of wholesale remedies is the final stage in the approach to market analysis set out in the relevant Guidelines, and this has not changed since 2013. Moreover, as is clear from Section

<sup>&</sup>lt;sup>983</sup> Ibid, pages 2, 3 and 10

<sup>&</sup>lt;sup>984</sup> We discuss Vodafone's comments about BT's arrangements for end-of-life service migration in Section 8.

<sup>&</sup>lt;sup>985</sup> Vodafone, Response to Ofcom's Consultation: Business Connectivity Market Review. Non Confidential Version, July 2015, p66

6, the retail markets defined at this final stage are specific to the Hull area and no retail markets are defined for regulatory purposes in the rest of the UK.

- 14.181 With regards to VHB CI services, we acknowledge that KCOM does not currently supply any VHB retail CI or wholesale CISBO services. However, given that such services are now well established in the UK generally, we consider that demand may emerge in the Hull area during this review period and that KCOM would be able to meet such demand. In view of the competition problems we have identified, we consider it essential that the general remedies we have specified to address these problems should also apply to VHB retail CI services. This will enable consumers to obtain VHB retail CI services from KCOM should demand for such services emerge and for consumers in the Hull area to be protected from anti-competitive behaviour on the part of KCOM, such as a refusal to supply.
- 14.182 We are not imposing any specific obligations in relation to retail EFM services. KCOM will therefore have flexibility about how it delivers low bandwidth Ethernet services requested under the general obligation to provide network access on reasonable request.

#### VLB retail services

- 14.183 VLB retail services are legacy services that are approaching the end of their life and KCOM has advised us that it is developing plans to withdraw them. We consider that it would be inappropriate for us to seek to artificially to extend the availability of these services through *ex ante* regulation. We therefore consider that KCOM should not be required to provide new VLB retail services.
- 14.184 As with the corresponding retail services provided by BT, our main concern in relation to refusal to supply relates to the withdrawal arrangements, specifically the need to ensure that existing customers are provided with adequate notice of service withdrawal. This is especially important given that some VLB services support critical national infrastructure (CNI) applications. In light of the fact that KCOM's plans are less developed than BT's, we consider it appropriate to retain regulatory oversight of their withdrawal. We also consider it appropriate to impose a minimum notice period for service withdrawal as a backstop to provide additional assurance to existing customers that sufficient notice will be given for them to migrate critical applications onto alternative services. In the 2016 BCMR VLB Statement<sup>986</sup> we report that CNI operators have addressed the technical barriers to migration from VLB services and have made good progress with their plans to migrate from the corresponding VLB retail services provided by BT. We consider that these developments will also reduce the barriers to migration for CNI operators who use KCOM's VLB retail services. We acknowledge that some stakeholders would prefer that we impose a notice period of three years; however, in view of the relatively small volume of circuits involved, we consider that, on balance, a two-year notice period is adequate as a backstop obligation.

14.185 We have therefore decided that KCOM should:

• not be required to supply new retail VLB services; and

<sup>&</sup>lt;sup>986</sup> Business Connectivity Market Review: Very low bandwidth leased lines, Statement, 28 April 2016, <u>http://stakeholders.ofcom.org.uk/consultations/very-low-bandwidth/final-statement/</u>

- be permitted to withdraw existing retail VLB services provided that it gives two years' notice.
- 14.186 In the 2016 BCMR VLB Statement we set out our plans to mitigate any residual risk to CNI operators by raising awareness of VLB service withdrawal amongst the wider CNI community.

#### Legal tests

- 14.187 We are satisfied that the SMP condition (as set out in Annex 35) meets the tests set out in the Act.
- 14.188 Section 91 of the Act authorises the setting of SMP conditions on a dominant provider in a retail market in circumstances where it appears that the imposition of SMP conditions in the upstream wholesale market would not enable us to perform, or fully perform, our duties under section 4 of the Act in relation to the situation in the retail market as revealed by our analysis of that market. In particular, these duties include: to promote competition in relation to the provision of [...] electronic communications services;<sup>987</sup> and to secure efficiency and sustainable competition;<sup>988</sup> and to secure the maximum benefit for the persons who are customers of CPs.<sup>989</sup> We consider this test for imposing retail regulation to be satisfied in relation to the retail markets in the Hull area.
- 14.189 We note that section 87(3) of the Act authorises the setting of an SMP services condition 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.
- 14.190 We have had regard for our 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 furthers the interests of citizens and consumers in relation to communications matters by ensuring the availability of retail leased lines services in these markets and by ensuring that VLB services are not withdrawn without sufficient notice.
- 14.191 Section 47 of the Act requires conditions to be objectively justifiable, not unduly discriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that, absent this obligation, there is a risk KCOM might unreasonably not supply retail leased lines to some or all end-users;
  - not unduly discriminatory, as only KCOM and no other operator has been found to hold a position of SMP in these markets and would therefore have the ability and incentive to exploit customers by not supplying end-users and/or by withdrawing very low bandwidth services without sufficient notice;

<sup>&</sup>lt;sup>987</sup> Communications Act 2003, s4(3)(a)

<sup>988</sup> Communications Act 2003, s4(8)(a)

<sup>&</sup>lt;sup>989</sup> Communications Act 2003, s4(8)(b)

- proportionate, since it is the least onerous obligation which addresses these
  particular risks of harm to end-users and citizens. In particular, wholesale
  remedies alone would be insufficient because there is little prospect that
  alternative suppliers would step in using wholesale inputs if such services were
  withdrawn by KCOM;
- transparent, in that the condition is clear in its intention and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.
- 14.192 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified and ensure end-users derive maximum benefit in terms of choice, price and quality. In this respect, we have also taken into account the extent of investment of KCOM in the matters to which the scope of the fair and reasonable obligation would relate.

#### Requirement not to discriminate unduly

#### Aim and effect of the regulation

14.193 In markets where there is an SMP provider and retail competition is weak, the SMP provider has an incentive to distort competition by discriminating against particular groups of retail customers, for example, through charging higher prices where competition is weaker and lower prices where it is stronger. This discrimination can take a number of forms, including price discrimination, imposing unfair terms or offering inadequate quality of service to particular groups of customers. An obligation not to discriminate unduly addresses this risk by prohibiting such conduct to the extent that the discrimination is undue.

#### Our proposals set out in the May 2015 BCMR Consultation

- 14.194 In the BCMR 2013 we prohibited KCOM from discriminating unduly in relation to the provision of retail leased lines.
- 14.195 In the May 2015 BCMR Consultation, we proposed to impose the same SMP condition for the next BCMR period.

#### Stakeholders' responses to our proposals

14.196 KCOM said that no evidence had been provided to justify retail remedies. There have been no allegations of refusal to supply, excessive pricing or undue discrimination.

#### Our decision

14.197 In light of our analysis in Section 6, particularly in relation to the weakness of retail competition in these markets, we consider that there is a risk of undue discrimination on the part of KCOM. We have therefore decided that KCOM should be subject to a requirement not to discriminate unduly against particular persons or against a particular description of persons in relation to matters connected with the supply of retail leased lines.

#### Legal tests

14.198 We are satisfied that the SMP condition (as set out in Annex 35) meets the tests set out in the Act.

- 14.199 Section 91 of the Act authorises the setting of SMP conditions on a dominant provider in a retail market in circumstances where it appears that the imposition of SMP conditions in the upstream wholesale market would not enable us to perform, or fully perform, our duties under section 4 of the Act in relation to the situation in the retail market as revealed by our analysis of that market. In particular, these duties include: to promote competition in relation to the provision of [...] electronic communications services;<sup>990</sup> and to secure efficiency and sustainable competition;<sup>991</sup> and to secure the maximum benefit for the persons who are customers of CPs.<sup>992</sup> As set out above, we consider this test for imposing retail regulation to be satisfied in relation to the retail markets in the Hull area.
- 14.200 We note that 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.
- 14.201 We have had regard to our 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 preventing the distortion of competition and harm to particular groups of end-users in the form of high prices, unfair terms or inadequate service, which might occur if KCOM had the freedom to unduly discriminate in the provision of services in these markets.
- 14.202 Section 47 of the Act requires conditions to be objectively justifiable, not unduly discriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that KCOM would otherwise be able to distort competition by discriminating against particular groups of retail customers – e.g. through charging high prices where competition is weak and lower prices where it is stronger and/or engaging in unduly discriminatory non-pricing practices (such as imposing unfair terms or offering inadequate quality of service to particular groups of customers). The requirement therefore promotes competition and furthers the interests of consumers;
  - not unduly discriminatory, as only KCOM, and no other operator, has been found to hold a position of SMP in these markets and would therefore have the ability and incentive to exploit customers by engaging in unduly discriminatory pricing and non-pricing practices;
  - proportionate, because it is the least onerous obligation which addresses this
    particular risk of harm to competition. As noted in relation to the obligation to
    supply, we do not consider wholesale remedies would be sufficient, because
    there is little prospect that alternative suppliers would step in using wholesale
    inputs were KCOM to charge excessive prices, impose unfair terms or offer
    inadequate quality of service; and
  - transparent, in that the SMP condition is clear in its intention and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.

<sup>&</sup>lt;sup>990</sup> Communications Act 2003, s4(3)(a)

<sup>&</sup>lt;sup>991</sup> Communications Act 2003, s4(8)(a)

<sup>&</sup>lt;sup>992</sup> Communications Act 2003, s4(8)(b)

14.203 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified and ensure end-users derive maximum benefit in terms of choice, price and quality.

#### Requirement to publish a reference offer

#### Aim and effect of the regulation

14.204 A requirement to publish an RO has three main purposes:

- to assist transparency for the monitoring of potential anti-competitive behaviour;
- to give visibility to the terms and conditions on which other customers will purchase retail services; and
- to enable Ofcom to monitor an SMP operator's retail prices (as discussed above).
- 14.205 This helps ensure stability in markets, and without it incentives to invest might be undermined and market entry less likely
- 14.206 The publication of an RO would potentially allow for quicker negotiations, avoid possible disputes and give confidence to those purchasing retail services that they are being provided on non-discriminatory terms. Without this obligation, an SMP operator would have an incentive not to publish this information, with the result that discriminatory conduct or excessive pricing would be less visible.
- 14.207 Moreover, in conjunction with the non-discrimination obligation, the effect of this obligation is to prevent an SMP operator from:
  - bundling retail leased lines together with other non-SMP products or services i.e. making the sale of a retail leased line conditional on the sale of another product or service including as part of a package incorporating another product or service; and
  - offering bespoke prices in order to secure business contracts against competition from other CPs. An SMP operator would still be permitted to offer discounts, but the terms of any such discounts would have to be published in the RO and available to all customers.

#### Our proposals set out in the May 2015 BCMR Consultation

- 14.208 In the BCMR 2013 we required KCOM to publish an RO in relation to the provision of retail leased lines.
- 14.209 In the May 2015 BCMR Consultation we proposed that KCOM should continue to be required to publish an RO for each of the retail markets in the Hull area. The proposed condition would require the published RO to include as a minimum, such matters as:
  - technical characteristics of the services, including the physical and electrical characteristics, as well as the detailed technical and performance specifications which apply at the network termination point;
  - charges, including the initial connection charges, the periodic rental charges and other charges;

- information concerning the ordering procedure;
- contractual details; and
- any refund procedure.
- 14.210 The condition proposed in the May 2015 BCMR Consultation would also prohibit KCOM from departing from the charges, terms and conditions set out in the RO. It would also require KCOM to comply with any directions Ofcom may make from time to time under the condition.
- 14.211 Additionally, we proposed two changes to the SMP condition imposed in the BCMR 2013:
  - To remove the flexibility for KCOM to offer bespoke discounts by requiring it to publish its retail charges in its RO and not to depart from those charges. We proposed this change as we considered that there was a need to improve pricing transparency to support the development of competition and minimise the risk of discriminatory conduct by KCOM.
  - To add a requirement for KCOM to publish its ROs on *publicly available* websites, i.e. those that do not require password access, to ensure full transparency for other CPs and for us.

#### Stakeholders' responses to our proposals

- 14.212 KCOM opposed our proposal to remove its flexibility to offer bespoke prices for retail services. KCOM said it was unclear what problem we are seeking to address with this proposal, and argued that it did not believe the proposed remedy is justified or proportionate. KCOM added that it could ultimately have harmful effects for customers who have previously been able to benefit from KCOM's pricing flexibility.
- 14.213 KCOM added that such a change would also require a significant amount of work to ensure compliance. KCOM also said that this proposal would place KCOM at a disadvantage when it comes to circuit renewals or future sales to existing customers, where it would now only be able to offer circuits on reference offer terms in direct contrast to the flexible approach it is able to take with customers now.<sup>993</sup>

#### Our decision

- 14.214 We consider that the current RO obligation has been largely effective in meeting the aims of the regulation detailed above, and consider it appropriate to re-impose the obligation with the two amendments noted above in each of the retail leased lines markets identified in this market review.
- 14.215 The main amendment is to remove the flexibility granted to KCOM in the last review to offer bespoke prices for retail services. In the BCMR 2013 we noted there was relatively little competition to KCOM, particularly for large local institutions whose connectivity requirements are mostly within the Hull area. Given this, our view in the BCMR 2013 was that the main impact of requiring KCOM not to deviate from published prices would be to restrict its ability to offer discounts to large local users, and this might have led to higher prices for them. We therefore concluded that KCOM

<sup>&</sup>lt;sup>993</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p9

should have some flexibility to price discriminate and offer discounts where it is efficient to do so. We allowed KCOM to offer these bespoke discounts by requiring it to publish only its maximum prices in its reference offer. This was in order to provide some transparency of retail pricing and to allow us to monitor retail prices.

- 14.216 In the course of this review we have found this arrangement has not been effective. KCOM has published very high retail prices and regularly offers bespoke discounts, consequently providing little transparency of the retail prices that are typically paid by end-users.
- 14.217 In view of the better long-term prospects for competition in the Hull area (as discussed in paragraph 14.8 above), we consider it appropriate to improve pricing transparency by removing KCOM's flexibility to offer bespoke discounts. This will support the development of competition, in particular by minimising the risk of discriminatory conduct by KCOM. This change will also benefit consumers as it will mean that, in the event that KCOM does experience some competition for example, for the highest value users by being unable to make bespoke discounts, any price reductions that KCOM makes as a result of competitive pressures would have to available to all consumers in the Hull area, including those that would not have another choice of supplier.
- 14.218 In addition, as we discuss in more detail in paragraphs 14.256 14.268 below, we consider there is a risk that KCOM may set excessive prices for retail leased lines services in the Hull area. To address this risk we have decided to impose an obligation for KCOM to ensure that its prices are fair and reasonable and to monitor KCOM's charges against a benchmark of its wholesale charges (with an appropriate margin for retail costs) as an alternative to a charge control. We also consider that this change (i.e. removing KCOM's flexibility to offer bespoke discounts) is necessary to enable us to monitor KCOM's charges effectively.
- 14.219 We have therefore decided to remove the flexibility for KCOM to offer unpublished bespoke discounts by requiring it to publish its retail charges, including any discounts offered, in its RO and not to depart from those charges.
- 14.220 We acknowledge that this change will limit KCOM's retail pricing flexibility. However, we consider that improving our ability to monitor KCOMs charges and supporting the development of competition is in the interests of consumers. Moreover, our analysis of KCOM's retail prices also suggests that the flexibility to offer bespoke discounts has not benefited consumers overall.
- 14.221 The effect of the amended condition is to require KCOM to apply the published terms, conditions and charges to every new retail leased line contract that it enters into after the condition comes into force. KCOM will be able to offer discounts, but the terms of these discounts will have to be published in the RO and available to all customers.
- 14.222 The SMP condition also includes an amendment requiring that KCOM must publish its ROs on *publicly available* websites, i.e. those that do not require password access, to ensure full transparency for other CPs and ourselves.

#### Legal tests

14.223 We are satisfied that the SMP condition (as set out in Annex 35) meets the various tests set out in the Act.

- 14.224 Section 91 of the Act authorises the setting of SMP conditions on a dominant provider in a retail market in circumstances where it appears that the imposition of SMP conditions in the upstream wholesale market would not enable us to perform, or fully perform, our duties under section 4 of the Act in relation to the situation in the retail market as revealed by our analysis of that market. In particular, these duties include: to promote competition in relation to the provision of [...] electronic communications services;<sup>994</sup> and to secure efficiency and sustainable competition;<sup>995</sup> and to secure the maximum benefit for the persons who are customers of CPs.<sup>996</sup> As set out above, we consider this test for imposing retail regulation to be satisfied in relation to the retail markets in the Hull area.
- 14.225 We note that 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 RO. Finally, section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed form time to time.
- 14.226 We have had regard to our duties under section 3, and all the Community requirements set out in section 4, of the Act. We note that the SMP condition is aimed at preventing KCOM from varying terms and conditions in a way which would harm citizens and consumers, and at providing transparency about the prices that KCOM charges to enable us to monitor retail prices.
- 14.227 Section 47 of the Act requires conditions to be objectively justifiable, not unduly discriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it provides certainty to operators and prevents KCOM from withholding information from customers and competitors, or misusing information in a way which could harm competition, which would be a real risk in the absence of the conditions. In addition, the SMP condition facilitates monitoring of KCOM's retail prices and monitoring compliance with the other obligations, notably the obligation not to discriminate unduly;
  - not unduly discriminatory, as only KCOM, and no other operator, has been found to hold a position of SMP in these markets and would therefore have the ability and incentive to exploit customers by withholding or misusing information;
  - proportionate, since it is targeted at addressing the SMP that we have found KCOM holds in these markets. This obligation supports the other SMP conditions imposed to address KCOM's SMP in this market. It provides transparency on retail pricing as a safeguard against excessive pricing and it ensures that CPs have access to information they need to compete fairly with KCOM. Additionally, a wholesale remedy would not be capable of supporting the other obligations at the retail level referred to above; and

<sup>&</sup>lt;sup>994</sup> Communications Act 2003, s4(3)(a)

<sup>&</sup>lt;sup>995</sup> Communications Act 2003, s4(8)(a)

<sup>&</sup>lt;sup>996</sup> Communications Act 2003, s4(8)(b)

- transparent, in that the SMP condition is clear in its intention and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.
- 14.228 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified and ensure end-users derive maximum benefit in terms of choice, price and quality.

#### Requirement to produce a pricing transparency report

#### Aim and effect of the regulation

- 14.229 In a competitive market, prices could be expected to be cost reflective. However, where a provider has SMP, competition cannot be expected to provide effective constraints and *ex ante* regulation may be desirable to prevent charges from being set at an excessive level. This requirement to produce a PTR and submit it to Ofcom will provide us with information about the actual prices that are being paid by customers for retail leased lines. This information will enable us to monitor prices against a suitable benchmark and determine whether prices are in excess of reasonable levels.
- 14.230 Moreover, a PTR enables the monitoring of the SMP operator's compliance with its other SMP Conditions, such as the obligation to publish a RO and not depart from the charges, terms and conditions set out within it, and the obligation not to discriminate unduly.

#### Our proposals in the May 2015 BCMR Consultation

- 14.231 We proposed to impose an SMP obligation requiring KCOM to produce a PTR that would be sent to Ofcom on an annual basis. The PTR would list all the retail leased lines that are provided by KCOM (both internal and external sales) that fall within any of the regulated retail leased lines markets in the Hull area, accompanied with the following information about each leased line:
  - the product type, interface, bandwidth and circuit orientation;
  - the connection charge paid by the customer;
  - the date on which the current rental price was agreed; and
  - the annual rental price paid by the customer.

#### Stakeholders' responses to our proposals

14.232 KCOM considered that our proposal would impose an unnecessary compliance burden was neither proportionate nor justified in light of the new price publication obligation that would give Ofcom visibility of all its retail prices.<sup>997</sup>

#### Our decision

14.233 As we discuss in more detail in paragraphs 14.256 – 14.268 below, we consider there is a risk that KCOM may set excessive prices for retail leased lines services in

<sup>&</sup>lt;sup>997</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p9

the Hull area. To address this risk we have decided to impose an obligation for KCOM to ensure that its prices are fair and reasonable, and to monitor KCOM's prices against a benchmark of BT's wholesale charges plus a reasonable allowance for KCOM's gross retail margin as an alternative to a price control.

- 14.234 We consider it necessary to take steps to improve pricing transparency to enable us to monitor KCOM's charges effectively. As we discuss in paragraphs 14.215 14.219 above, the changes to the RO obligations will improve pricing transparency by requiring KCOM to publish its prices for new contracts in its RO and prevent it from offering unpublished bespoke discounts. The requirement to provide a PTR will provide us with a greater level of information: KCOM's prices for individual contracts, including those that were entered into before the revised RO obligation comes into force and which may therefore be on different terms to those published in KCOM's RO. We consider that such a requirement is also necessary to provide transparency so that we can monitor all KCOM's prices effectively. Moreover, the PTR will enable us to monitor KCOM's compliance with its other SMP Conditions, such as the obligation to publish a RO and not depart from the charges, terms and conditions set out within it, and the obligation not to discriminate unduly.
- 14.235 We intend to review KCOM's retail leased line prices at least on an annual basis and we therefore consider it proportionate to impose an obligation for KCOM to supply this information annually. Moreover, in view of the difficulty that KCOM had in supplying us with accurate information about its retail leased lines in response to our request during this review, we consider that an *ex ante* obligation is likely to be more efficient for both KCOM and Ofcom.<sup>998</sup>
- 14.236 We have therefore decided to impose an SMP obligation requiring KCOM to produce a PTR for Ofcom on an annual basis.
- 14.237 In addition, to enable us to interpret the information in the PTR more easily, we have decided to require KCOM to also provide for each leased line the minimum term of the rental charge where one has been agreed. KCOM will therefore be required to include in its PTR the following information about each leased line:
  - the product type, interface, bandwidth and circuit orientation;
  - the connection charge paid by the customer;
  - the date on which the current rental charge was agreed; and
  - the amount and frequency of the rental charge paid by the customer, and the term that that charge has been agreed for, if such as fixed or minimum term has been agreed.

#### Legal tests

14.238 We are satisfied that the SMP condition (as set out in Annex 35) meets the tests set out in the Act.

<sup>&</sup>lt;sup>998</sup> In August 2014 we issued KCOM with a formal information request asking for a list of its retail leased lines and their prices, which KCOM supplied in September 2014. In February 2015 KCOM conceded that the information provided wasn't accurate. In March 2015 we reissued the formal information request, which KCOM responded to in April 2015.

- 14.239 Section 91 of the Act authorises the setting of SMP conditions on a dominant provider in a retail market in circumstances where it appears that the imposition of SMP conditions in the upstream wholesale market would not enable us to perform, or fully perform, our duties under section 4 of the Act in relation to the situation in the retail market as revealed by our analysis of that market. In particular, these duties include: to promote competition in relation to the provision of [...] electronic communications services;<sup>999</sup> and to secure efficiency and sustainable competition;<sup>1000</sup> and to secure the maximum benefit for the persons who are customers of CPs.<sup>1001</sup> As set out above, we consider this test for imposing retail regulation to be satisfied in relation to the retail markets in the Hull area.
- 14.240 We note that section 87(6)(b) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish information for the purpose of securing transparency in relation to matters connected with network access to the relevant network.
- 14.241 We have had regard to our duties under section 3, and all the Community requirements set out in section 4, of the Act. We note that the SMP condition is aimed at providing transparency about the prices that KCOM charges to enable us to monitor retail prices.
- 14.242 Section 47 of the Act requires conditions to be objectively justifiable, not unduly discriminatory, proportionate and transparent. The SMP condition is:
  - objectively justifiable, in that it enables the monitoring of KCOM's retail prices, as well as monitoring KCOM's compliance with the other obligations, specifically the obligation to publish an RO and not to depart from the charges, terms and conditions set out within it, and the obligation not to duly discriminate;
  - not unduly discriminatory, as only KCOM, and no other operator, has been found to hold a position of SMP in these markets and would therefore have the ability and incentive to exploit customers by withholding or misusing information;
  - proportionate, since it is targeted at addressing the SMP that we have found KCOM holds in these markets. This obligation supports the other SMP conditions imposed to address KCOM's SMP in this market by providing transparency on retail pricing as a safeguard against excessive pricing, and ensure KCOM's compliance with its other SMP Conditions; and
  - transparent, in that the SMP condition is clear in its intention and because the purpose and meaning of the obligation and the reasons for imposing it are clearly explained in this document.
- 14.243 For the reasons set out above, we consider that the SMP condition is appropriate to address the competition concerns identified and ensure end-users derive maximum benefit in terms of choice, price and quality.

<sup>&</sup>lt;sup>999</sup> Communications Act 2003, s4(3)(a)

<sup>&</sup>lt;sup>1000</sup> Communications Act 2003, s4(8)(a)

<sup>&</sup>lt;sup>1001</sup> Communications Act 2003, s4(8)(b)

# **Cost accounting obligations**

#### Aim and effect of the regulation

- 14.244 Cost accounting obligations require the dominant provider to maintain a cost accounting system (a set of processes and systems) 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 services may be determined. Cost accounting obligations perform several important functions. In particular:
  - Cost accounting obligations ensure that we have the information necessary to carry out our work, pursuant to our statutory duties, including the following:
    - Information to support the monitoring of compliance with and of effectiveness of remedies. Given the nature of a market review, any SMP findings apply prospectively. In this respect, cost accounting obligations provide important information to us so that we may ensure that remedies we have applied in our market reviews in general, and those SMP conditions we are imposing as a result of this review, continue to address the competition problems identified.
    - Information to support our market reviews. Our market reviews involve a forward-looking, structural evaluation of the relevant markets, based on existing market conditions. The information deriving from cost accounting obligations assists us in this evaluation, in particular, at the remedies stage in determining whether a form of price control<sup>1002</sup> (if any) should be imposed and, if so, what the appropriate price control should be.
    - Information to support investigations of potential breaches of SMP obligations and anti-competitive practices. It may also be used in resolving disputes.
  - Cost accounting obligations ensure that the dominant provider records all information necessary for the purposes listed above at the time those 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.

#### Proposals set out in the May 2015 BCMR Consultation

- 14.245 The BCMR 2013 did not subject KCOM to cost accounting obligations in the retail leased lines markets.
- 14.246 In the May 2015 BCMR Consultation, we proposed to impose cost accounting requirements on KCOM in both the retail leased lines markets. Under this obligation, we would require KCOM to provide information to Ofcom confidentially on an annual basis, showing revenues, wholesale charges and retail costs at a market level for each of the regulated retail markets. Retail costs should be split to show operating expenditure as well as depreciation. Our rationale for this proposal was that having visibility of KCOM's profitability in these retail markets would allow us to monitor the effectiveness of the remedies which we proposed to impose on KCOM in both these retail leased lines markets.

<sup>&</sup>lt;sup>1002</sup> Within the meaning of section 87(9) of the Act

#### Stakeholders' responses to our proposals

14.247 KCOM opposed this proposal, arguing that it is disproportionate and unjustified given there have been no allegations of excessive pricing or formal complaints to Ofcom about pricing. KCOM stated that it would involve considerable effort to report in the way proposed.<sup>1003</sup>

#### Our decision

- 14.248 We have decided to impose cost accounting requirements on KCOM in both the retail leased lines markets in which we have found that it has SMP. Under this obligation, we would require KCOM to confidentially provide information to Ofcom on an annual basis, showing revenues, wholesale charges and retail costs at a market level for each of the regulated retail markets. Retail costs should be split to show operating expenditure as well as depreciation.
- 14.249 We do not agree with KCOM's view that this obligation is disproportionate or unjustified. We consider that cost accounting information is necessary given the competition problems we have identified. We require the information concerning KCOM's profitability in these retail markets to allow us to monitor the effectiveness of the remedies which we have decided to impose on KCOM in both retail leased lines markets where we found KCOM to hold SMP, including the obligation to provide network access on fair and reasonable terms, conditions and charges. Moreover, whilst we have not received any formal complaints about KCOM's retail prices, the information available to us suggests that KCOM's retail margins may be high and we therefore consider it proportionate to require KCOM to provide further information about its retail costs.

#### Legal tests

- 14.250 We are satisfied that the SMP conditions (as set out in Annex 35) meet the tests set out in the Act.
- 14.251 Section 91 of the Act authorises the setting of SMP conditions on a dominant provider in a retail market in circumstances where it appears that the imposition of SMP conditions in the upstream wholesale market would not enable us to perform, or fully perform, our duties under section 4 of the Act in relation to the situation in the retail market as revealed by our analysis of that market. In particular, these duties include: to promote competition in relation to the provision of [...] electronic communications services;<sup>1004</sup> and to secure efficiency and sustainable competition;<sup>1005</sup> and to secure the maximum benefit for the persons who are customers of CPs.<sup>1006</sup> As set out above, we consider this test for imposing retail regulation to be satisfied in relation to the retail markets in the Hull area. Furthermore, section 91(6) provides that where Ofcom imposes a condition under section 91 which controls tariffs, or other matters to which costs are relevant, Ofcom may also require the use of a cost accounting system.
- 14.252 We note that 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

<sup>&</sup>lt;sup>1003</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p10

<sup>&</sup>lt;sup>1004</sup> Communications Act 2003, s4(3)(a)

<sup>&</sup>lt;sup>1005</sup> Communications Act 2003, s4(8)(a)

<sup>&</sup>lt;sup>1006</sup> Communications Act 2003, s4(8)(b)

of the provision of network access, the use of the relevant network and the availability of relevant facilities.

- 14.253 We have had regard to our duties under section 3, and all the Community requirements set out in section 4, of the Act. In accordance with section 3 we consider the proposed conditions would further the interests of citizens and further the interests of consumers in relevant markets by requiring KCOM to provide Ofcom with financial information that would enable us to monitor the effectiveness of the retail remedies we impose and support our decision-making in relation to these markets. Further, for these reasons, in accordance with section 4, we also consider the proposed conditions would help secure the maximum benefit for the persons who are customers of communications providers.
- 14.254 We consider that the SMP conditions meet the criteria set out in section 47(2) of the Act because they are:
  - objectively justifiable, for the reasons set out above;
  - non-discriminatory, as they are to be imposed only for KCOM and no other operator has been found to hold a position of SMP in the relevant markets in which we are imposing cost accounting obligations;
  - proportionate, in that they require KCOM to provide the minimum amount of information necessary to discharge our duties; and
  - transparent, in that these SMP conditions are clear in their intention and because the purpose and meaning of the conditions, and the reasons for imposing them are clearly explained in this document.
- 14.255 For the reasons set out above, we consider that the SMP conditions are appropriate to address the competition concerns identified and ensure end-users derive maximum benefit in terms of choice, price and quality.

#### Benchmarking of KCOM's retail prices

#### Approach proposed in the May 2015 BCMR Consultation

- 14.256 In the May 2015 BCMR Consultation, rather than propose a price control or a cost orientation obligation to address the risk of excessive pricing by KCOM, we proposed that a more proportionate approach, which would also have good incentive properties, would be maintain the approach adopted in the BCMR 2013, namely to impose an obligation for KCOM to ensure that its prices are fair and reasonable and to monitor KCOM's prices against a suitable benchmark.
- 14.257 We proposed that KCOM's wholesale charges (which we also proposed to monitor using a benchmark) plus a reasonable allowance for KCOM's gross retail margin (to cover retail costs, including a reasonable rate of return) would be a suitable initial benchmark for assessing KCOM's retail prices. If any concerns were raised from our initial analysis of KCOM's retail prices against this benchmark, we would consider what alternative steps might be appropriate to deal with the concerns.
- 14.258 In connection with our proposals, we considered it necessary to take steps to improve pricing transparency to enable us to monitor KCOM's prices effectively. As we have discussed above, we also proposed two measures in this regard:

- Firstly, we proposed to remove the flexibility for KCOM to offer unpublished bespoke discounts by requiring it to publish its retail prices in its RO and not to depart from them.
- Secondly, we proposed to require KCOM to provide us with a PTR on an annual basis. This would enable us to monitor prices for contracts that pre-date the amended reference offer obligation and which may therefore be offered on different terms.

#### Stakeholders' responses to our proposals

14.259 KCOM commented that using KCOM's wholesale charge plus a reasonable allowance for gross retail margin was more acceptable than benchmarking its charges against BT's retail prices. However, KCOM was concerned about our approach in view of our proposal to benchmark its wholesale charges against BT's wholesale charges.<sup>1007</sup>

#### Our decision

#### Risk of excessive pricing

- 14.260 In a competitive market, prices could be expected to be cost reflective. However, where a provider has SMP, competition cannot be expected to provide effective constraints and *ex ante* regulation may be desirable to prevent prices from being set at an excessive level.
- 14.261 As we explain in Section 6 and above, in these retail leased lines markets where KCOM has SMP, whilst there are may be somewhat better long-term prospects for competition than appeared in the past, we consider that competition will not be sufficiently strong to constrain KCOM in the review period and we therefore consider that KCOM will have the ability and incentive to charge excessive prices to the detriment of end-users.

#### Potential charge control remedies

- 14.262 The general remedies we have decided to impose, in particular the requirement to supply retail leased lines on fair and reasonable terms, conditions and charges, the prohibition against undue discrimination and requirement to publish a RO, in our view, only do a limited amount to address the incentive to charge excessive prices. We therefore consider that further measures are needed.
- 14.263 Whilst in principle a price control is likely to be effective in controlling KCOM's prices, and would also have good incentive properties, we also consider what the minimum necessary remedy is to achieve the aim pursued, in light of available evidence. In this regard, we note that KCOM has not previously been subject to a price control in these markets and that we have not received any formal complaints from customers and competitors. We therefore consider that a price control would at this stage be disproportionate to the aim preventing excessive prices, especially given the significant costs to Ofcom and KCOM of formulating and monitoring a price control.
- 14.264 We have also considered the alternative of imposing a cost orientation obligation to address the possible risk of excessive pricing. However, we believe that a cost

<sup>&</sup>lt;sup>1007</sup> KCOM, Business Connectivity Market Review, KCOM response, 31 July 2015, p2 and p13

orientation obligation in the present circumstances would be disproportionate for similar reasons discussed above in relation to a price control. In addition, we consider that such an obligation, if used as the primary control on KCOM's prices, would not provide the necessary incentive for KCOM to incur its cost efficiently that we think would be required for this remedy to be effective.

# Monitoring KCOM's retail charges against a suitable benchmark as an alternative to ex ante controls

- 14.265 We consider that monitoring KCOM's retail prices against a suitable benchmark, in conjunction with an obligation to offer fair and reasonable prices will have good incentive properties and will have a lower regulatory burden than the *ex ante* controls discussed above. We consider that KCOM's wholesale charges plus a reasonable allowance for KCOM's gross retail margin (to cover retail costs, including a reasonable rate of return) would be a suitable initial benchmark for assessing KCOM's retail prices.
- 14.266 Benchmarking is not a formal price control mechanism and would not prevent KCOM setting its prices at a level that would recover its efficiently incurred costs. Rather it is a tool to facilitate our initial analysis of KCOM's charges. Although KCOM's wholesale charges form part of our benchmark, the focus of our retail benchmark is KCOM's gross margin over its wholesale charges. In paragraph 14.158, we have discussed KCOM's concerns about the suitability of BT's wholesale charges as a benchmark against which to monitor KCOM's wholesale charges.

#### Our decision

- 14.267 Having considered KCOM's comments we have decided to adopt our proposal to monitor KCOM's retail prices against a benchmark of KCOM's wholesale charges plus a reasonable allowance for KCOM's gross retail margin (to cover retail costs, including a reasonable rate of return). <sup>1008</sup> If in future we have concerns about the reasonableness of KCOM's prices using such a comparison, we would undertake more detailed analysis to determine what measures might be appropriate to deal with such concerns.
- 14.268 For this approach to be fully effective, it is important that we have visibility of KCOM's retail prices. In this respect, we consider that the arrangement adopted in the BCMR 2013, under which KCOM is required to publish only its maximum retail prices, has not been fully effective. KCOM has published very high retail prices and we therefore have insufficient visibility as to the prices actually paid by end-users. In view of this, we consider there is a need for further measures to provide additional transparency about retail priceng:
  - Firstly, as we discuss in paragraphs 14.215 14.219 above, we have decided to remove the flexibility for KCOM to offer unpublished bespoke discounts by requiring it to publish its retail prices in its RO and not to depart from them.
  - Secondly, as we discuss in more detail in paragraphs 14.229 14.237 above, we have decided to require KCOM to provide us with a PTR on an annual basis. This will enable us to monitor prices for contracts that pre-date the amended RO obligation and which may therefore be offered on different terms.

<sup>&</sup>lt;sup>1008</sup> In order to preserve incentive, we may also use BT's retail costs as a benchmark for a reasonable level of retail costs.

## Section 15

# Remedies – summary of approach to setting the charge controls

# Introduction

15.1 In Sections 8 to 14, Volume I, we explain that we are imposing charge controls on leased lines services and relevant ancillary services. In this section we summarise the charge controls decisions, including our decisions on the structure and levels of the controls. A detailed explanation of our approach, including the principles we have used to set the controls and our modelling approach (including the inputs and the adjustments we have made) is set out in Volume II of this statement.

# Key features of our charge controls

- 15.2 We have decided to impose a series of restrictions on BT's charges. The charge controls cover wholesale TI services at bandwidths up to and including 8Mbit/s; wholesale Ethernet services at bandwidths up to and including 1Gbit/s; accommodation services; Excess Construction Charges (ECCs)<sup>1009</sup>; and Time Related Charges (TRCs).<sup>1010 1011</sup>
- 15.3 The new charge controls are set out in Table 15.1 below. The combined approach of our starting charge adjustments and our CPI-X price caps is intended to align BT's charges for the relevant services with costs by the end of the control period.
- 15.4 The previous charge controls for leased lines services will expire on 31 March 2016. The new charge controls will come into force on 1 May 2016 and cover the period to 31 March 2019.
- 15.5 We are proposing significant reductions to both BT's Ethernet and TI charges. Our decisions for the Ethernet and TI charge control baskets reflect that BT's returns in these markets are significantly in excess of its cost of capital.
- 15.6 First, for TI and Ethernet services we are imposing immediate reductions in BT's charges on 1 May 2016, i.e. starting charge adjustments. Second, for the period from 2 May 2016 to 31 March 2019, we have decided to control BT's TI, Ethernet, TRCs, ECCs and Accommodation services through a series of price caps. This means that BT will be required to ensure that its charges do not increase by more than an index (in most cases CPI) minus the value of X in each year of the control. We place further restrictions on BT's flexibility in implementing the starting charge adjustments and the charge controls through a series of sub-baskets and sub-caps.

<sup>&</sup>lt;sup>1009</sup> ECCs are charges levied by BT in some cases where it needs to extend its network to an end user's premises.

<sup>&</sup>lt;sup>1010</sup> TRCs are levied for services such as fault repair and providing or rearranging services where the work is not covered within Openreach's terms of service.

<sup>&</sup>lt;sup>1011</sup> As set out in Volume I of this statement, we are also imposing a safeguard cap charge control for WDM and Ethernet services at bandwidths above 1Gbit/s.

Baskets	BT product name	Starting Charge Adjustment	Value of X
Ethernet basket		-12%	CPI-13.5% <sup>1012</sup>
	Sub-baske	ts/sub-caps	
1Gbit/s EAD sub-basket	1Gbit/s EAD and EAD LA <sup>1013</sup>	-12%	CPI-6.75%
Main link sub-basket	EAD Main link, WES/WEES, BNS, ONBS and BES Main Link charges	-12%	CPI-6.75%
Interconnection services and Cablelink sub-basket	Bulk Transport Link (BTL), Cablelink	-12%	CPI-13.50%
Ethernet rental sub- basket	EAD and EBD rental charges with an associated connection charge		CPI-CPI
Sub-cap on all charges	All Ethernet Services <sup>1014</sup>		CPI-CPI
TI basket		-7.5%	CPI-3.5%
	Sub-baske	ts/sub-caps	
2Mbit/s RBS and SiteConnect sub-basket	2Mbit/s Radio Backhaul Services (RBS) and SiteConnect	-7.5%	CPI-3.5%
Sub-cap on interconnection services	PPC and RBS point of handover charges		CPI-CPI
Sub-cap on all non- interconnection charges	All TI services (excluding interconnection services)		CPI+8%
Accommodation services i.e. to rent space in BT exchanges			
Access Locate Administration Fee	Access Locate Administration Fee <sup>1015</sup>		CPI-0%
Excess Construction Charges (ECCs)			
Contractor ECCs	Construction activities that Openreach provides through an external contractor	None	Basis of charges obligation <sup>1016</sup>
Direct ECCs: Blown fibre	Fibre installation using blown fibre technique	None	CPI-18.75%

<sup>1012</sup> CPI refers to the amount of change in the Consumer Prices Index.

<sup>&</sup>lt;sup>1013</sup> EAD stands for Ethernet Access Direct. This includes all variants of 1Gbit/s EAD and EAD LA services. <sup>1014</sup> Except charges that fall within the Ethernet rental sub-basket.

<sup>&</sup>lt;sup>1015</sup> We have decided to treat the Ethernet and TI accommodation products that overlap with LLU Co-Mingling products the same as the LLU Co-Mingling products. The June 2014 FAMR Statement's charge control for the Co-Mingling (New Provides and Rentals) basket continue to apply regardless of whether they are used by CPs for leased line products or for LLU

<sup>&</sup>lt;sup>1016</sup> Contractor ECCs are based on the charge paid by BT to contractor(s), plus BT's relevant incremental costs, plus an appropriate mark-up for common costs.

Direct ECCs: Cable delivery	Installation of copper or fibre cables	None	CPI+17.25%
Direct ECCs: Blown fibre tubing	Installation of blown fibre tubing in ducts	None	CPI+8.75%
Direct ECCs: Internal cabling	Internal cabling work	None	CPI+11.75%
Direct ECCs: Survey	Survey fees and planning charges	None	CPI-3.25%
Ethernet Time Related Charges (TRCs)			
All relevant Ethernet	All relevant Ethernet	None	-0.15%

Source: Ofcom

# Approach to setting the charge controls

15.7 The controls set out in Table 15.1 above reflect the principles, modelling approach, inputs and starting charge adjustments set out below.

#### **Principles**

- 15.8 **Form of the controls**: For the Ethernet and TI controls we have set Inflation-X charge controls, where our choice of inflation index is CPI, which are designed to align current charges with our forecast of efficient costs. See Volume II, Section 3.
- 15.9 **Framework:** We have followed our standard five key stage approach to design the charge controls:
  - stage 1 we have identified the relevant services and appropriate charge control baskets and sub-caps;
  - stage 2 we have determined the base year costs for the services covered by the charge control;
  - stage 3 we have forecast the costs of the services for the duration of the charge control;
  - stage 4 we have considered the case for one-off adjustments to charges at the start of the charge control; and
  - stage 5 we have calculated the value of X for the basket(s) of services.
- 15.10 The key economic principles that have guided our approach in designing our charge controls are set out in Volume II, Section 4.

#### Modelling approach

15.11 **Main services are controlled separately:** We have adopted separate Ethernet, TI, TRCs, ECCs and Accommodation services controls. These separate controls are explained in Volume II, Section 5 (Ethernet services), Section 6 (TI services) and Section 8 (TRCs, ECCs and Accommodation services).

<sup>&</sup>lt;sup>1017</sup> See Table 8.3, in Section 8, Volume I

- 15.12 **Pricing flexibility:** In addition to the main controls we have also adopted a number of sub-basket and sub-cap controls. Again these controls are explained in the relevant service sections of Volume II (Section 5 (Ethernet services), Section 6 (TI services) and Section 8 (TRCs, ECCs and Accommodation services)). We have also decided that only certain types of discounts will count towards compliance with our controls. See Annex 34.
- 15.13 **Type of model:** For the Ethernet and TI controls we have set the charges using a top-down model based on data within and underpinning BT's RFS. See Volume II, Sections 5 and 6 and Annex 26.

### **Model inputs**

- 15.14 **Relevant cost data:** We have relied on relevant cost data to derive our charge controls.
  - **Cost standard:** Our typical approach to setting charge controls for BT's services is to allow BT to recover its long run incremental costs of provision plus an appropriate mark up to allow for the recovery of common costs. We have adopted the CCA FAC cost standard to determine the appropriate mark up for common costs for our Ethernet and TI charge controls. See Volume II, Section 5 and Section 6.
  - **Technology change:** For Ethernet services we have adopted the modern equivalent asset (MEA) approach to modelling legacy Ethernet services up to and including 1Gbit/s. This means that we model legacy Ethernet services based on the most efficient technology that delivers the same service, to the same level of quality and to the same group of customers; namely Openreach's more recent EAD technology. In contrast, for TI services we have based our cost forecasts on the costs and asset values of the existing technology that is currently used to provide them. See Volume II, Sections 5 and 6.
  - **Base year adjustments:** We have adjusted BT's 2014/15 RFS cost data to ensure that it is representative of the relevant level of costs for forward-looking charge control purposes, while remaining consistent with the principle of allowing BT to recover its efficiently incurred costs. We have made a number of adjustments to ensure that the base year cost data is a suitable basis for forecasting costs for the purposes of setting the charge control. Where available, we have used latest current actuals data, unless otherwise stated for reasons explained in this statement. See Volume II, Sections 5 and 6 and Annex 27.
  - Cost Allocation Review (CAR): The base year adjustments include a number of adjustments which we have decided to make informed by the CAR. These adjustments impact both the Ethernet and the TI service controls and therefore are summarised in Volume II, Section 5 and Section 6 and Annex 27 and are set out in more detail in Annex 28 which is supplementary to Annex 27.
  - Quality of service costs: We are imposing minimum quality of service standards on BT, which will require BT to raise its quality of service. We have reflected in the base year costs the additional provisioning resources BT has put in place to improve performance as part of its 2014/15 QoS improvement programme<sup>1018</sup> and the forecast reduction in penalty payments BT will pay to its customers under

<sup>&</sup>lt;sup>1018</sup> See Volume I, Section 13.

the Service Level Agreement (SLA)/Service Level Guarantee (SLG) regime for poor provisioning performance, when QoS improves. See Volume II, Section 5 and Annex 27.

- Dark fibre costs: We consider it appropriate to uplift the 2018/19 forecast costs for the Ethernet basket to take into account costs associated with the introduction of our dark fibre remedy (including development costs and other efficiently incurred costs), to ensure that BT's opportunity to recover its efficiently incurred costs has not been adversely affected by the dark fibre remedy. These additional costs of £[≫] result in the overall Ethernet basket 'X' becoming less negative by [≫]%. See Volume II, Section 5 and Annex 33.
- 15.15 Asset Volume Elasticities (AVEs) and Cost Volume Elasticities (CVEs): The model uses AVEs and CVEs to forecast the costs to the end of the control period which are based on calculated LRIC to FAC ratios, derived from the outputs of BT's 2014/15 LRIC model, except where otherwise specified. See Volume II, Sections 5 and 6 and Annex 32.
- 15.16 **Volume forecasts:** We have generated volume forecasts for TI and Ethernet services. For Ethernet services we are forecasting significant volume growth, particularly for bandwidths of 100Mbit/s and higher. However, we have also adjusted the Ethernet forecasts to take account of the forecast uptake of dark fibre. For TI services we have forecast all low bandwidth volumes to decline during the charge control period. See Volume II, Sections 5 and 6 and Annex 32.
- 15.17 Efficiency targets: We have adopted efficiency targets of 5% for operating costs and 4% for capital expenditure, and an efficiency target for TI services of 4.5% for operating costs. We make no assumption about efficiency on capex for TI services as there is no capital expenditure for TI services in the 2016 LLCC Model. See Volume II, Sections 5 and 6 and Annex 29.
- 15.18 Weighted average cost of capital: We have used a pre-tax nominal Other UK telecoms WACC of 9.8% for both Ethernet and TI services. This is based on a three-way disaggregation of the BT Group WACC (Openreach copper, Other UK telecoms services, and Rest of BT). See Volume II, Sections 5 and 6 and Annexes 30 and 31.
- 15.19 **Input price inflation:** We have adopted pay inflation at 3.0% for both Ethernet and TI services and non-pay inflation at 2.1% and 3.2% per annum for Ethernet and TI services respectively. See Volume II, Sections 5 and 6 and Annex 32.
- 15.20 Asset price change assumptions: We have adopted asset price change assumptions such that duct and copper are valued through the RAV-based approach (RPI inflation) and all other asset prices (for example for fibre, electronics and software) are assumed to stay constant (flat in nominal terms). See Volume II, Sections 5 and 6 and Annex 32.

#### Starting charge adjustments and glide paths

15.21 Our general preference is to set charges using glide paths to bring charges into line with projected costs by the end of the control period, rather than imposing one-off changes to charges at the start of control period. This is consistent with our incentive regulation approach. However, as we find that returns for these services are high, being persistently more than double BT's cost of capital, we have decided to make immediate adjustments, referred to as starting charge adjustments, for both Ethernet and TI services. We have adopted starting charge adjustments of -12% for Ethernet

services and -7.5% for TI services within this control. These starting charge adjustments mean that the value of X will be -13.5% and -3.5% for Ethernet and TI services respectively (see Volume II, Section 4 and Section 7).

## Impact of the new charge controls

15.22 We estimate that approximately £1bn of BT's annual revenues will be covered by the charge controls proposed in this statement. The combined effect of the proposed controls will result in a reduction of approximately £800m in revenues over the control period, with reductions more heavily weighted in the first year of the control due to the adoption of starting charge adjustments. These reductions reflect BT's reported returns in these markets, which have significantly exceeded its cost of capital for a number of years.





Source: Ofcom

15.23 We consider that these charge controls appropriately balance the need to ensure that BT's returns for services are constrained while retaining the right signals for efficient investment. By setting our charge control based on BT's CCA FAC, including a return on capital, we consider that we have set a price level consistent with efficient investment signals. When weighing up setting the right investment incentives for BT and its competitors and protecting consumers from high prices, we have taken account of the availability of fibre-based connections for businesses. We note however that the situation differs for residential markets where fibre connections are often not yet available.

- 15.24 We consider that these charge controls will benefit consumers, through the promotion of competition by:
  - ensuring that charges for the relevant services are not excessive;
  - controlling charges in a way that provides BT and others with incentives to seek to reduce its costs of providing leased lines services;
  - ensuring BT and others have the incentive to continue to invest and innovate where it is efficient to do so; and
  - enabling CPs to make efficient choices between the different services and technologies available.

# Section 16

# Regulatory financial reporting

# Introduction

- 16.1 In this section we set out our views on what specific regulatory accounting requirements are appropriate to complement the pricing remedies as specified in this statement.
- 16.2 We set out our decision in Section 8 of this volume to impose cost accounting and accounting separation obligations on BT.
- 16.3 In this section we:
  - set out the necessary directions to give effect to certain decisions made in the 2014 Regulatory Financial Reporting Statement about changes to BT's reporting requirements;
  - summarise the relevant base year adjustments we have decided to make to BT's reported financial data in setting the leased lines charge controls and set out if and how these adjustments should be reflected in BT's Regulatory Financial Reporting; and
  - set out the regulatory reporting requirements that we impose on BT for wholesale leased lines services. In particular, we explain why we need this information and what needs to be provided.
- 16.4 Our decisions discussed in this section are implemented by way of directions.

# Directions to implement regulatory accounting requirements as set out in the 2014 Regulatory Financial Reporting Statement

- 16.5 As we explain in Section 8 of Volume I, we have decided to impose on BT the SMP conditions capturing the specific form of BT's cost accounting and accounting separation requirements that flowed from our conclusions in the 2014 Regulatory Financial Reporting Statement. In that statement we also set out our reasoning and decisions about the following more detailed reporting requirements which we considered were appropriate for the RFS in all regulated markets. These related to:
  - the Regulatory Accounting Principles;
  - the requirement to prepare the RFS on a RAV basis;
  - transparency requirements for the purposes of preparing and maintaining the accounting records, the Accounting Methodology Documents and the RFS;
  - requirements in relation to audit, form of the FPIA opinion and form of PPIA opinion for RFS; and
  - requirements in relation to reconciliation report and accompanying audit opinion.

- 16.6 These reporting requirements were subject to consultation as part of our 2014 Regulatory Financial Reporting review. We have concluded in this market review that these requirements should be adopted for the business connectivity markets.
- 16.7 The requirement to prepare the RFS on a RAV basis has been implemented in condition 11.10. We specified the methodology to determine the RAV adjustment in the March 2015 Directions Statement for the fixed access and WBA markets. We consider that this methodology remains appropriate and have therefore decided to direct BT to apply it for the leased lines markets.

# Our conclusions on the requirement for consistency with regulatory decisions

- 16.8 Regulatory accounting condition 11.8 which we have decided to impose requires that BT's RFS must be prepared in accordance with the Regulatory Accounting Principles ("RAP") among other things. Principle 4 of the RAP requires that Regulatory Financial Reporting must be consistent with our regulatory decisions.
- 16.9 We set out below the consistency requirements arising from the regulatory decisions in this market review. The requirement for consistency applies to the entirety of the RFS and BT must therefore ensure in all markets where the new SMP conditions and the requirement for consistency apply (i.e. fixed access and WBA markets) that the accounting treatment reflects the consistency requirements we have specified in this statement.

#### **Charge Control adjustments**

16.10 As part of our decisions on the charge controls set out in this statement, we have made various adjustments to the cost information reported in BT's 2014/15 RFS, which we use as our base year. Detailed explanations and justifications are set out in Annexes 27 and 28. We have summarised them in Table 16.1 below.

Adjustment	Description
a) Error in 2014/15 RFS	We have corrected two errors BT identified in the 14/15 RFS in relation to CPE Equipment and Project Services.
b) EE Acquisition costs	We have excluded costs associated with the acquisition of EE.
c) Transmission Equipment costs	We have excluded the Ethernet Electronics costs from Ethernet services that had been previously recovered through connection charges.
d) Base year adjustments informed by CAR	We set out in Annex 28 our decisions in relation to the base year adjustments informed by the analysis carried out in CAR.
e) Restructuring costs	We have smoothed the costs relating to one-off restructuring charges.
f) Property Rationalisation	We have smoothed the costs relating to Property Rationalisation

## Table 16.1: Summary of base year adjustments

provision	provision.
g) QoS resource uplift	We have made an adjustment to reflect the additional resources required to improve the quality of Ethernet services.
h) SLG payments	We have adjusted BT's SLG payments to reflect an appropriate level of SLG payments.

Source: Ofcom

#### Identification of adjustments and their treatment within the RFS

#### Our approach

- 16.11 We explained in the March 2015 Directions Statement and in the June 2015 LLCC Consultation that the identification of adjustments that should be reflected within Regulatory Financial Reporting to achieve consistency or within the Adjusted Financial Performance Schedules is a matter for our judgement. We said that this should be considered on a case by case basis.
- 16.12 The starting point for our analysis is that we would expect to see a cost adjustment, made by us in our regulatory decisions, to be reflected in the RFS if it relates to the way BT's actual or incurred costs should be treated.
- 16.13 We said in the March 2015 Directions Statement that we would not expect to see a cost adjustment reflected in the RFS if:
  - the adjustment has the effect of replacing BT's incurred costs with an alternative estimate of cost. In such case, we would expect to see the adjustment reflected in the Adjusted Financial Performance Schedules; and
  - the adjustment has the effect of replacing BT's incurred costs with a value that is not based on BT's network (whether actual or estimated) and is only made for forecasting purposes. In addition, we would not expect such an adjustment to be reflected in the Adjusted Financial Performance Schedules.
- 16.14 We continue to believe that the general principles of considering whether and if so how the RFS or the Adjusted Financial Performance Schedules should remain consistent with our regulatory decisions are an appropriate starting point for our consideration in this market review.

#### June and November 2015 LLCC Consultations

16.15 In the June and November 2015 LLCC Consultations we set out our proposed application of the above approach to the adjustments identified and their treatment within the RFS and the Adjusted Financial Performance Schedules.

#### Stakeholders' comments

16.16 BT generally disagreed with the proposed consistency requirements, in particular the proposed requirements arising out of the analysis undertaken in the CAR, in its

responses to the June and November 2015 LLCC Consultations.<sup>1019</sup> Vodafone said, with respect to the proposed consistency requirement for general overheads, that the attribution rules applied to costs that can be causally associated with activities should be consistent with those ultimately determined by Ofcom, and not left to BT's discretion.<sup>1020</sup>

16.17 Other stakeholders did not make any comments in relation to the identification of adjustments and their treatment within the RFS.

#### Our conclusions

- 16.18 As we explain in Annex 27, we have decided that we will not reach separate conclusions on our review of BT's attribution rules for regulatory accounting purposes (CAR). However, informed by the analysis undertaken in the CAR we have decided to make base year adjustments as described below. We have considered BT's and other stakeholders' comments on the appropriateness of our proposed adjustments and explain in detail in Annex 28 why we have concluded that the adjustments, as revised to take account of those comments, are appropriate for the purposes of setting these charge controls. Given that each adjustment which we have decided to make taking account of the analysis in the CAR concerns treatment of BT's incurred costs, as we explain below, we believe that it is appropriate to ensure that BT's RFS should be prepared on a basis which is consistent with these regulatory decisions.
- 16.19 In order to determine whether the adjustments listed in Table 16.1 should be reflected in BT's RFS or Adjusted Financial Performance Schedules we have applied the approach set out above. We have set out our analysis in Table 16.2 below.

<sup>&</sup>lt;sup>1019</sup> BT response to the June 2015 LLCC Consultation, paragraphs 419-440; BT response to the November 2015 LLCC Consultation, paragraph 120.

<sup>&</sup>lt;sup>1020</sup> Vodafone response to the November 2015 LLCC Consultation, page 14.

Table 16.2: Application	of our approach to	consistency with ou	ur adjustments
-------------------------	--------------------	---------------------	----------------

Adjustment	Base year adjustments informed by CAR	Does the adjustment have the effect of replacing BT's incurred costs with an alternative estimate of cost?	Does the adjustment have the effect of replacing BT's incurred costs with a value that is not based on BT's network (whether actual, estimated or for forecasting purposes)?
a) Error in 14/15 RFS		No	No
g) EE Acquisition costs		No	No
c) Transmission equipment costs		No	No
d) Fibre costs		No	No
e) Duct costs	Г	No	No
f) Openreach and TSO Software costs	Г	No	No
g) Electricity costs	Г	No	No
h) Property costs	Г	No	No
i) General overheads <sup>1021</sup>	Г	No	No
j) Restructuring costs		Yes	No
k) Property Rationalisation provision		Yes	No
I) QoS resource uplift		Yes	Yes
m) SLG payments		Yes	Yes

Source: Ofcom

16.20 We consider that adjustments a)-i) in Table 16.2 are cost adjustments, made by us in our regulatory decisions, which relate to the way BT's actual or incurred costs should

<sup>&</sup>lt;sup>1021</sup> As further explained in Annex 28 and referred to in Table 16.3 below (adjustments (i) to (m), BT attributes the following five categories of general overhead costs using either a Pay and Return on Assets (ROA) or a factorised Pay and ROA methodology: corporate costs, TSO Support function costs, Openreach overheads, BT Wholesale general software and Openreach general software.

be treated. We have therefore decided that the RFS must include all of these adjustments.

- 16.21 BT's cost attribution system attributes costs to cost categories and ultimately services in a series of steps.<sup>1022</sup> This means that the order in which adjustments are made is important since there are interdependencies between adjustments that can affect the amount of cost attributed to individual services. In the draft BCMR Statement we said that BT should reflect adjustments a) i) in the order presented above because this order reflects how we have modelled the charge controls. Having considered this issue further, we believe that BT is better placed than Ofcom to determine the precise order in which these adjustments should be made in the RFS such that any interdependencies are properly taken into account. Therefore, we have decided that, in implementing adjustments a) i) above in its Regulatory Financial Statements BT should have regard to the order that the costs associated with these requirements are processed in its cost attribution system as set out in BT's Accounting Methodology Documents. <sup>1023</sup>This requirement seeks to ensure that the impact of any adjustment on another adjustment is taken into account.
- 16.22 Adjustment j) and k) replace the actual movement on Restructuring costs and the Property Rationalisation provision with ones calculated on a smoothed basis for the purposes of determining prices for the controlled services. We have therefore decided that adjustments j) and k) should not be reflected in the RFS.
- 16.23 Adjustments I) and m) uplift BT's actual base year QoS costs and commensurately reduce BT's actual base year SLG costs to take account of the net cost of improving BT's Ethernet provisioning performance. These adjustments are made to make our cost base suitable for forecasting purposes, and do not reflect BT's actually incurred costs. We have therefore decided that adjustments I) and m) should not be reflected in the RFS.
- 16.24 We set out in Table 16.3 below our decision on how adjustments a)-i) should be implemented in the RFS.

Adjustment	Base year adjustments informed by CAR	Requirements on treatment for the purposes of the RFS
a) Errors in 2014/15 RFS		BT must allocate Class of Work <sup>1024</sup> costs (CoWs) relating to the installation of CPE switches) to the CPE Switch service (see Annex 27).
		BT must allocate CoW costs relating to Project Services to Project Services (see Annex 27).

#### Table 16.3: Requirements for the implementation of our adjustments in the RFS

<sup>&</sup>lt;sup>1022</sup> For a description of these steps see section 3 of the June 2015 CAR consultation and section 5.2 of BT's 2015 Accounting Methodology Documents.

<sup>&</sup>lt;sup>1023</sup> BT is required under the SMP conditions to notify us of any proposed changes to its accounting methodology and we can veto these changes where we consider it appropriate to do so.

<sup>&</sup>lt;sup>1024</sup> Class of Work (CoWs) specify a type of activity or asset type on which engineers are engaged at an aggregated General ledger (F8 code) level.
b) EE Acquisition costs		BT must not attribute costs in connection with BT Group's acquisition of EE to business connectivity services (see Annex 27).
c) Transmission equipment Costs		BT must exclude the MCE and depreciation cost of Transmission assets deployed prior to 2010/11 from business connectivity services (see Annex 27).
d) Fibre costs	V	BT should attribute distribution fibre costs between NGA and non-NGA distribution fibre taking account of the different asset lives of NGA and non-NGA distribution fibre (see Annex 28). BT should attribute spine fibre costs between NGA and non-NGA spine fibre based on the relative proportions of distribution fibre NGA and non-NGA volumes (see Annex 28).
e) Duct costs	$\checkmark$	BT should i) attribute duct costs between core and access using the estimated GRC value of core and access duct (i.e. using the outcomes of BT's duct survey as shown in Annex 28) and ii) attribute core duct costs between inner core and backhaul using live circuit lengths and live circuit volumes (see Annex 28).
f) Software costs	$\checkmark$	<ul> <li>BT should:</li> <li>a) attribute software directly to products, assets, lines of business or support functions where the information it holds demonstrates that such costs are associated with those products assets, lines of business or support functions;</li> <li>b) where software is shared between two or more products or assets, attribute these software costs to those products or assets which that software supports;</li> <li>c) where it is not possible to attribute software in the manner set out in a) and b) BT should attribute software using the specified cost attribution methodology (see Annex 28).</li> </ul>
g) Electricity costs	$\checkmark$	<ul> <li>BT must attribute electricity costs (not related to offices or Openreach) in the following order:</li> <li>a) electricity costs should be attributed separately based on transfer charges for electricity costs only, instead of being included with property costs;</li> <li>b) for equipment that is specifically metered, the electricity costs should be directly allocated to product and assets groups; and</li> <li>c) the remaining electricity costs for equipment that are not specifically metered should be apportioned on the basis of relative estimated electricity consumption</li> </ul>

		calculated using disaggregated and the most recent annual data. (see Annex 28).
h) Property costs	V	<ul> <li>Property costs should be separately identified and separately attributed to specific types of space. For each specific type of space within each building, the costs associated with any vacant space should be attributed in the same proportions as the costs of any non-vacant are attributed.</li> <li>In particular, BT should:</li> <li>a) not attribute all vacant space in operational buildings with a main distribution frame solely to Openreach, cable chambers or main distribution frame areas; and</li> <li>b) not apply to LLU hostel areas any mark-up for potential future growth.</li> <li>(see Annex 28).</li> </ul>
i) Corporate costs	$\checkmark$	BT must separate the costs currently included in activity group AG112 (Corporate costs) into the relevant cost groups and attribute costs in each of these cost groups using the specified cost attribution methodology (see Annex 28).
j) TSO Support function costs	$\checkmark$	BT must separate the costs currently included in activity group AG103 (TSO Support Function) into the relevant cost groups and attribute costs in each of these cost groups using the specified cost attribution methodology (see Annex 28).
k) Openreach overheads	$\checkmark$	BT must separate the costs currently included in the COMCOS activity group (Openreach Overheads) into the relevant cost groups and attribute costs in each of these cost groups using the specified cost attribution methodology (see Annex 28).
I) BT Wholesale general software	$\checkmark$	BT must separate the costs currently included in activity group AG409 (BT Wholesale General Software) into the relevant cost groups and attribute costs in each of these cost groups using the specified cost attribution methodology (see Annex 28).
m) Openreach general software	$\checkmark$	BT must separate the costs currently included in activity group AG410 (BT Openreach General Software) into the relevant cost groups and attribute costs in each of these cost groups using the specified cost attribution methodology (see Annex 28).

Source: Ofcom

- 16.25 The Restructuring costs and Property Rationalisation provision should not be reflected in the RFS because the base year adjustments have the effect of replacing BT's incurred costs with alternative estimates of cost. However, the smoothing of these adjustments will impact how we view BT's financial performance on an ongoing basis as the effect of our adjustments is to produce a less volatile view of these costs for the purposes of assessing BT's financial performance. We therefore consider that BT must, in the Adjusted Financial Performance Schedules, calculate the impact of smoothing the movement of Restructuring costs and the Property Rationalisation provision individually over a three year moving average. In doing so, we have decided that BT must prepare and publish the "Adjusted Financial Performance at a market review level"<sup>1025</sup> and prepare and provide to Ofcom the "Adjusted Financial Performance at a market level".<sup>1026</sup> The requirements in relation to the Adjusted Financial Performance Schedules are captured in a direction set out in Annex 35.
- 16.26 In respect of QoS resource costs and SLG payments, our base year adjustments model our view of what these costs would be in 2017/18 (adjusted back to 2014/15 taking account of volume movements, efficiency and inflation). These base year adjustments do not reflect BT's actual costs and should not be reflected in the RFS. Going forward, its actual costs will be reflected in the RFS rather than the costs we have modelled. It is therefore not appropriate for BT to prepare and include adjustments in respect of QoS resource costs and SLG payments in the Adjusted Financial Performance Schedules.

# Our conclusions on reporting requirements to support remedies in the BCMR 2016

16.27 In assessing what specific regulatory accounting requirements would be appropriate, we have considered what requirements would best support the pricing remedies we have decided to impose following this review. In particular, we have considered what information and at what level of detail should be disclosed in the RFS and what information should be provided only to Ofcom.

# June and November 2015 LLCC Consultations

- 16.28 In the June 2015 LLCC Consultation, we set out the regulatory reporting requirements that we proposed to impose on BT in relation to the provision of public information. In particular we proposed that BT must disclose:
  - revenue and FAC costs for business connectivity markets;
  - revenue, volume, average price and FAC for regulated wholesale leased lines services at the level they are regulated (i.e. at the basket, sub-basket level and individual service); and
  - calculation of FAC based on network component costs and usage factors for regulated wholesale leased lines services at the level they are regulated (i.e. at the basket, sub-basket level and individual service levels).

<sup>&</sup>lt;sup>1025</sup> Schedule 1 of the Adjusted Financial Performance Schedules.

<sup>&</sup>lt;sup>1026</sup> Schedule 2 of the Adjusted Financial Performance Schedules.

- 16.29 We proposed that the information above should be separately identified and separately reported where applicable for i) internal and external circuits, and ii) rentals<sup>1027</sup> and connections.<sup>1028</sup>
- 16.30 We then set out our proposed requirements for additional public reporting. We proposed that BT must disclose the same level of information for a number of individual services.<sup>1029</sup>
- 16.31 Finally, we set out our proposed requirements for private reporting. We proposed that BT must submit to Ofcom additional information in four different schedules: Detailed BCMR Services, Detailed BCMR Service Component FACs, BCMR EAD/EAD LA 1Gbit/s component LRIC and FAC, and Detailed Service LRICs.
- 16.32 In the November 2015 LLCC Consultation we supplemented the above proposals with proposals for additional public information and private information in relation to dark fibre and TRCs. We also included proposals in relation to network cost component information for EBD services.

### Stakeholders' comments

- 16.33 In its responses to the June and November 2015 LLCC Consultations, BT disagreed with most of the proposed requirements for financial reporting. In summary it said that the proposals are not objectively justifiable, disproportionate, and inconsistent both with the approach to reporting set out in the statements issued following the review of regulatory reporting and with the approach adopted for other markets.<sup>1030</sup> BT provided a number of detailed responses which we discuss in our conclusions below.
- 16.34 Other stakeholders tended to support our proposed disclosure requirements.
- 16.35 GTC said that it welcomes Ofcom's decision to align the RFS with the cost base used to set charge controls. It said that "*this approach should improve transparency for stakeholders and the subsequent decision making*".<sup>1031</sup> GTC also requested that Ofcom takes into account the information asymmetry between BT and all other CPs when reaching its decisions for the statement.<sup>1032</sup>
- 16.36 The Passive Access Group<sup>1033</sup> said that that Ofcom's proposal for an active minus approach to dark fibre pricing will suffer from a lack of transparency. It said that *"[a]Iternative operators will still face considerable uncertainty about the value of LRIC because: [...] the input cost data will not be available to CPs [...]".*<sup>1034</sup>
- 16.37 TalkTalk suggested that it would be useful if BT provided details of average discounts applied within its ex-post compliance reporting.<sup>1035</sup> TalkTalk also supported the proposed requirement that BT discloses revenues and cost breakdowns for each of

<sup>&</sup>lt;sup>1027</sup> We proposed that rentals should also be separated by charging elements.

<sup>&</sup>lt;sup>1028</sup> Paragraph 11.29 of the June 2015 LLCC Consultation.

<sup>&</sup>lt;sup>1029</sup> Paragraphs 11.32-11.33 of the June 2015 LLCC Consultation.

<sup>&</sup>lt;sup>1030</sup> BT response to the June 2015 LLCC Consultation, paragraph 442.

<sup>&</sup>lt;sup>1031</sup> GTC response to the June 2015 LLCC Consultation, page 13.

<sup>&</sup>lt;sup>1032</sup> GTC response to the November 2015 LLCC Consultation, page 1.

<sup>&</sup>lt;sup>1033</sup> The Passive Access Group (PAG) is a group of several communications providers: Colt, Three UK, Sky, TalkTalk and Vodafone.

<sup>&</sup>lt;sup>1034</sup> PAG response to the June 2015 LLCC Consultation, paragraph 3.4.

<sup>&</sup>lt;sup>1035</sup> TalkTalk response to the June 2015 LLCC Consultation, paragraph 8.114.

1Gbps EAD and 1Gbps EAD LA (in the non-CLA) and said that these proposals are necessary to allow stakeholders to monitor compliance with the proposed active minus pricing structure of the dark fibre product. TalkTalk suggested that BT should provide a similar breakdown of information for other CISBO products in order to identify whether BT is gaming the charge control.<sup>1036</sup>

- 16.38 UKCTA said "it is vital that stakeholders obtain reliable cost information about the products they purchase in large quantities". In its view "Ofcom should [...] require more information on the EAD 1G service, providing more granular information around component reporting in recognition of its proposed status as the active reference product for a passive alternative". UKCTA also said that "wide basket design gives BT considerable scope to elect where it allocates its costs and, when combined with a lack of accounting transparency, give insufficient confidence that Ofcom can adequately measure where true efficiency gains have been achieved in the past and will be achieved in future". UCKTA suggested that appropriate action is taken to ensure that the design of future RFS can adequately capture the efficiency data required to give a significantly improved level of certainty. <sup>1037</sup>
- 16.39 Virgin agreed with Ofcom's proposed requirements for additional public and private reporting. It said it believes that these requirements "will support the industry and Ofcom in reviewing BT's treatment of costs in these markets and allow industry to have greater confidence in the basis on which BT determines the attributed cost base of services within the BCMR".<sup>1038</sup> Virgin did not comment on the proposed requirements in the November 2015 LLCC Consultation.
- 16.40 Vodafone also agreed with Ofcom's proposals in respect of regulatory accounting transparency. It considered that "stakeholders require transparency if they are to hold BT to account where there is market failure and the more meaningful information that is disclosed the better".<sup>1039</sup>
- 16.41 [>].1040
- 16.42 One confidential respondent [ $\gg$ ] said that it agrees with Ofcom's proposals.<sup>1041</sup>

# **Our conclusions**

- 16.43 As noted in the June and November 2015 LLCC Consultations, we consider that it is important that BT maintains appropriate and reliable accounts that capture information on an ongoing basis relevant to its provision of wholesale leased lines services. As we concluded in the May 2014 Regulatory Reporting Statement, the published RFS 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.<sup>1042</sup>
- 16.44 In addition, given the wide baskets we have decided to adopt in this review, we consider that it is important that BT provides additional information that will enable the monitoring of compliance with, and the effectiveness of, the remedies imposed in

<sup>&</sup>lt;sup>1036</sup> TalkTalk response to the November 2015 LLCC Consultation, paragraph 3.3 and 3.4.

<sup>&</sup>lt;sup>1037</sup> UKCTA response to the June 2015 LLCC Consultation, paragraphs 2.6-2.7 and 3.1.

<sup>&</sup>lt;sup>1038</sup> Virgin response to the June 2015 LLCC Consultation, page 15.

<sup>&</sup>lt;sup>1039</sup> Vodafone response to the June 2015 LLCC Consultation, page 53

<sup>&</sup>lt;sup>1040</sup> [**※**].

<sup>&</sup>lt;sup>1041</sup> [×].

<sup>&</sup>lt;sup>1042</sup> Paragraph 2.41, May 2014 Regulatory Reporting Statement.

this statement, including pricing remedies. This information will provide transparency on how BT has attributed costs across services, and will mitigate against the risk of double recovery of costs or that costs might be inappropriately attributed to particular services. We consider that this information will also be a useful source of information and will serve as an anchor point to reconcile data, in order to support our decision making in relation to wholesale leased lines markets.

- 16.45 The importance of transparency of data in providing confidence in BT's regulatory financial reporting has been highlighted by the error in relation to the products within the Wholesale Residual Market, as set out in Annex 27.<sup>1043</sup> Information that is only available to BT means that BT alone is able to perform the appropriate review and checks and ensure the accuracy of its cost attributions. Transparency of financial information for us, and where appropriate for stakeholders, is fundamental to ensuring that, where we regulate charges, those charges can be referenced to accurate and error free financial data. Our reporting requirements should provide us with, the information we need to make informed regulatory decisions in business connectivity markets now and in the future whilst publication provides stakeholders with credibility around the costs of the regulated services that they purchase.
- 16.46 For these reasons, we have decided to require the additional reporting set out below, both publicly and privately.

#### Public information

- 16.47 Stakeholders generally agreed with the proposed requirements for public reporting in the June and November 2015 LLCC Consultations. While BT<sup>1044</sup> agreed with the requirement to report costs at a level consistent with that at which price remedies are imposed, it disagreed with any reporting below this level.
- 16.48 In accordance with our decision in the May 2014 Regulatory Reporting Statement, which sets out that cost, volume and revenue information within the RFS should provide the appropriate level of detail and make clear in which basket regulated products are reported, we have decided that:
  - BT must disclose the revenue and FAC costs for business connectivity markets;
  - BT must disclose the revenue, volume, average price and FAC for regulated wholesale leased lines services at the level they are regulated (i.e. at the basket, sub-basket<sup>1045</sup> level and individual service in case of services which are separately controlled); and
  - BT must disclose the calculation of FAC based on network component costs and usage factors for regulated wholesale leased lines services at the level they are regulated (i.e. at the basket, sub-basket<sup>1046</sup> level and individual service in case of services which are separately controlled).

16.49 In addition, we have decided that:

<sup>&</sup>lt;sup>1043</sup> See discussion of Errors in 2014/15 RFS, Annex 27.

<sup>&</sup>lt;sup>1044</sup> BT response to the June 2015 LLCC Consultation, paragraph 442; BT response to the November 2015 LLCC Consultation, paragraphs 136 and 170.

<sup>&</sup>lt;sup>1045</sup> For the purposes of this provision, "sub-basket" does not include the sub-baskets on each combined rental and connection charge in the Ethernet basket (see Section 5).

<sup>&</sup>lt;sup>1046</sup> For the purposes of this provision, "sub-basket" does not include the sub-baskets on each combined rental and connection charge in the Ethernet basket (see Section 5).

- BT must include the total costs and revenues for all of its dark fibre access provided in the London Periphery (LP) and the Rest of UK (RoUK) in the market summary for CISBO LP and RoUK.
- BT must include the total costs and revenues for all of its TRCs in the market summary for all business connectivity markets in which the services are provided.<sup>1047</sup>
- 16.50 BT disagreed with the proposed requirement that it should report separately i) internal and external circuits, and ii) rentals and connections.<sup>1048</sup> However, we continue to consider that where services have different total internal and external costs, it is appropriate to require separate disclosure in the interests of ensuring transparency. Such disclosure provides a useful control over the way that BT reports its costs and revenues in different parts of its business. Where the charging elements of services are separately priced and we conclude the Fully Allocated Costs (FAC) are required to be disclosed, the FAC should be disaggregated to make meaningful comparisons of cost to price. This is especially the case with connections and rentals, given that connections tend to be a one-off cost related to labour driven provisioning activities whereas rentals are the ongoing costs of the underlying assets and asset maintenance. Connections and rentals use very different network component costs, and amalgamating them to create hybrid products would simply mask the underlying cost drivers.
- 16.51 Therefore we have decided that the information in paragraphs 16.57 and 16.58 above should where applicable separately identify in the RFS internal and external circuits. In relation to the services in paragraph 16.48 we have decided that connections, rentals and main links should be separately identified. In relation to the services listed in paragraph 16.49 we have decided that rentals, connections, local end, link and distribution as applicable should be separately identified. Where allowable discounts have been included, BT must separately disclose the discounted and undiscounted volumes and revenues..

# Additional public information

# Individual services reporting

16.52 BT disagreed with the proposed requirements for additional public reporting. It said that stakeholders "do not need to see services below market (or if lower, basket) level to understand 'how BT is recovering its costs,...to comment on the returns that BT is making and also consider the impact of regulation on BT for the services they purchase". According to BT, "to assess the effectiveness of the remedies imposed for services they purchase, stakeholders should be supplied with information at the same level as those remedies".<sup>1049</sup> BT suggested that publication of information below market (or sub-basket) level is restricted to revenue and volume data. BT also commented that because there will be two CISBO markets (London Periphery and Rest of UK) with an internal and external split, with rentals, connections and four

<sup>&</sup>lt;sup>1047</sup> This would bring BT's regulatory reporting requirements in line with those in the fixed access markets where TRCs are currently subject to charge control and included in the relevant market summaries, as set out in the March 2015 Directions Statement.

<sup>&</sup>lt;sup>1048</sup> BT response to the June 2015 LLCC Consultation, paragraphs 447-450.

<sup>&</sup>lt;sup>1049</sup> BT response to the June 2015 LLCC Consultation, paragraph 452.

circuit elements, there would be 68 different services reported for the TI basket and 120 for the Ethernet basket.<sup>1050</sup>

- 16.53 We adopted the policy on reporting at the level of regulation in the May 2014 Regulatory Reporting Statement and have since implemented it in some of our market reviews.<sup>1051</sup> We note however that the charge control for the BCMR is substantially different from that in the 2014 fixed access and WBA market reviews.<sup>1052</sup> In particular, as defined in Section 5 and 6 of Volume II, for the purposes of this charge control, leased lines services are only split into two broad baskets (TI and Ethernet) with a limited number of sub-baskets. This means that information for services at the level they are regulated would only provide stakeholders with limited basket and sub-basket information which has been aggregated to a very high level. By contrast in the 2014 fixed access market review we charge controlled the key rental products (MPF, SMPF and WLR) at the individual service level, with public information provided for 23 individual services or baskets. This compares to our proposal in the June 2015 LLCC Consultation for the publication of 20 key services (excluding dark fibre) in addition to the two main baskets, six sub baskets and three ancillary baskets<sup>1053</sup>. It is also important in this context to recognise the diverse and complex nature of the services in the business connectivity markets compared to the services in the markets covered by the fixed access and WBA market reviews. In the BCMR, whilst any level of disclosure would be duplicated across the London Periphery and Rest of UK markets, we consider that in most cases this would result in minimal additional burden.
- 16.54 As evident from the above summary of responses, other stakeholders generally supported our proposals for additional public reporting.<sup>1054</sup>
- 16.55 We remain of the view that stakeholders should be provided with information about individual services, because this will enable them to observe cost, volume and revenue data for the services that they purchase and to understand the relativity of the services within the baskets and sub-baskets. It is important that stakeholders are able to scrutinise the regulatory accounts in order to understand how BT is recovering its costs, to comment on the returns that BT is making and to consider the impact of regulation on BT for the services they purchase. This in turn provides stakeholders with confidence that BT has complied with its regulatory obligations and enables them to assess the effectiveness of our regulation on BT in terms of the returns BT makes in SMP markets.
- 16.56 Therefore, we have decided to require BT to publish certain information for a number of individual services at the service level. In light of BT's comments, we have revisited our considerations and analysis for requiring the reporting of specific services. In particular, we have identified services that account for a significant proportion of Ethernet and TI basket revenues as well as those that are more likely to be purchased by customers that are external to BT, as these services are likely to be more important to stakeholders. We have identified services that are forecast to decline significantly and therefore may not remain of central importance to stakeholders during the whole period of the charge control. Similarly, we have

<sup>&</sup>lt;sup>1050</sup> BT response to the June 2015 LLCC Consultation, paragraphs 453-454.

<sup>&</sup>lt;sup>1051</sup> BT response to the June 2015 LLCC Consultation, paragraph 466.

<sup>&</sup>lt;sup>1052</sup> In the 2014 WBA Statement, paragraph 7.346, we explained that the future significance of WBC services meant that we required the disclosure of FAC information even though they were not individually regulated.

<sup>&</sup>lt;sup>1053</sup> Paragraphs 11.32-11.33 of the June 2015 LLCC Consultation.

<sup>&</sup>lt;sup>1054</sup> See in particular summaries of GTC, NATS, TalkTalk, Virgin and Vodafone.

identified other services which are forecast to increase their volumes (e.g. EAD 10Gbit/s) and may be expected to substantially or wholly replace an existing service. BT's attribution system already generates this information and most of it is already being published. Therefore we do not believe that publishing this information imposes any additional cost or burden on BT. Taking into account these considerations we have decided that reporting should be required for the relevant list of services below. This change means that BT will be required to report on 20 services in total which is of the same magnitude as the 2013 BCMR Statement for Ethernet and TI.

- 16.57 In addition to reporting at a basket and sub-basket level, we have therefore decided that BT should publish additional information for the following CISBO LP and RoUK services for each basket and sub-basket in which they appear and also an 'other' category containing a total for the remaining services within each basket and sub-basket:<sup>1055</sup>
  - EAD Local Access 10Mbit/s;
  - EAD Local Access 100Mbit/s;
  - EAD Local Access 1000Mbit/s;
  - EAD (including all variants) 10Mbit/s;
  - EAD (including all variants) 100Mbit/s;
  - EAD (including all variants) 1000Mbit/s;
  - EBD 1000Mbit/s;
  - EBD 10000Mbit/s;
  - Wholesale extension services 10Mbit/s;
  - Wholesale extension services 100Mbit/s;
  - Wholesale extension services 1000Mbit/s;
  - Backhaul extension services up to and including 1000Mbit/s;
  - WDM Services;<sup>1056</sup>
  - Wholesale extension services above 1000Mbit/s;
  - Backhaul extension services above 1000Mbit/s;
  - Exempt Ethernet Ancillary Services should be grouped and reported on together; and
  - "Other" (All remaining services not reported above).

<sup>&</sup>lt;sup>1055</sup> We note that some of this information is being provided already within AFI's.

<sup>&</sup>lt;sup>1056</sup> WDM services is defined in Section 2 of the Annex to SMP condition 10B in Annex 35.

- 16.58 We have decided that BT should publish information for the following low bandwidth TISBO services:
  - Radio Backhaul Service 2Mbit/s;
  - Partial and Private Circuits 64kbit/s;
  - Partial and Private Circuits 2Mbit/s;
  - Radio Backhaul Service 64kbit/s;
  - Partial Private Circuits Point of Handover;
  - Exempt TI Ancillary Services should be grouped and reported on together; and
  - "Other" (All remaining services not reported above).
- 16.59 For each of the services listed above, we have decided that:
  - BT must disclose the revenue, volume, average price and FAC;
  - BT must disclose the calculation of FAC based on network component costs and usage factors;
  - the information above should be produced where applicable for internal and external circuits. In relation to the services in paragraph 16.57 we have decided that connections, rentals and main links should be separately identified. In relation to the services listed in paragraph 16.58 we have decided that rentals, connections, local end, link and distribution as applicable should be separately identified. Where time limited discounts and three year term products have been included, BT must separately disclose the discounted and undiscounted volumes and revenues; and
  - BT must provide information on any new services that will substantially or wholly replace an existing service that is listed above, e.g. EAD 10,000Mbit/s, including multiple service variants as set out in Volume II, Section 5.
- 16.60 We have decided to treat combined rental and associated connection charge as falling within separate sub-baskets for the purposes of the sub-cap constraint.<sup>1057</sup> This means that individual wholesale Ethernet leased lines services are now regulated at the level of their connection and rental charges. Based on our decision for public reporting and in line with the May 2014 Regulatory Reporting Statement this would require BT to publish more granular information about its regulated Ethernet services. However, we have decided not to impose this reporting requirement because it would lead to a disproportionate reporting burden. BT will of course have to demonstrate compliance with this sub-basket in its charge control compliance submission.
- 16.61 For ancillary services within the Ethernet Ancillary safeguard cap, since the November 2015 LLCC Consultation we have decided (Section 9) that where accrued revenues are over £1m, they should not be included within the main Ethernet basket. Instead they will be subject to a CPI-CPI charge control at an individual service level.

<sup>&</sup>lt;sup>1057</sup> See Volume II, Section 5.

As services should be reported at the same level they are regulated, BT should report revenues and costs of these services on an individual service basis. However we believe that reporting this very long tail of services is disproportionate. Therefore we have decided not to impose this reporting requirement, and instead require BT to report on them in aggregate as a single line within the RFS as if they were a single basket.

# Dark fibre reporting

- 16.62 In Section 10, Volume I we explain our decision to impose a "basis of charges" condition specifying that BT should derive prices for dark fibre services from the prices for the reference Ethernet services (1Gbit/s EAD, 1Gbit/s EAD LA and Main Link), with the prices adjusted to reflect the long-run incremental costs of certain network cost components and/or Cumulo costs that are avoided by BT when providing the dark fibre service instead of the corresponding 1Gbit/s EAD, 1Gbit/s EAD LA and Main Link service, as appropriate.
- 16.63 BT disagreed with the proposed requirements for additional public reporting in relation to dark fibre services (1Gbit/s EAD and 1Gbit/s EAD LA FAC unit costs and unit LRIC cost of excluded network cost components). BT argued that:
  - stakeholders already know the scope of the differential, which is unlikely to change significantly during the charge control period;
  - the differential will not be a significant contributory factor in dark fibre pricing volatility; and
  - the time horizon is short and there will be only one price change during the period.<sup>1058</sup>
- 16.64 BT also said that any potential benefit to CPs would be outweighed by the potential harm to BT and others' legitimate business interests, as a result of the proposed disclosure of commercially sensitive information which is highly confidential to BT. BT proposed that this information is supplied to Ofcom privately but redacted in the published version.<sup>1059</sup>
- 16.65 BT provided two examples of potential harm to its and suppliers business interests. Firstly, BT said that it faces some competition in the SMP market from competing infrastructure providers as Ofcom acknowledged<sup>1060</sup>, and therefore disclosure of more detailed cost information may help these competitors. Secondly, BT said that Ofcom's proposal would also entail disclosure of commercial information of Openreach's equipment suppliers, which would or may harm those suppliers' legitimate business interest and competition in the market.<sup>1061</sup>
- 16.66 In accordance with our decision in the May 2014 Regulatory Reporting Statement, we consider that in principle services should be reported publicly on a basis consistent with how they are regulated. We also recognise the importance of ensuring transparency of financial information on the pricing of the dark fibre services on an on-going basis.

<sup>&</sup>lt;sup>1058</sup> BT response to the November 2015 LLCC Consultation, paragraph 160.

<sup>&</sup>lt;sup>1059</sup> BT response to the November 2015 LLCC Consultation, paragraphs 133, 150-167.

<sup>&</sup>lt;sup>1060</sup> BT response to the November 2015 LLCC Consultation, paragraph 163

<sup>&</sup>lt;sup>1061</sup> BT response to the November 2015 LLCC Consultation, paragraph 164

- 16.67 Nevertheless, having considered BT's comments, we believe that the disclosure of disaggregated information about LRIC for network components such as Ethernet Electronics and Cumulo costs could be problematic. We have therefore had to balance the requirement for transparency with the risk of disclosure of BT's and others' commercial information. In light of this, we have decided not to require BT publish in the RFS: (i) the avoided LRIC of certain network cost components, (ii) Cumulo costs that are avoided by BT when providing the dark fibre service instead of the corresponding 1Gbit/s EAD, 1Gbit/s EADLA or Main Link service, and (iii) the LRIC of objectively justifiable differences between the dark fibre service and the corresponding 1Gbit/s EAD, 1Gbit/s EADLA or Main Link service. However, this information must be provided to Ofcom as an AFI.
- 16.68 We continue to believe that the remaining information which we proposed that BT must disclose is unlikely to be confidential and as explained above, it is important that stakeholders are provided with transparency about the pricing of regulated dark fibre services. We have therefore decided that BT must publish in the RFS:
  - 1Gbit/s EAD and 1Gbit/s EAD LA and Main Link FAC unit costs;
  - the total volumes, average prices and revenues for its dark fibre non-LA, dark fibre LA services and dark fibre Main Link services (including their variants) respectively, from when these services are commercially available.

This information should be produced where applicable for internal and external circuits. In relation to the services in paragraph 16.57 we have decided that connections, rentals and main links should be separately identified. In relation to the services listed in paragraph 16.58 we have decided that rentals, connections, local end, link and distribution as applicable should be separately identified. Where time limited discounts, three year and five year term products have been included, BT must separately disclose the discounted and non-discounted volumes and revenues.

### ECC reporting

- 16.69 BT disagreed with the proposed requirement in relation to recording and reporting of ECC costs in the RFS. BT said that Ofcom has not sufficiently and clearly set out why its current methodology does not comply with the principle of causality. BT noted that Ofcom has made no reference to the methodology for ECC credits being inappropriate with regards to the Regulatory Accounting Principles in its June 2015 CAR Consultation.<sup>1062</sup> <sup>1063</sup>
- 16.70 BT does not separately account for the cost of ECCs. BT's current approach when reporting ECC costs in the RFS<sup>1064</sup> is to assume that costs equate to ECC revenue less the regulated rate of return, making accurate identification of ECC costs problematic. We believe that this approach to reporting ECC costs is not causal. The fact that ECCs were not considered as part of the CAR does not mean that it is not necessary for us to consider the appropriate reporting of these costs here.
- 16.71 We have discussed with BT how ECC cost accounting could be introduced. BT has informed us that accurately recoding ECC costs would require significant changes to its systems which, if put in place during 2016/17, would be disproportionate. If costs

<sup>&</sup>lt;sup>1062</sup> BT response to the June 2015 LLCC Consultation, paragraphs 457-458.

<sup>&</sup>lt;sup>1063</sup> BT response to the November 2015 LLCC Consultation, paragraphs 467.

<sup>&</sup>lt;sup>1064</sup> As can be seen in page 77, BT's 2013/14 RFS.

were recorded without introducing systems changes, BT estimated the costs would only be 85-90% accurate. However, with system changes, BT believes it can put in place a more accurate costing solution that requires minimal manual intervention by 1 April 2017. We have therefore decided to require BT to separately account and report ECCs in the market summary for the CISBO LP and RoUK in a manner compliant with Regulatory Accounting Principle number five<sup>1065</sup> at the level of the remedy in the 2017/18 RFS. We expect BT to trial the system and be able to provide data from it for the last quarter of 2016/17. In the interim period (2015/16 and 2016/17), BT will calculate ECC costs on the basis of the annual planning estimates. These annual planning estimates will be in the same format as requested through our formal information gathering process.<sup>1066</sup> BT will also provide details of the work it has carried out to ensure that the planning estimates reflect actual time and costs. The information (to replace the current AFI26; see below) will be provided in private.

# TRCs reporting

- 16.72 BT also disagreed with the proposed requirements for additional public reporting in relation to TRCs. It said that Ethernet TRCs currently use a manual process, and therefore it would be disproportionate in terms of the amount of work required to report the hours into normal, other, and Sunday/bank holiday hours. BT said that it is unclear what purpose this additional requirement is aiming to achieve. It suggested that "stakeholders should only be provided with revenues, volumes, and costs at the fully allocated level, and at the basket level in this case total TRC whereas the more detailed information requested [...] should only be provided privately to Ofcom, to allow it to monitor effectiveness of the remedies and BT's compliance".<sup>1067</sup>
- 16.73 On further consideration, particularly in light of our decision that an immediate change to the charges for TRCs is no longer necessary<sup>1068</sup>, we have decided that BT must only report revenues, volumes and FAC costs for all TRCs in aggregate in the following statements in the RFS: Market Summary and the Calculation of FAC based on component costs and usage factors.
- 16.74 In addition, we have decided that BT must disclose the total amount of hours billed (excluding volumes deals) for TRCs by charging rate (if available) and the total direct cost per labour hour. This will ensure a sufficient and proportionate level of reporting given the charge control we are imposing. We consider that this information will provide confidence to stakeholders that BT has complied with its regulatory obligations and will also bring BT's regulatory reporting requirements in line with those in the fixed access markets as set out in the March 2015 Directions Statement.<sup>1069</sup>

<sup>&</sup>lt;sup>1065</sup> According to this principle BT's costs should be "*attributed in accordance with the activities which cause the…costs to be incurred, or the assets to be acquired…*" (Annex 3, May 2014 Regulatory Reporting Statement).

<sup>&</sup>lt;sup>1066</sup> See the 26<sup>th</sup> s135 notice.

<sup>&</sup>lt;sup>1067</sup> BT response to the November 2015 LLCC Consultation, paragraphs 170-171.

<sup>&</sup>lt;sup>1068</sup> See Vol II Section 8.

<sup>&</sup>lt;sup>1069</sup> Ofcom, *Directions for Regulatory Financial Reporting, Statement*, 30 March 2015.

### EAD/EAD LA LRIC differential reporting

- 16.75 BT said that stakeholders would not need to monitor the EAD/EAD LA LRIC differential. It said that Ofcom will receive this information privately and will be able to monitor the compliance with the proposed pricing requirement.<sup>1070</sup>
- 16.76 As we explain in Section 10, Volume I, we have decided not to impose the EAD/EAD LA LRIC differential obligation on BT. Therefore we no longer need to consider reporting requirements in relation to the EAD/EAD LA LRIC differential.

#### **Private information**

- 16.77 In relation to the proposed requirements for private reporting, BT disagreed with the proposal that it should report cost information for any service with revenue over £1m. It said that such an obligation would require BT to maintain over 780 services in its cost attribution system for CISBO markets alone.<sup>1071</sup>
- 16.78 We have reconsidered our proposal and agree with BT that an obligation to report cost information for any service with revenue over £1m could be disproportionate to BT. We have reanalysed BT's costing data and found that if the threshold for reporting is increased from the proposed £1m to £5m, BT will have to report cost information on 31 CISBO services (11 of which will already be disclosed publically as explained above).
- 16.79 BT also disagreed with the proposed requirement that it continues to provide a schedule (Detailed Service LRICs) where it sets out DLRIC and DSAC data for the wholesale leased lines services. BT said that Ofcom has not demonstrated how this requirement is linked to the other remedies imposed.<sup>1072</sup>
- 16.80 We consider that it is proportionate to require BT to continue to maintain (and hence supply) DLRIC and DSAC data as it is informative in considering the effectiveness of our remedies going forward.<sup>1073</sup> We have used LRIC data in this charge control to calculate cost volume and asset volume elasticities using the ratio of LRIC to FAC. In future we may continue to use this or some similar method to forecast costs as a result of volume changes; therefore we consider it important for BT to maintain (and therefore provide) this data.
- 16.81 The LRIC data is also important because it helps provide an estimate of the common costs that are being recovered within the charge control and thus helps ensure consistency across charge controls.
- 16.82 The DSAC data is also important because it helps inform our decisions on remedies. Specifically we have looked at DSAC in assessing whether we should adopt subcaps or a SCA.
- 16.83 In the draft BCMR Statement, we said that BT should provide a schedule (Detailed Service LRICs) which would set out DLRIC and DSAC data for the wholesale leased lines services listed in paragraphs 16.57 and 16.58 above. BT is currently required to provide AFI-29 entitled "Provision of DLRIC and DSAC data per service" in relation to

<sup>&</sup>lt;sup>1070</sup> BT response to the June 2015 LLCC Consultation, paragraphs 455-456.

<sup>&</sup>lt;sup>1071</sup> BT response to the June 2015 LLCC Consultation, paragraphs 459-460.

<sup>&</sup>lt;sup>1072</sup> BT response to the June 2015 LLCC Consultation, paragraphs 462-463.

<sup>&</sup>lt;sup>1073</sup> Currently AFI29 (AFI3B)

the business connectivity markets. Since the publication of the draft BCMR Statement we have reviewed the information provided in this AFI and have decided that given that there would be a degree of overlap between AFI-29 and the new AFI, it is not necessary or appropriate to impose a requirement on BT to provide this additional AFI. Instead, we have decided that BT should continue to provide the existing AFI-29 and that the information provided in this AFI should be supplemented to include DLRIC, DSAC, FAC and service volumes for the wholesale leased lines services listed in paragraphs 16.57 and 16.58 above.

- 16.84 BT accepted the proposed requirements for private disclosure of information set out in the November 2015 LLCC Consultation in relation to dark fibre and TRCs. It noted that the variants should be aggregated where necessary to ensure that the volume of information reported does not become disproportionate.<sup>1074</sup>
- 16.85 Based on the above analysis we have decided that additional information should be provided to us in private.<sup>1075</sup> We set out the schedules and our reasoning for them below<sup>1076</sup>:
  - the first schedule (Detailed BCMR Services) should set out the revenues, volumes and FAC on a CCA basis of any other wholesale leased lines service not publicly disclosed, where the revenue from this service is above £5m. The revenues and costs should, in total, be reconciled to the revenues and costs included within the publicly reported totals for the business connectivity markets. This schedule will ensure that Ofcom has sufficient information to identify services that account for a significant proportion of Ethernet and TI basket revenues;
  - the second schedule (Detailed BCMR Service Component FACs) should set out the calculation of FAC based on component costs and usage factors for all services reported under the first schedule. The fully allocated service unit costs should reconcile to those given in the first schedule. As with schedule one, this schedule will ensure that Ofcom has sufficient information to identify services that account for a significant proportion of Ethernet and TI basket revenues;
  - the third schedule (Dark Fibre Services Revenues and Costs) should set out how the prices for dark fibre services are derived from the prices from the reference Ethernet services (1Gbit/s EAD, 1Gbit/s EADLA and Main Link) and adjusted to: (i) the avoided LRIC of certain network cost components, (ii) Cumulo costs that are avoided by BT when providing the dark fibre service instead of the corresponding 1Gbit/s EAD, 1Gbit/s EADLA or Main Link service, and (iii) the LRIC of objectively justifiable differences between the dark fibre service and the corresponding 1Gbit/s EAD, 1Gbit/s EADLA or Main Link service; and

<sup>&</sup>lt;sup>1074</sup> BT response to the November 2015 LLCC Consultation, paragraphs 141-142.

<sup>&</sup>lt;sup>1075</sup> In its submission to the April 2014 BCMR CFI [ $\approx$ ], [ $\approx$ ] expressed its general concern about greater disclosure of costs. We note that Ofcom has published the results of its general review of the regulatory reporting requirements looking across all the regulated markets. These are set out in the May 2014 Regulatory Reporting Statement in which we set out our views on what we see as the purpose of financial reporting in the future in light of market developments, the current requirements and our approach to improving the framework.

<sup>&</sup>lt;sup>1076</sup> Given our decision that current charges for Ethernet TRCs are broadly in line with costs, we no longer consider it necessary for BT to provide additional information on TRCs, as consulted on in the November 2015 LLCC Consultation.

 the fourth schedule (ECC costs) should set out how BT has calculated ECC costs on the basis of the annual planning estimates. BT will also provide details of the work it has carried out to ensure that the annual planning estimates reflect actual time and costs.

# <u>AFIs</u>

- 16.86 During the course of the BCMR we have also considered the usefulness of a number of AFIs which BT is currently required to provide to Ofcom and have decided to require BT to do the following:
  - In relation to AFI-1(Cost category (as used within regulatory LRIC model) analysis for network components, increments and relevant layers of common cost) and AFI3 (Cost category (as used within regulatory LRIC model) analysis for network components and increments, in relation to Fixed Asset cost categories, for the BT Total, BT must include a column for GRC as well as NRC.
  - In relation to AFI-21 (AFIC\_D1) 'Comprehensive analysis of transfer charges', BT should only provide this information for the markets we have decided to regulate (i.e. wholesale CISBO in the LP and the RoUK and wholesale TISBO at bandwidths up to and including 8 Mbit/s in the UK excluding the Hull area).
  - We have decided that BT should continue to provide the following AFIs: AFI-22 (Analysis of markets covered by replicability review), AFI-23 (Cost data for plant groups to services for the PPC services and technical areas and as explained in above, AFI-29 (Provision of DLRIC and DSAC data per service).
  - BT no longer needs to produce and provide AFI-25 (AFID4) 'TISBO sub 2 meg', as we no longer regulate these services at the retail level.
  - BT no longer needs to produce and provide AFI-26 Cost and Revenue adjustments for ECCs and 3rd Party Equipment costs. We no longer require information on third party equipment costs given that the ECC cost information will be supplied for compliance purposes in 2015/16 and 2016/17 and as a new AFI in 2017/18.
  - BT no longer needs to produce and provide AFI-27 (AFID5) matching cost adjustments for ECCs and 3rd Party Equipment costs, as we no longer use this schedule.
  - In the draft BCMR Statement we said that BT should provide annually as an AFI the file currently entitled 'WBA WS Residual EOI and Sector Flat File' which sets out EOI charges within the RFS. We have subsequently discussed and agreed with BT that this information will be provided as part of the existing AFI (Provision of BT Data File). We have therefore decided that there is no need to impose a requirement on BT to provide a new AFI. Instead, we reflected the requirement to provide information in relation to EOI charges in the description of the Provision of BT Data File.

### Network Component information

16.87 BT disagreed with the requirement for reporting on network cost component information proposed in the November 2015 LLCC Consultation in relation to EBD network cost components. It said that Ofcom has not clearly explained the purpose of making such a change, and in particular the way and purpose it or other stakeholders would use this additional information. According to BT, "*in many instances transparency is indeed necessary, for example to allow investors to make informed decisions, but this cannot lead to the conclusion that transparency promotes competition in all circumstances*".<sup>1077</sup>

- 16.88 As we noted in the November 2015 LLCC Consultation, Ethernet Backhaul Direct and Ethernet Backhaul Direct Resilience network cost components are currently included within the EBD/ONS rental costs. These cost components include an amalgamation of circuit link and length plant groups which include 'active' plant groups and 'passive' plant groups. Disaggregating these components by using information within the current plant groups that currently attribute costs to these components should be straightforward for BT to implement and would make the reporting of these services consistent with BT's reporting of the other regulated business connectivity services. This information will allow Ofcom and other CPs to better understand the cost drivers within EBD and ONS rentals. Whilst implementation should be straightforward, new components should be in place at the start of the financial year being reported on.
- 16.89 We have therefore decided that the current cost components Ethernet Backhaul Direct and Ethernet Backhaul Direct Resilience should each be split into two separate cost components: an "active" component and a "passive "component for the 2016/17 RFS:
  - The active component should cover the costs associated with the "active" plant groups (currently WDM-Metro Link for EBD rentals and Metro-Core link and Core-Core Link for EBD Resilience). These plant groups include power costs, equipment, relevant software, accommodation, and plant and maintenance costs. The costs for this component should also include an appropriate element of Cumulo rates non-NGA costs.
  - The passive component should cover the costs of "passive" plant groups (currently Backhaul Fibre, WDM-Metro Length, and AISBO ECC Credit for EBD Rentals, Core Fibre, Core-Core Length and Metro-Core Length for EBD Resilience). These plant groups cover the costs of any activities required to maintain and support fibre and duct infrastructure. These costs include accommodation costs (excluding electricity costs required to power electronic equipment) relevant software, accommodation plant and maintenance costs. The costs for this component should also include an appropriate element of Cumulo rates non–NGA costs.
- 16.90 We have reviewed and discussed the remaining list of network components with BT. New components have been added to the list and components no longer relevant to the regulated Network Services have been removed. The new list is set out in the direction specifying network component s in Annex 35 and includes the following changes:
  - Components that are only utilised by services in markets where no cost accounting obligation exists have been removed from the component list. An example of such a component is 'Ethernet Switches HE/MEAS'.
  - Nine new components have been introduced to provide further clarity to the readers.

<sup>&</sup>lt;sup>1077</sup> BT response to the November 2015 LLCC Consultation, paragraphs 144-148.

• Seven components have been withdrawn. Six ATM components have been removed as the ATM Network has now been closed. 'PPC Support Services' are also no longer required.

# Legal tests

# Requirements in relation to consistency with regulatory decisions and RAV

- 16.91 We have considered our decisions set out in the Consistency with Regulatory Decisions Direction against the tests set out in section 49(2) of the Act and for all of the reasons set out above, we consider that they are:
  - objectively justifiable because we have established in the May 2014 Regulatory Reporting Statement the need for the RFS to be consistent with regulatory decisions and the Direction specifies the regulatory decisions which we have made in this statement with which the RFS need to be consistent. The Direction also provides BT with clarity as to how our decisions made in this statement should be reflected in the RFS;
  - not unduly discriminatory because KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not imposed a requirement obliging KCOM to ensure its RFS are consistent with our regulatory decisions;
  - proportionate because the Direction in which we have specified the adjustments with which BT's RFS need to be consistent, is no more than is required to ensure consistency with our decisions. Further, BT retains an important role in determining the basis of preparation of the RFS; and
  - transparent because it is clear that the intention of the Direction is to ensure that BT's RFS are consistent with our decisions.
- 16.92 We have considered our decision to specify the RAV methodology against the tests set out in section 49(2) of the Act and have concluded it is:
  - objectively justifiable because the requirements specifying the RAV methodology establish further detail and provide BT with clarity as to the requirements which BT will need to follow to ensure that the Regulatory Financial Statements are prepared on the RAV basis.
  - not unduly discriminatory because 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.
  - 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.

# Requirements in relation to reporting of BT's financial performance

- 16.93 We have considered our decision about the Adjusted Financial Performance Schedules against the tests set out in Section 49(2) of the Act and have concluded that they are:
  - objectively justifiable because we have previously established in the March 2015 Directions Statement that some disclosure of BT's financial performance from a regulatory perspective is appropriate and the decision in relation to the calculation of the impact of the smoothing movement of Property Rationalisation costs and Restructuring costs specify the detail to enable BT to produce the additional statement. Our decision concerning Schedule 2 of the Adjusted Financial Performance Schedules to be provided only to Ofcom seeks to enable us to understand the way in which BT has calculated the impact of the smoothing movement of Property Rationalisation costs and Restructuring costs in the published Adjusted Financial Performance Schedule.
  - not unduly discriminatory because KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not at present established the need for such regulation.
  - proportionate because our decision in relation to the Adjusted Financial Performance Schedules is no more than is required to provide stakeholders with a better understanding of BT's financial performance from a regulatory perspective and to enable us to understand the way in which BT has prepared the published Adjusted Financial Performance Schedule.
  - transparent because it is clear that the intention of our decision is to ensure that stakeholders can gain a better understanding of BT's financial performance from a regulatory perspective and that we are able to understand the way in which BT has prepared the published Adjusted Financial Performance Schedule.

# Requirements in relation to the preparation, audit, delivery, publication, form and content of the RFS

- 16.94 We have considered whether the Direction setting requirements relating to the preparation, audit, delivery and publication of the RFS, and Direction setting requirements relating to the form and content of the RFS meet the tests set out in section 49(2) of the Act. In line with our approach in the fixed access and WBA markets, we have captured these requirements in one direction. For all of the reasons set out above, we consider that they are:
  - objectively justifiable because the Direction reflects 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 we have sufficient information necessary to carry out our functions;
  - not unduly discriminatory because KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not established the need for KCOM to provide further information and in any event we are not imposing any charge control remedies on KCOM;

- proportionate because the Direction is no more than is required in order 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; and
- transparent because it is clear that the intention of the Direction is to make sure that the RFS remain fit for purpose and that Ofcom and stakeholders are provided with a sufficient level of information.

# **Regulatory Accounting Principles**

- 16.95 We have considered our decision to give a Direction specifying the Regulatory Accounting Principles against the tests set out in section 49(2) of the Act and have concluded it is:
  - objectively justifiable because by specifying the Regulatory Accounting Principles we establish the attributes for BT's Regulatory Financial Reporting.
  - not unduly discriminatory because KCOM is the only other SMP provider which has regulatory accounting obligations, but we have not at present established the need for such regulation.
  - proportionate because our decision is no more than is required to ensure an absence of bias and consistency with regulatory decisions. While we have established 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.

### **Transparency requirements**

- 16.96 We have considered our decision in relation to transparency requirements to be included in a Direction against the tests set out in section 49(2) of the Act and have concluded that they are:
  - objectively justifiable because the Accounting Methodology Documents previously prepared by BT were difficult to understand. The changes we have decided to introduce will seek to clarify that BT should be providing less detailed, but clearer Accounting Methodology Documents.
  - not unduly discriminatory because 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.

• 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 requirements

- 16.97 We have considered our decision in relation to audit requirements against the tests set out in section 49(2) of the Act and have concluded that they are:
  - 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 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.
  - 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.

# Requirements in relation to the reconciliation report and the accompanying audit opinion

- 16.98 We have considered our decisions specifying the requirements in relation to the reconciliation report and the accompanying audit opinion against the tests set out in section 49(2) of the Act and have concluded that they are:
  - 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 KCOM is the only other SMP provider which has regulatory accounting obligations, but KCOM is not subject to a requirement to publish a reconciliation report.
  - 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.
  - transparent because it is clear that our decisions seeks 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**

- 16.99 We have considered our decisions in relation to BT's list of network components against the tests set out in section 49(2) of the Act and have concluded that they are:
  - objectively justifiable because it is necessary for us to give a direction specifying network components. Our decision about the modification of the current cost components Ethernet Backhaul Direct and Ethernet Backhaul Direct Resilience is

objectively justifiable because it is necessary to make the reporting of these services consistent with BT's reporting of the other regulated business connectivity services.

- not unduly discriminatory because KCOM is the only other SMP provider which has regulatory accounting obligations and we have 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 Ethernet Backhaul Direct and Ethernet Backhaul Direct Resilience is no more than is required to make the reporting of these cost components consistent with BT's reporting of the other regulated business connectivity services and to enable these costs to be objectively attributed to regulated wholesale services on a causal basis.
- transparent because it is clear that our decision seeks to specify network components and to make the reporting of Ethernet Backhaul Direct and Ethernet Backhaul Direct Resilience consistent with BT's reporting of the other regulated business connectivity services to ensure that these components remain fit for purpose.
- 16.100 We have also considered how our decisions meet the tests in Section 3, 4 and 4A of the Act.
  - Our decisions set out in this section are designed to give Ofcom a greater role in determining how BT should prepare its Regulatory Financial Statements, thereby ensuring the Regulatory Financial Statements are aligned with Ofcom's regulatory decisions and giving confidence to stakeholders about the absence of bias in the preparation of the Regulatory Financial Statements. They also ensure that the presentation and usability of the Regulatory Financial Statements is improved, and that the obligations that are imposed on BT are proportionate.
  - Our specific decisions in relation to the regulatory reporting requirements for wholesale leased lines services seek to ensure that stakeholders have sufficient information about the products and services they purchase and we have sufficient information necessary to carry out our functions.
  - The above decisions therefore seek to ensure the RFS remain relevant, thereby increasing transparency. Ultimately, this promotes competition.
- 16.101 In imposing these changes we have taken into account all applicable recommendations issued by the European Commission under Article 19(1) of the Framework Directive, in particular Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications.
- 16.102 In consequence Ofcom believes the Directions meet the tests in Sections 3, 4 and 4A.