



Review of the fixed narrowband services markets

Statement on the proposed markets, market power
determinations and remedies

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Statement

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Section 1

Executive Summary

Introduction

- 1.1 This statement sets out decisions designed to promote competition in the supply of telephone calls from fixed lines for the next three years (from 1 October 2013 to 30 September 2016), under the European Framework for Electronic Communications. These decisions are important in furthering the interests of citizens and consumers.
- 1.2 Despite the growth of mobile and online services, millions of us still make and receive telephone calls from fixed lines at home or at work. As a result, promoting effective competition between communications providers (CPs) that offer fixed line calls remains an important part of Ofcom's work.
- 1.3 The services covered in this statement are "fixed narrowband telephony services", including retail services, in particular voice telephone calls, and wholesale services such as call origination and call termination, offered between CPs.¹
- 1.4 In this statement we present the conclusions of our review of the retail and wholesale markets for fixed narrowband telephony services in the United Kingdom. We explain how we are going to regulate these markets and the rules we are imposing on any company we have found to have significant market power (SMP).
- 1.5 These new rules will replace the existing rules and will take effect from the date of this statement, and, in the case of the charge controls, from 1 October 2013.
- 1.6 We have decided to impose controls on charges for wholesale call termination and wholesale call origination. We have concluded that wholesale call termination rates will be based on long run incremental costs (LRIC) and wholesale call origination rates on LRIC+² with effect from 1 January 2014.

This review

- 1.7 On 17 May 2012 we published a 'call for inputs' ('May 2012 CFI'), seeking views on the proposed scope of our review.³ We received 12 responses from industry stakeholders, including BT and other fixed and mobile CPs.
- 1.8 On 28 September 2012, we published a further consultation document: *Narrowband Market Review – Consultation on possible approaches to cost modelling for the Network Charge Control for the period 2013-2016* ('September 2012 consultation'). In that document, we sought views on how we might implement cost modelling for the purposes of setting charge controls for certain key markets in this review, should a

¹ For a full list of markets considered see Section 2.

² The "+" includes both the common costs attributable to wholesale call origination and those common costs that are no longer recovered from wholesale call termination.

³ Ofcom, *Fixed Narrowband Market Review, Call For Inputs, 17 May 2012* - <http://stakeholders.ofcom.org.uk/consultations/narrowband-market-review-call/>

charge control remedy be necessary.⁴ We received 13 responses from industry stakeholders, including BT and other fixed and mobile CPs.

- 1.9 On 5 February 2013, we published a further consultation: *Review of the fixed narrowband services markets – Consultation on the proposed markets, market power determinations and remedies* ('February 2013 consultation'). In that document we set out our proposals on market definition, SMP and remedies to address our proposed SMP findings. We received 35 responses from industry stakeholders, including BT, other fixed and mobile CPs, industry associations, standards bodies and private individuals.
- 1.10 On 20 August 2013, having taken account of these consultation responses and having made modifications in the light of these comments, we notified our intended measures and an explanatory draft Statement setting out the reasons for them to the European Commission (EC), BEREC and other National Regulatory Authorities (NRAs). In its decision letter of 20 September 2013, the EC made two comments on the draft Statement, but it did not raise any concerns about our measures. We received no responses from BEREC or any NRAs.

Summary of conclusions

- 1.11 This document should be read in conjunction with our consultation documents in which our original analysis is set out in full. Our conclusions in this statement are drawn from that original analysis and careful consideration of the responses received to our consultations.
- 1.12 In this market review we conclude that:
- The fixed voice retail calls markets in the United Kingdom excluding the Hull Area, remain effectively competitive and no company holds a position of SMP;
 - In the Hull Area, although KCOM's market share remains high both in retail residential and in retail business fixed calls, we consider that *ex post* competition law is sufficient to address any competition concerns at the retail level. We are therefore removing all remaining *ex ante* regulation in the relevant markets at the retail level;
 - BT has SMP in the provision of wholesale call origination in the United Kingdom excluding the Hull Area, and:
 - we are imposing access and non-discrimination remedies;
 - a charge control is an appropriate remedy;
 - we are removing BT's obligation to offer carrier pre-selection (CPS)⁵ and indirect access (IA)⁶ where BT's retail arm⁷ provides the retail access line;⁸ and

⁴ Ofcom, *Narrowband Market Review, Consultation on possible approaches to cost modelling for the network charge control for the period 2013-2016*, 28 September 2012 - <http://stakeholders.ofcom.org.uk/consultations/narrowband-market-review/>

⁵ CPS is the facility offered to customers that allows them to opt for certain defined classes of call to be carried by an operator selected in advance without having to dial a routing prefix or follow any other different procedure to invoke such routing.

- for calls to non-geographic numbers, we require that BT provides number translation service (NTS) call origination, until our separate review of these non-geographic calls services is completed and the resulting changes to the regime have been implemented. BT's charges for the retailing activities associated with these services will be capped at their current levels (in real terms) until then.^{9 10}
 - In the Hull Area, KCOM has SMP in the provision of wholesale call origination, so we are imposing a requirement to provide network access on fair and reasonable terms. We do not consider that a charge control is required. We are removing KCOM's obligation to offer CPS and IA where KCOM's retail arm provides the retail access line¹¹;
 - Each CP that connects calls to its own customers has SMP in respect of the market for the supply of wholesale call termination to those numbers. For BT we are setting a range of remedies including a charge control based on the long-run incremental costs (LRIC) of wholesale call termination. For all other CPs, including KCOM, we are imposing a requirement to provide access on fair and reasonable terms and conditions, including charges;
 - For single transit, we consider that *ex ante* regulation is no longer appropriate on the basis that *ex post* competition law is sufficient to address any competition concerns that might arise. We are therefore removing all remaining *ex ante* SMP regulation in this market;
 - BT is required to provide interconnect circuits on reasonable request and charges for interconnect circuits will be charge-controlled; and
 - KCOM is required to provide interconnect circuits on reasonable request but no charge control will apply to such provision.
- 1.13 In setting charge controls for wholesale call origination and termination, we have estimated the forward-looking cost of providing wholesale services based on a Next Generation Network (NGN) model using the internet protocol (IP).
- 1.14 The charge controls for the provision of wholesale call termination will be based on the LRIC of providing the service. We explain in more detail in Section 8 of this

⁶ IA is the facility offered to BT's retail customers that allows them to access the services of any interconnected CP, but on a call-by-call basis by dialling a carrier selection code.

⁷ This includes the divisions of BT known as BT Retail and BT Global Services.

⁸ "Sunset" provisions for the current CPS and IA obligations on BT of 12 months will apply as a transition period to allow CPs to adapt to this change. This is explained in paragraphs 5.308 and 5.310 respectively.

⁹ Since the non-geographic reform currently proposes an unbundled tariff remedy to be implemented by spring 2015 we believe that we do not require the NTS call origination condition after that time. (See <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geographic-no/>)

¹⁰ BT is currently required to provide call origination which allows its retail customers to call the non-geographic numbers of other providers. BT is allowed to retain the costs of call origination at the charge controlled rate, plus an additional retention for the costs of providing the retail service (called the Retail Uplift). A further allowance for bad debt arising on calls to premium rate numbers is also allowed.

¹¹ A "sunset" provision for the current IA obligation on KCOM of 12 months will apply as a transition period to allow CPs to adapt to this change. There will be no sunset transition period for CPS for KCOM. This is explained in paragraphs 5.313 onwards.

document, why we are capping FTRs at LRIC. This LRIC cap will be based on our NGN cost model and the LRIC cap will apply from 1 January 2014.

- 1.15 This approach will lead to FTRs falling from an average of 0.219ppm in 2012/13 (in 2012/13 prices) to 0.034ppm by 1 January 2014 (in 2012/13 prices).
- 1.16 This reduction in the maximum permitted FTR will be achieved via:
- A charge control to limit FTRs for BT; and
 - other designated CPs to offer fixed call termination at a fair and reasonable rate (which will be presumed to be met when the rate is no higher than the level of the charge control imposed on BT).
- 1.17 In relation to wholesale call origination, we have concluded that charge controls should be based on LRIC plus an appropriate mark up for common costs. In Section 8 of this document we explain why it is appropriate for wholesale call origination to recover the common costs unrecovered from setting FTRs at LRIC.
- 1.18 This approach will lead to wholesale call origination rates moving from an average of 0.245ppm in 2012/13 (in 2012/13 prices) to 0.415ppm by 1 January 2014 (in 2012/13 prices) and falling to 0.387ppm (in 2012/13 prices) in the final year of the charge control.¹²
- 1.19 A summary of the caps for the period 1 October 2013 to 30 September 2016 is provided in Table 1.1 and a summary of our decisions in relation to remedies is provided in Table 1.2.

Table 1.1 – X-values (pence per minute (ppm) real values are in 2012/13 prices)

	2012/13 Actual Real	2013/14 ¹³ Forecast Real	2014/15 Forecast Real	2015/16 Forecast Real
Termination				
ppm cap	0.219	0.034	0.033	0.032
Value of X in the RPI+X formula	NA	-87.3%	-3.0%	-3.1%
Origination				
ppm cap	0.245	0.415	0.401	0.387
Value of X in the RPI+X formula	NA	71.7%	-3.5%	-3.6%
ISB¹⁴				
Cap		0% +10% subcap	0% +10% subcap	0% +10% subcap
NTS retail uplift				
Value of X in the RPI+X formula		RPI-0	RPI-0	RPI-0

¹² The new charge control on wholesale call origination will also include the contribution to costs previously recovered through BT's separate Product Management, Policy and Planning (PPP) charge.

¹³ For 2013/14 these rates will apply from 1 January 2014. Prior to this date, all rates will be frozen at their current level.

¹⁴ These are the controlling percentages, i.e. the charge control formula is not index linked.

Table 1.2 - Summary of remedies

Market	Obligations ¹⁵
Wholesale call origination	<p>BT:</p> <ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requests for new forms of network access • Requirement not to unduly discriminate • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information • Transparency as to quality of service • Cost accounting • Accounting separation • Requirement to provide NTS wholesale call origination¹⁶ • Charge control (call origination and NTS call origination) <p>KCOM:</p> <ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requirement not to unduly discriminate • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information • Accounting separation
Wholesale call termination	<p>BT:</p> <ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requirement not to unduly discriminate • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information • Cost accounting • Accounting separation • Charge control <p>All other CPs that provide call termination:</p> <ul style="list-style-type: none"> • Requirement to provide network access on reasonable request¹⁷ • Requirement to notify charges

¹⁵ The obligation on BT and KCOM to provide Indirect Access is removed. However, a sunset clause of 12 months will allow CPs to make alternative arrangements.

¹⁶ This covers the interim period between the conclusion of this review and current charge control and the commencement of the new regime for non-geographic calls, which is expected to be spring 2015.

¹⁷ This includes fair and reasonable terms, conditions and charges with guidance, as explained in paragraphs 6.124 to 6.130 and paragraphs 6.213 to 6.226.

Interconnect circuits	<p>BT:</p> <ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requests for new network access • Requirement not to unduly discriminate • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information • Cost accounting • Accounting separation • Transparency as to quality of service • Charge control <p>KCOM:</p> <ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requirement not to unduly discriminate • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information

Section 2

Background

Introduction

- 2.1 In this section we set out the scope of the statement, the regulation currently in place, and summarise the changes that have occurred in the market since the last review. We also describe the process we have adopted in defining the markets in this review and the legal framework pertaining to the market review process.¹⁸

Scope of this statement

- 2.2 This document sets out which *ex ante* SMP regulation Ofcom, following consultation, has decided to impose in the markets for the provision of fixed narrowband voice services in the United Kingdom for the period 1 October 2013 to 30 September 2016.
- 2.3 Existing remedies in these markets are withdrawn¹⁹, although we have allowed a period of transition where appropriate.
- 2.4 In this review we have considered the markets and services listed in Table 2.1.

Table 2.1: The markets and services considered in this review

Market	Services
Retail market	Residential fixed narrowband calls
	Business fixed narrowband calls
Wholesale market	Wholesale call origination on a fixed narrowband network
	Wholesale fixed geographic call termination
	Local-tandem conveyance and transit ("LTC/LTT")
	Wholesale transit services – Inter-tandem conveyance and transit ("ITC/ITT")
	Wholesale transit services – single transit ("ST")
Services related to the wholesale markets	Interconnect circuits
	Product management, policy and planning ("PPP")

Services considered in this review

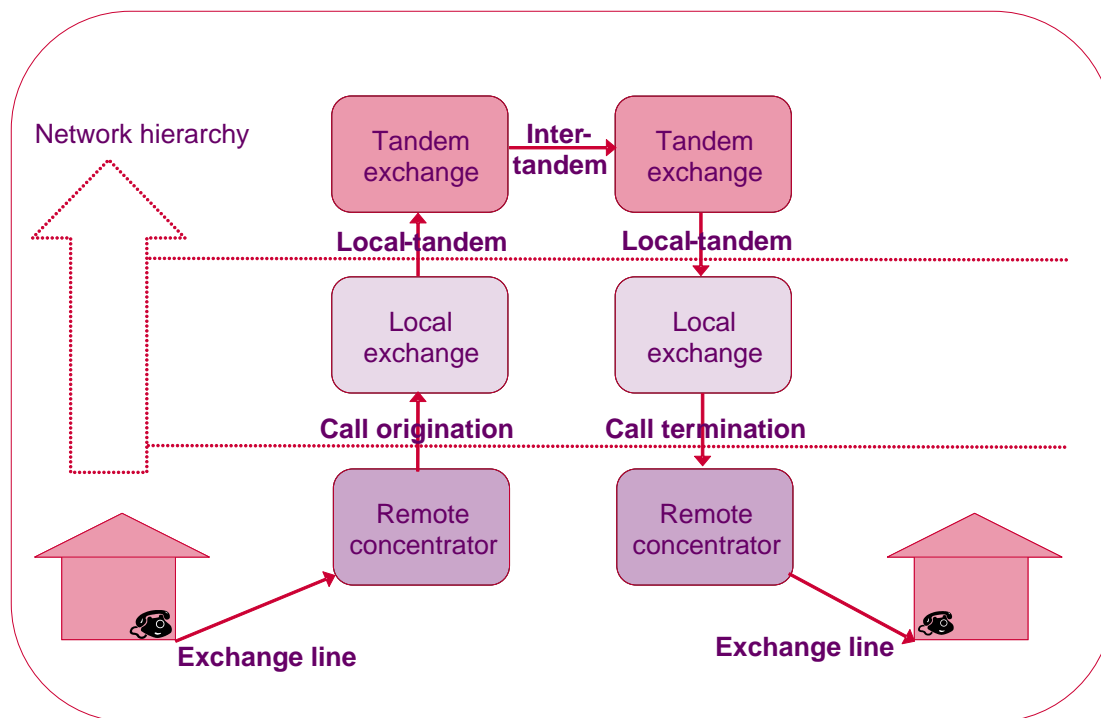
- 2.5 The wholesale components that are required to provide retail calls products are call origination, call termination and the various conveyance and transit services that

¹⁸ Further detail on the legal framework is set out in Annex 13 – Regulatory Framework.

¹⁹ The current charge controls expire on 30 September 2013.

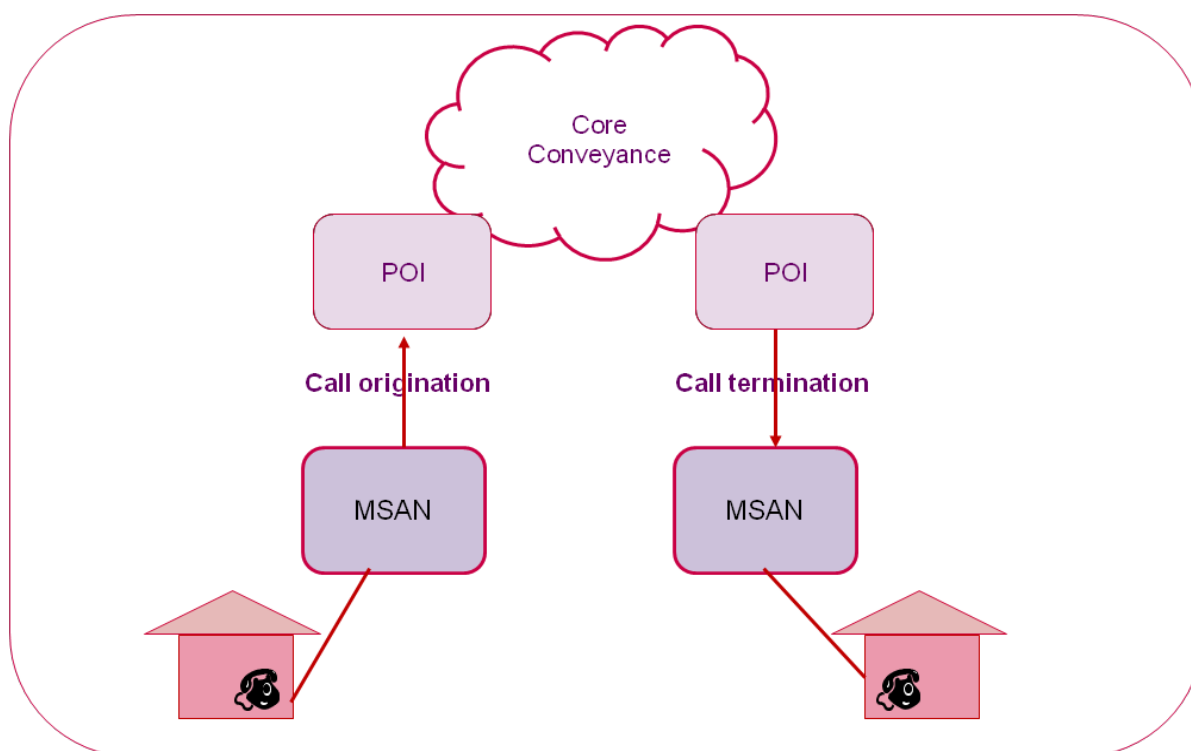
provide connectivity across narrowband networks. Figure 2.1 shows such services within the context of BT's current time division multiplex (TDM) network. Other CPs may structure their TDM networks differently. In particular, in other networks, the remote concentrator unit (RCU) is less likely to be physically remote from the digital local exchange (DLE). Additionally, there is less likely to be separate local and tandem network layers.

Figure 2.1: Network services considered in the wholesale fixed narrowband services markets review as applied to the existing BT network



2.6 Figure 2.2 shows wholesale call origination and wholesale call termination services in the context of a typical next generation network (NGN), which has a different structure to TDM networks.

Figure 2.2: Network services considered in the wholesale fixed narrowband services markets review as applied to a typical NGN



NGNs and postponement of NGN deployment by BT

- 2.7 The current public switched telephone network (PSTN) is based on technology developed and deployed over the past 25 to 30 years. Initially, CPs deployed TDM networks but, in the United Kingdom, a number of CPs have invested in NGNs. NGNs are generally based on internet protocol (IP) packet technology. They convey multiple services (broadband and media services in addition to telephony) over the same all-IP transport platform. From the CP's perspective, NGNs can offer a number of potential benefits including cost savings due to the economies of scale and scope inherent in a single converged network, increased efficiency of network operations and the potential for innovative services.
- 2.8 BT set out proposals for its NGN – which it called 21CN - early in 2004. At the time, BT envisaged that a substantial volume of PSTN traffic would have migrated onto 21CN by 2009. However, in 2009 BT reviewed its plans for deployment of the project in relation to voice services. BT's migration of voice services has not occurred and, to our knowledge, it is now unlikely that any such migration to 21CN will take place in the time period considered in this market review. While BT has not moved to an NGN for voice services, a number of CPs competing with BT are using NGNs. Consequently, we have considered the impact of the deployment of NGNs over the period of this review.

Previous market reviews

- 2.9 We last reviewed narrowband services markets in 2009 ('the 2009 review'), issuing a statement for fixed narrowband retail services²⁰, and two statements for fixed narrowband wholesale services (the '2009 wholesale review').²¹ In 2009, we also separately published our decision in relation to the network charge controls.²² As a result of the 2009 review we commenced a review of the NTS retail uplift and the PRS bad debt surcharge, publishing a statement in 2011.²³ In this document, our decisions in relation to retail and wholesale market reviews and our decisions in relation to the associated charge controls (the NCC, NTS retail uplift and the PRS bad debt surcharge) are included in a single statement.
- 2.10 In the 2009 retail review we found that the retail markets for narrowband services were competitive in the United Kingdom excluding the Hull Area, but that KCOM had SMP in the supply of these services in the Hull Area.
- 2.11 In the 2009 wholesale review we assessed the markets for wholesale call origination and wholesale call termination. In these markets, BT and KCOM had SMP in wholesale call origination on a fixed narrowband network and each individual CP had SMP in the market for fixed geographic call termination on its own network.
- 2.12 The 2009 review also included analogue and digital (ISDN2 and ISDN30) exchange line services. While we have included calls made to/from analogue, ISDN2 and ISDN30 lines in this market review, we have not included the access elements of these services, as we consider that it is more appropriate to review such access services under the fixed access market review which commenced in late 2012.²⁴
- 2.13 In our 2009 reviews we also identified and assessed interconnect circuits, and BT's product management, policy and planning (PPP activities)²⁵ related to regulated products. Although these areas were not considered markets in themselves, they are related to the provision of regulated products in the markets covered by the review. We therefore imposed regulatory obligations to ensure the effectiveness of the rules placed on regulated products.

²⁰ Ofcom, *Fixed Narrowband Retail Services Markets- Identification of Markets and Determination of Market Power*, Statement, 15 September 2009;

http://stakeholders.ofcom.org.uk/consultations/retail_markets/statement/

²¹ Ofcom, *Review of the Fixed Narrowband Services Wholesale Markets- statement on the markets, market power determinations and remedies including further consultation*, 15 September 2009;

http://stakeholders.ofcom.org.uk/consultations/wnmr_statement_consultation/summary, and Ofcom, *Review of the fixed narrowband services wholesale markets - Further statement on wholesale transit markets and remedies in the wholesale call termination market*, 5 Feb 2010; http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/statement/statement.pdf

²² Ofcom, *Review of BT's Network Charge Controls – Explanatory statement and notification of decisions on charge controls in wholesale narrowband markets*, 15 September 2009;

http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/statement/nccstatement.pdf

²³ Ofcom, *Wholesale charges for number translation services and premium rate services – NTS retail uplift charge control and PRS bad debt surcharge*, 20 July 2011;

http://stakeholders.ofcom.org.uk/binaries/consultations/nts-retail-uplift/statement/NTSRU_statement.pdf

²⁴ Ofcom, *Fixed Access markets review wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 Consultation*, 3 July 2013 -

<http://stakeholders.ofcom.org.uk/consultations/fixed-access-market-reviews/>

²⁵ PPP includes administration overheads, marketing activities directly related to the regulated service, customer service management for these services and billing and finance activities.

- 2.14 In relation to transit and conveyance services, in our 2009 reviews we found SMP in the market for single transit (ST), and imposed remedies, while we deregulated the market for local-tandem conveyance (LTC) and transit (LTT) services.
- 2.15 In addition, we have on several occasions conducted market reviews which have considered the competition problems associated with call termination in the mobile market and we have concluded that a charge control was necessary to address the competition concerns identified.²⁶
- 2.16 A summary of the outcome of the 2009 reviews is set out in Table 2.2.

²⁶ The most recent review and charge control was set in the Mobile Call Termination Statement March 2011 - <http://stakeholders.ofcom.org.uk/consultations/mtr/statement>, with the charge control as amended following the appeals to the Competition Appeals Tribunal (CAT) and Competition Commission (CC): 9th February 2012 http://www.competition-commission.org.uk/assets/competitioncommission/docs/appeals/telecommunications-price-control/appeals/final_determination.pdf. CAT judgment [2012] CAT 11 of 3rd May 2012 <http://www.catribunal.org.uk/238-7586/Judgment.html>

Table 2.2: Summary of SMP findings and remedies imposed in 2009

Retail Market	Is there SMP?	Remedies / Obligations Imposed
Residential fixed narrowband calls	Y (KCOM only)	KCOM: No undue discrimination. Publication of charges.
Business fixed narrowband calls	Y (KCOM only)	KCOM: No undue discrimination. Publication of charges.
Wholesale Market		
Wholesale call origination on a fixed narrowband network	Y (BT and KCOM)	BT: Requirement to provide network access on reasonable request; requests for new network access; requirement not to unduly discriminate; basis of charges; requirement to publish a reference offer; requirement to notify charges; requirement to notify technical information; cost accounting; accounting separation; obligation to provide CPS; obligation to provide IA; NTS call origination ²⁷ ; and charge control. KCOM: Requirement to provide network access on reasonable request; requirement not to unduly discriminate; basis of charges; requirement to publish a reference offer; requirement to notify charges; requirement to notify technical information; cost accounting; accounting separation; obligation to provide CPS; and obligation to provide IA.
Wholesale fixed geographic call termination	Y (All CPs providing call termination including BT and KCOM)	BT: Requirement to provide network access on reasonable request; requirement not to unduly discriminate; basis of charges; charge control; requirement to publish a reference offer; requirement to notify charges; cost accounting and accounting separation. KCOM: Requirement to provide network access on reasonable request; requirement not to unduly discriminate; basis of charges; requirement to publish a reference offer; requirement to notify charges; cost accounting and accounting separation. All other communication providers (CPs) that provide call termination: requirement to provide call termination on fair and reasonable terms, requirement to notify charges ²⁸ .
Local-tandem conveyance and transit	N	BT: Previously existing remedies continued where appropriate for 12 months after review before being lifted. ²⁹

²⁷ The NTS call origination condition requires BT to provide services and requires that charges related to retailing these services comply with the NTS retail uplift charge control and, where applicable, the PRS bad debt surcharge.

²⁸ The requirement to notify charges was added following a further decision. Ofcom, *Review of the Fixed Narrowband Services Wholesale Markets-further statement on the wholesale transit markets and remedies in the wholesale call termination market*, 5 February 2010;

²⁹ SMP conditions were revoked in four phases, as follows: Immediately on publication of the statement; requests for new network access. On 1 January 2010; charge control. On 31 July 2012; cost accounting (for the financial year 2009/2010). On 15 September 2010; requirement to provide network access on reasonable request; requirement not to unduly discriminate; basis of charges;

Wholesale transit services – ST	Y (BT only)	BT: Requirement to provide network access on reasonable request; requirement not to unduly discriminate; basis of charges; requirement to publish a reference offer; requirement to notify technical information; requirement to notify charges; and accounting separation.
Services related to the wholesale markets		
Interconnect circuits		BT: Requirement to provide network access on reasonable request; requests for new network access; requirement not to unduly discriminate; basis of charges; requirement to publish a reference offer; requirement to notify charges; requirement to notify technical information; cost accounting; accounting separation; transparency as to quality of service; and charge control. KCOM: Requirement to provide network access on reasonable request; requirement not to unduly discriminate; basis of charges; requirement to publish a reference offer; requirement to notify charges; requirement to notify technical information; cost accounting; and accounting separation.
PPP		BT: Charge control. KCOM: n/a

Developments since the last market review

- 2.17 Since the previous market reviews, there have been a number of developments relevant to the narrowband markets considered in this review. We discuss these in detail in the relevant sections and provide a brief summary below.
- 2.18 Since the 2009 review, the coverage of local loop unbundling (LLU)³⁰ has increased and the shift from shared LLU (shared metallic path facility (SMPF)) to full LLU (metallic path facility (MPF)) has been significant. Both forms of LLU allow a CP to locate its own equipment in BT's local exchanges to connect to BT's local copper access network. However, SMPF only allows the CP to provide broadband services, with narrowband voice services still being provided over BT's narrowband network. By contrast, MPF enables full control of services supplied over the copper access network to the end customer; including narrowband voice call services, so the CP is able to provide narrowband and broadband services without relying on BT's narrowband network. This has led to more intense retail competition as discussed in Section 3.
- 2.19 In April 2013 we published a policy position and consultation, *Simplifying non-geographic numbers*,³¹ ('2013 NGCS review') setting out our policy position on new rules for governing non-geographic calls services delivered to consumers using telephone numbers beginning with 03, 070, 08, 09 and 118. Using these telephone numbers, a wide range of services are offered to callers (consumers) by public and

requirement to publish a reference offer; requirement to notify charges; and requirement to notify technical information.

³⁰ LLU allows other CPs to physically take over (or share) BT's existing copper lines between the local telephone exchange and the customer premises.

³¹ Ofcom, *Simplifying non-geographic numbers– Policy Position on the introduction of the unbundled tariff and changes to 080 and 116 ranges* – 15 April 2013
<http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

private organisations. Delivering these services involves a diverse set of participants, joined in complex commercial relationships that have been shaped by, among other things, regulation. The links between our narrowband market review and the review of non-geographic numbers are discussed in sections 5 and 6.

- 2.20 As some CPs in the UK operate NGNs (as explained in paragraphs 2.7 – 2.8 (above), we discuss some of the key features of NGNs and the differences between current narrowband networks and NGNs. In Annex 5, we assess some of the issues associated with migration from current networks to NGNs and the issues associated with interconnecting networks using different technologies.

This market review

- As noted in the executive summary of this statement, we published on 17 May 2012 a ‘call for inputs’ (‘May 2012 CFI’) seeking views on the proposed scope of our review.
 - On 28 September 2012, we published a consultation entitled *Narrowband Market Review – Consultation on possible approaches to cost modelling for the Network Charge Control for the period 2013-2016* (September 2012 consultation), seeking views on cost modelling based on NGN technology.³²
 - On 5 February 2013, we published a consultation entitled *Review of the fixed narrowband services markets – Consultation on the proposed markets, market power determinations and remedies* (‘February 2013 consultation’). This consultation made proposals in relation to market definitions, market power assessments and remedies, including charge controls.
- 2.21 Our analysis in this statement is based on the information we routinely collect on these markets while carrying out our duties, on stakeholder responses to the May 2012 CFI, the September 2012 consultation, and the February 2013 consultation, and on 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 and financial data, and publicly available information (including material from investor presentations and analysts’ reports).³³

The February 2013 consultation

- 2.22 In the February 2013 consultation, we sought stakeholders’ views on the preliminary conclusions of our review of the retail and wholesale markets for narrowband telephony services in the United Kingdom. In particular we asked stakeholders’ views on:
- i) the proposals for regulation of wholesale call origination, wholesale call termination, and interconnection services, including charge controls and a move to LRIC for the calculation of FTRs;
 - ii) the choice of technology and the intention to model costs of an NGN rather than a network that uses TDM technology;

³² Ofcom, *Narrowband Market Review, Consultation on possible approaches to cost modelling for the network charge control for the period 2013-2016*, 28 September 2012 - <http://stakeholders.ofcom.org.uk/consultations/narrowband-market-review/>

³³ A full list of respondents to the February 2013 consultation and a list of sources of evidence that we have used in developing these proposals can be found in Annex 11 – Sources of Evidence

- iii) the economic features of our cost model – e.g. model calibration, cost recovery over time, etc;
 - iv) the implementation of the proposed cost model design³⁴, in particular, NGN configuration as supported by a report by CSMG published with our consultation;
 - v) the proposals for deregulation of the ST market; and
 - vi) the proposals for deregulation of KCOM in relation to retail services in the Hull Area.
- 2.23 We received 35 responses to the consultation from stakeholders and industry bodies. In each section of this document we present a summary of the responses relevant to the issues raised in that section. We then present our final analysis of the relevant issues, adjusted where appropriate in the light of the consultation submissions and any new information we have received since the consultation.

The EU consultation

- 2.24 Under the revised Article 7 of the Framework Directive^{35 36}, NRAs are required to notify their draft decision to the EC, BEREC and other NRAs upon completion of their own domestic consultation and having taken account of all stakeholder responses. The EC, BEREC and other NRAs may make comments within a month. The notifying NRA needs to take utmost account of any EC and BEREC opinions.
- 2.25 Having completed the domestic consultation process and taken account of all stakeholder responses, we notified our draft decision on 20 August 2013. In its decision letter of 20 September 2013, the EC made two comments on the draft Statement, but it did not raise any concerns about our measures. We received no comments from BEREC or any NRAs. We present a summary of the EC's comments in Annex 14 along with a brief response to these comments, which are covered in more detail in sections 6 and 11.

Regulatory framework

- 2.26 The regulatory framework has its basis in five EU Communications Directives ('the Directives'), each of which has been implemented into national legislation.³⁷ It imposes a number of obligations on national regulatory authorities, 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 13. In this chapter we have set out, in summary, what the market review process involves.

The market review process

- 2.27 The review is carried out in three stages:

³⁴ We published a full description of the Network Charge Control model in February alongside the February 2013 consultation; Ofcom, *Review of the fixed narrowband services markets*, Consultation, 5 February 2013; <http://stakeholders.ofcom.org.uk/consultations/nmr-13/>

³⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0037:0069:EN:PDF>

³⁶ The revised framework was transposed into UK law by the Electronic Communications and Wireless Telegraphy Regulations 2011 which came into force on 26 May 2011 and amended the Communications Act 2003. This notification requirement is implemented by Section 48B.

³⁷ Recent amendments to the five EU Communications Directives were transposed into national legislation and came into effect from 26 May 2011.

- i) we identify and define the relevant markets;
- ii) we assess whether 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 that should be imposed where there has been a finding of SMP, based on the nature of the competition problem identified in the relevant markets.

2.28 In carrying out the review, we are obliged to define relevant markets “appropriate to national circumstances in accordance with the principles of competition law”.³⁸ In so doing, we are also obliged to take “utmost account”³⁹ of the EC’s Recommendation on relevant product and service markets⁴⁰ (‘2007 EC Recommendation’) and SMP Guidelines.⁴¹

The 2007 EC Recommendation and its application to this review

2.29 The 2007 EC Recommendation sets out product and service markets which, at the European level, the EC has identified as being susceptible to *ex ante* regulation. These markets are identified on the basis of the cumulative application of three criteria:

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

2.30 The requirement to define relevant markets appropriate to national circumstances means we are free to identify relevant markets in the United Kingdom as susceptible to regulation other than those in the 2007 EC Recommendation. However, where we do so, the 2007 EC Recommendation requires that for each relevant market we must show that the cumulative criteria are satisfied in order for regulation to be appropriate.

The SMP Guidelines and their application to this review

2.31 The SMP Guidelines include guidance on market definition, assessment of SMP and SMP designation. In 2002, Oftel produced additional guidelines on the criteria to assess effective competition based on the SMP Guidelines (‘Oftel Guidelines’).⁴² In the relevant chapters below we set out how we have taken both the SMP and Oftel Guidelines into account in reaching our conclusion.

³⁸ 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).

³⁹ *Ibid.*

⁴⁰ Commission Recommendation of 17 December 2007 on relevant product and services markets (2007/879/EC); http://eur-lex.europa.eu/LexUriServ/site/en/oj/2007/l_344/l_34420071228en00650069.pdf

⁴¹ 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).

⁴² See www.ofcom.org.uk/static/archive/oftel/publications/about_oftel/2002/smpg0802.htm

Forward look

- 2.32 Rather than just looking at the current position, market reviews look at how competitive conditions might change over the period covered by the review. For this review we have taken a forward look of three years, in line with the requirement in the Directives that ordinarily a market review should be conducted within three years of the previous review.
- 2.33 This does not preclude our reviewing any of the markets sooner but in the absence of unforeseen developments, we anticipate that we will time the next market review to conclude before the end of September 2016. Therefore the charge controls that we are imposing in this statement will apply for a period of three years.

Impact assessment and EIA framework

Impact assessment

- 2.34 The analysis presented in this document constitutes an impact assessment as defined in section 7 of the Communications Act 2003 ('the Act').
- 2.35 Impact assessments provide a valuable way of assessing the options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that, generally, we have to carry out impact assessments in cases where our conclusions would be likely to have a significant effect on businesses or the general public, or where there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, *Better policy-making: Ofcom's approach to impact assessment*.⁴³

Equality impact assessment

- 2.36 Annex 12 sets out our equality impact assessment (EIA) for this market review. Ofcom is required by statute to assess the potential impact of all its functions, policies, projects and practices on race, disability and gender equality. EIAs also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers regardless of their background or identity.
- 2.37 Unless we state otherwise in this document, it is not apparent to us that the outcome of our review is likely to have any particular impact on race, disability or gender equality. Specifically, we do not envisage the impact of any outcome to be to the detriment of any group in society. Nor do we envisage any need to carry out separate EIAs in relation to race or gender equality or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we anticipate that our regulatory intervention will 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 do not consider that our decisions will have a particular impact on consumers in different parts of the United Kingdom or on consumers with low incomes.

⁴³ *Better Policy Making: Ofcom's approach to Impact assessment*, 21 July 2005 (http://stakeholders.ofcom.org.uk/binaries/consultations/ia_guidelines/summary/condoc.pdf)

Document structure

2.38 This document sets out the scope of the review, our approach to the analysis, our findings and our decisions. The rest of this document is structured as follows:

- Sections 3 and 4 cover retail markets and services;
- Sections 5 to 7 cover market definition, assessment of SMP and remedies for the wholesale markets we analyse;
- Sections 8 and 9 deal with issues relating to the choice of cost standard, cost recovery and cost modelling in relation to the charge controls we set;
- Section 10 covers our decisions in relation to interconnection and the group of products that facilitate the connection of the networks of different CPs; and
- Section 11 covers the specific charge control remedy and addresses matters relating to basket design.

Section 3

Market overview and developments in the United Kingdom

Summary of our decision

- 3.1 We have considered the state of competition in the retail markets for telephone calls from fixed lines, both business and residential, in the United Kingdom excluding the Hull Area ('the United Kingdom'). We conclude that the markets for these services continue to be effectively competitive and are likely to remain so for the period covered by this market review.
- 3.2 The rest of this section is set out as follows:
- Introduction, including a description of the services considered in this section, an overview of the 2009 retail narrowband market review, and a discussion on the purpose of this review;
 - summary of our position in the February 2013 consultation;
 - summary of responses to the February 2013 consultation in relation to retail competition; and
 - our analysis and conclusions, taking into account the responses to the February 2013 consultation and recent market information.

Introduction

- 3.3 Telephone calls from fixed lines – or 'narrowband' services - are typically provided over analogue telephone lines for residential customers, while business fixed-line calls services can be provided over digital technologies (ISDN2 and ISDN30 lines) as well as over analogue lines.

2009 market review

- 3.4 In the 2009 retail review⁴⁴, we defined separate markets for business and consumer telephone calls in the United Kingdom, and we found that these markets were effectively competitive. In particular, we found that BT no longer had SMP in respect of the market for retail fixed narrowband calls in either the residential or business sectors.
- 3.5 In reaching this conclusion, we found that the regulated wholesale access and calls services CPS, IA, wholesale line rental (WLR) and LLU had allowed other CPs to compete with BT in offering telephone calls to consumers and business customers across the United Kingdom such that BT was no longer able to exercise SMP in the provision of retail services to consumers.

⁴⁴ Ofcom, *Fixed Narrowband Retail Services Market— Identification of Markets and Determination of Market Power*, Statement, 15 September 2009 (http://stakeholders.ofcom.org.uk/binaries/consultations/retail_markets/statement/statement.pdf)

- 3.6 Consistent with the finding that BT no longer held SMP in business and residential narrowband calls, we revoked all existing SMP conditions in the relevant markets in accordance with section 84(4) of the Act.⁴⁵

The purpose of this review

- 3.7 We are mindful that this is the first review of narrowband services since all regulations were revoked in retail fixed narrowband calls markets in the United Kingdom in 2009. Therefore, we have considered how de-regulation has affected competition and the interests of consumers.⁴⁶
- 3.8 In addition, we are considering in this review the state of competition for the delivery of wholesale services, including wholesale call origination⁴⁷ and wholesale call termination.⁴⁸ Because demand for wholesale services is derived from demand for retail products, it is important to understand the competitive conditions in the supply of retail telephone calls to inform our assessment of the wholesale markets.

Our position in the February 2013 consultation

- 3.9 In the February 2013 consultation we indicated that our provisional view was that both the business and residential retail fixed narrowband calls markets in the United Kingdom continue to be effectively competitive and are likely to remain so for the period covered by this market review.
- 3.10 In reaching this view, we considered evidence from submissions to the May 2012 CFI, as well as evidence from our ongoing monitoring of these markets, including our yearly *Communications Market Reports* (CMR) and *Consumer Experience* reports. In particular, we considered the following:
- The retail market share of suppliers offering narrowband calls (in the residential and business markets);
 - the price of narrowband calls in real terms (to the extent that this could be robustly derived from the price of the complex retail bundles offered);
 - developments in the type of bundled offers being supplied;
 - the wholesale services which were purchased by retailers to enable them to offer narrowband calls (and lines), namely wholesale calls, CPS, IA, WLR, and LLU; and
 - trends in the supply of mobile services.

⁴⁵ This meant the removal of the following remedies: the requirement to publish charges and terms and conditions and to notify any amendments to these within 24 hours and no undue discrimination. No retail price control had been in place since 2006 when Ofcom allowed this to expire.

⁴⁶ Where we have previously found markets to be competitive, as is the case in these markets, we are not required to conduct a review of the type contemplated by section 79 of the Act, and this review of retail services does not constitute a review as set out in section 79 of the Act.

⁴⁷ Refer to section 5 for a full discussion of competition in the supply of wholesale call origination.

⁴⁸ Refer to section 6 for a full discussion of competition in the supply of wholesale call termination.

Stakeholder responses to the February 2013 consultation

- 3.11 Of the 35 responses to the February 2013 consultation, 11 respondents explicitly commented on matters relating to the proposals and analysis of the retail markets in the United Kingdom.⁴⁹
- 3.12 All of these 11 respondents agreed with our view that the retail narrowband markets had remained competitive since the last review. EE and [3] also argued that wholesale remedies remained necessary to support retail competition. This is discussed in Section 5.
- 3.13 However, three respondents (SSE, FCS and BT)⁵⁰ raised points regarding the UK retail narrowband market definition. SSE argued that rather than reviewing narrowband and broadband markets, reviews should be focused on fixed line voice and data so that the narrowband review becomes a review of the provision of fixed line services. Ultimately, developments in the markets will lead to the relevant reviews being reviews of access and services. BT and FCS commented that increasing fixed-mobile substitution should warrant a revision of narrowband market definitions to bring mobile and fixed into a single relevant market. BT also submitted a report by DotEcon on trends in retail narrowband services, including a discussion of product bundles and substitutes.⁵¹ In this report, BT stated that Ofcom might not have sufficiently segmented the market to understand the substitutes available for business customers.
- 3.14 BT submitted that the narrowband markets had become increasingly competitive since 2009, due to market convergence between fixed and mobile services, increased competition on the supply side, changing purchasing patterns by business customers and residential consumers, and the move towards increased purchases of bundles particularly by residential consumers. BT argued further that, because of increasing competition, it is no longer necessary to regulate certain wholesale products. These arguments are fully discussed in Section 5 in the context of our assessment of competition in the wholesale call origination market.
- 3.15 We consider the trends raised by BT in the DotEcon report – where relevant - as part of our analysis of indirect constraints in relation to the wholesale markets considered in this review in Section 5. We also comment briefly in our discussion of bundles in this section (paragraphs 3.27- 3.35) on the evidence submitted by BT.

Our analysis and conclusions

- 3.16 In this section we consider the trends discussed in paragraph 3.10 above.

⁴⁹ BT, [3], EE, FCS, [3], [3], Lanonyx, Lexgreen Services, TalkTalk, SSE plc and, Virgin Media.

⁵⁰ SSE plc, *Response to the review of the fixed narrowband services markets consultation*, April 2013; <http://stakeholders.ofcom.org.uk/consultations/nmr-13/?showResponses=true&pageNum=4#responses>
FCS, *Review of the fixed narrowband services markets* Issued 5 February 2013
FCS response, 2 April 2013 <http://stakeholders.ofcom.org.uk/consultations/nmr-13/?showResponses=true&pageNum=3#responses> and BT response and annexes 1-10, April 2013; <http://stakeholders.ofcom.org.uk/consultations/nmr-13/?showResponses=true&pageNum=1#responses> and; <http://stakeholders.ofcom.org.uk/consultations/nmr-13/?showResponses=true&pageNum=2#responses>.

⁵¹ BT, *Annex 2, Narrowband Market Review, a paper prepared for BT by DotEcon*, 28 March 2013; <http://stakeholders.ofcom.org.uk/consultations/nmr-13/?showResponses=true&pageNum=1#responses>.

BT's retail share has not increased for residential or business narrowband services since 2009

Residential services

- 3.17 BT's retail share (by volume) of residential calls from a fixed line has continued to decline since the 2009 review, from 46% in Q1 2009 to 39% in Q1 2012 (see Table 3.1).

Table 3.1 Residential voice call volume share⁵²

	BT	Virgin Media	TalkTalk	Sky	Others
Q1 2009	46%	17%	[10-20]%	[5-10]%	[10-20]%
Q1 2010	41%	16%	[10-20]%	[5-10]%	[10-20]%
Q1 2011	39%	15%	[20-30]%	[10-20]%	[10-20]%
Q1 2012	39%	15%	[20-30]%	[10-20]%	[10-20]%

Source: Ofcom/operators. Note: Includes estimates where Ofcom does not receive data from operators;⁵³ excludes non-geographic voice calls and data for KCOM

- 3.18 The observed changes in shares since the last review – and in particular, the decreased share of the largest provider, BT – supports the view that consumers continue to have access to a range of competing services from different providers.
- 3.19 Evidence on consumer switching and satisfaction with fixed line services also supports the view that the supply of retail narrowband services remains competitive. In the 2012 Consumer Experience Report⁵⁴, we found that switching levels had remained broadly unchanged for narrowband services at around 10%; the same level as in 2009.
- 3.20 Customer satisfaction levels have also remained high for fixed lines. The 2012 CMR shows that 89% of consumers with a fixed line at home were either 'very satisfied' or 'fairly satisfied' with their service⁵⁵, only two percentage points lower than in 2009 and therefore relatively unchanged since the last review.

Business services

- 3.21 BT's share of business calls from a fixed line has remained broadly stable since the 2009 review, increasing slightly in Q1 2010 before falling again to 36%, the same as its share in Q1 2009.

⁵² Consistent with the practice of DG Competition (http://ec.europa.eu/competition/mergers/legislation/market_share_ranges.pdf) and the United Kingdom Competition Commission (see paragraph 9.16), http://www.competition-commission.org.uk/assets/competitioncommission/docs/2013/publications/cc7_revised_.pdf), we use ranges for market share based on data provided on a confidential basis.

⁵³ This data has been amended since the February 2013 consultation to reflect amended estimates for indirect calls originated by CPs.

⁵⁴ Consumer Experience Report 2012, January 2013, http://stakeholders.ofcom.org.uk/binaries/research/consumer-experience/tce-12/Consumer_Experience_Research1.pdf.

⁵⁵ Figure 1.11, Ofcom, *Communications Market Report*, July 2012, page 32, http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf.

Table 3.2 Business voice call volume share

	BT	CWW	Virgin Media	Others
Q1 2009	36%	[10-20]%	6%	[40-50]%
Q1 2010	37%	[10-20]%	7%	[40-50]%
Q1 2011	36%	[10-20]%	7%	[40-50]%
Q1 2012	36%	[10-20]%	7%	[40-50]%

Source: Ofcom/operators. Note: Includes estimates where Ofcom does not receive data from operators;⁵⁶ excludes non-geographic voice calls and data KCOM

- 3.22 However, BT's market share remains under 40%. Combined with continued changes in alternative CPs' market share, which suggests that business consumers are willing and able to switch between CPs, the evidence suggests that the markets for business narrowband call services remain competitive.

Retail prices

- 3.23 Figure 3.1⁵⁷ shows the average real price paid by consumers for a basket of fixed access and geographic calls, and indicates that the real price paid for consumers for these services has continued to decline since the 2009 retail review; between 2009 and 2012 average spend on fixed access and geographic calls has declined by 2.1%; the real monthly spend on a basket of calls to mobiles fell by 21 pence per month (8%); and international calls fell by 40 pence per month (33%).⁵⁸ We note that in the CMR 2013⁵⁹ the increase in average spend in the basket was likely to be due to an increase in residential line rental increases introduced by a number of the largest residential CPs in 2012.
- 3.24 These pricing trends for residential services suggest that competition in retail residential services has continued to maintain pressure on retail prices. We believe that this supports the view that the level of competition for residential retail narrowband services has not decreased since the 2009 review.

⁵⁶ This data has been amended since the February 2013 consultation to reflect amended estimates for indirect calls originated by CPs.

⁵⁷ Includes estimates where Ofcom does not receive data from operators; excludes non-geographic voice calls; adjusted for inflation (RPI); includes VAT. The basket consists of the price of 16 minutes of international calls, 16 minutes of calls to mobiles, 204 minutes of United Kingdom geographic calls and the fixed line rental.

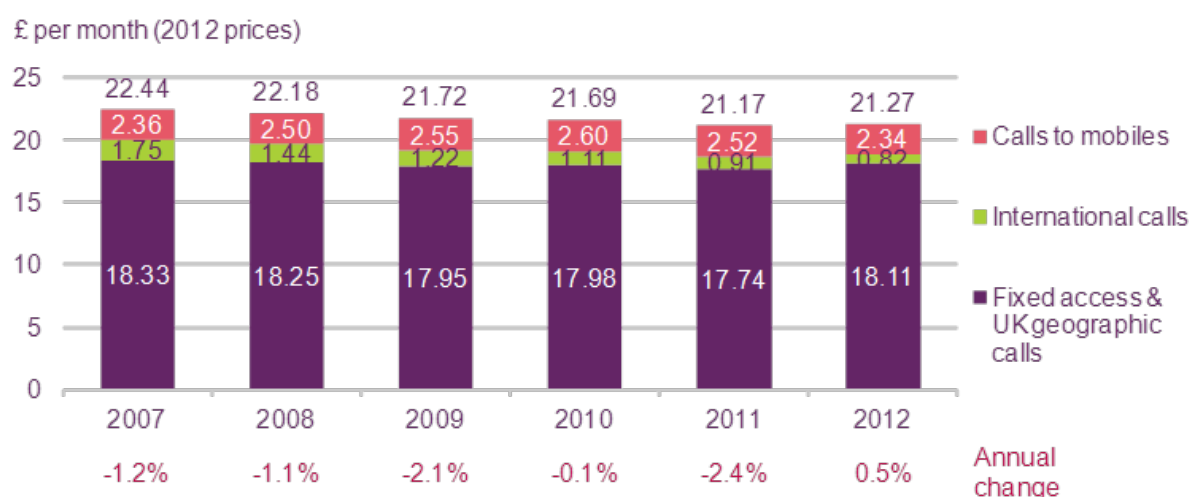
⁵⁸ These findings are broadly consistent with the 2012 *Consumer Experience* report, which states that average residential fixed line calls have remained stable in 2011 and that, in real terms, the average call charge in 2011 was equal to the average call charge in 2009 for residential customers. Ofcom, *Consumer Experience Report 2012*, January 2013, p 86;

http://stakeholders.ofcom.org.uk/binaries/research/consumer-experience/tce-12/Consumer_Experience_Research1.pdf.

⁵⁹ Ofcom, *Communications Market Report*, August 2013, p 360.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMCR.pdf

Figure 3.1 Cost of a basket of residential fixed voice services



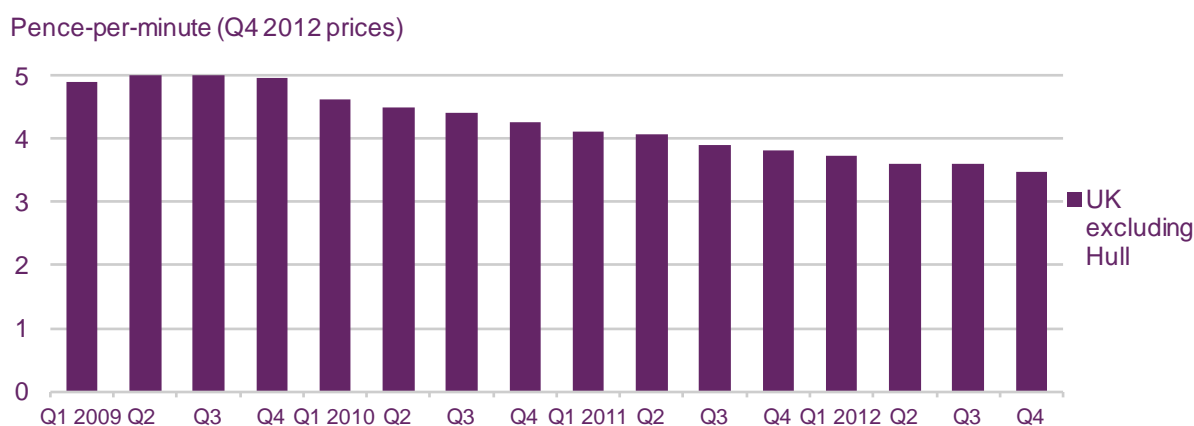
Source: Ofcom/operators Note: The basket used in the CMR consists of the price of 16 minutes of international calls, 16 minutes of calls to mobiles, 204 minutes of United Kingdom geographic calls and the fixed-line rental. The figures include estimates where Ofcom does not receive data from operators;⁶⁰ exclude non-geographic calls; are adjusted for RPI; include VAT

- 3.25 Comparison of the retail prices of narrowband business call services on a like-for-like basis is problematic due to the complex and often bespoke nature of the offerings in the business sector. However, we have looked at the reported revenue per minute ('RPM') figures as a proxy for prices in these markets.⁶¹
- 3.26 Figure 3.2 shows that the average revenue per minute of business voice calls fell by 1.5p per minute in real terms (i.e. adjusted for inflation) between Q4 2009 and Q4 2012. This fall in RPM indicates continued downward pressure on the prices of business calls.

⁶⁰ This data has been amended since the February 2013 consultation to reflect amended estimates for indirect calls originated by CPs.

⁶¹ Revenue per minute figures are calculated by dividing CPs' (excluding KCOM) total business call revenues (local, national, United Kingdom geographic, international and mobile) by total business call minutes. The data is sourced from quarterly Ofcom data.

Figure 3.2 Real average retail revenue per minute for business voice calls

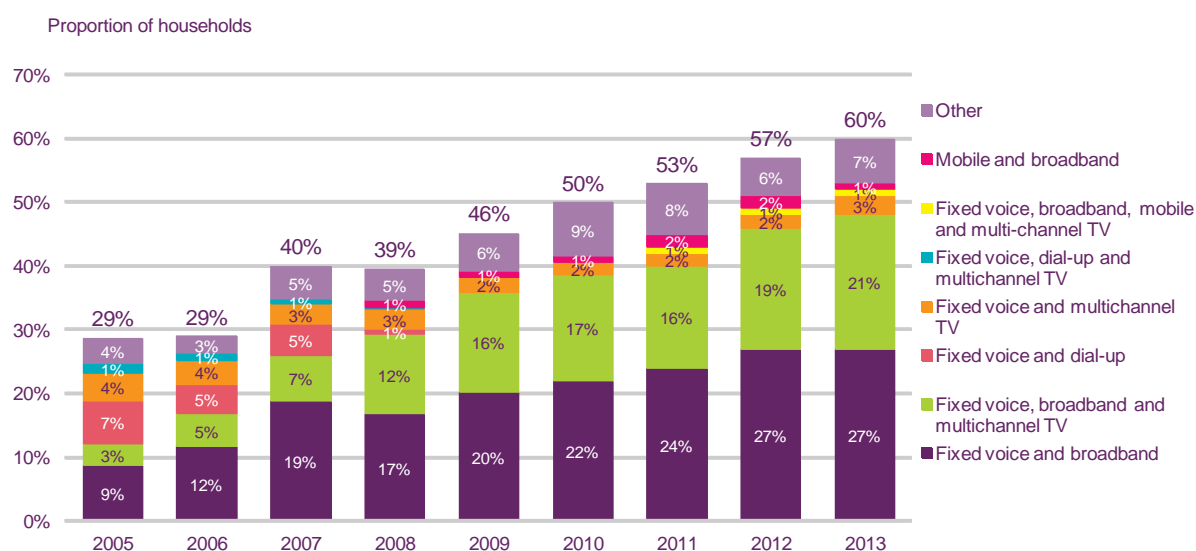


Source: Ofcom/operators Notes: includes estimates where Ofcom does not receive data from operators;⁶² excludes non-geographic calls; adjusted for RPI

Retail bundling continues to increase

- 3.27 We have seen a continuing trend towards narrowband services being sold as one component of a bundle of communications services (see Figure 3.3). This can benefit the consumer in terms of both convenience and price.
- 3.28 Since the last market review, take-up of bundled services has increased from 46% of households in Q1 2009 to 60% in Q1 2013.⁶³ There has been a rise in 'dual-play' bundles that comprise fixed voice and broadband services (up seven percentage points since Q1 2009 to 27% of households in Q1 2013). The proportion of households bundling their multichannel TV, broadband and fixed line has also increased by five percentage points between Q1 2009 (16%) and Q1 2013 (21%).

Figure 3.3 Take-up of bundled services over time



Source: Ofcom technology tracker Note: Data as at Q1 at each year

⁶² This data has been amended since the February 2013 consultation to reflect amended estimates for indirect calls originated by CPs.

⁶³ Of those residential consumers who have a fixed line (rather than all households), approximately 65% purchase voice as part of a larger bundle in Q1 2013 (e.g. with fixed broadband and/or pay TV).

- 3.29 Ofcom research found that most business customers (90%) purchased fixed line rental and calls together, driven primarily by opportunities to reduce cost through bundling.⁶⁴
- 3.30 As part of its response, BT submitted a report by DotEcon.⁶⁵ This report argued that developments in competition (e.g. the increased focus on bundles) and network technologies - such as mobile and social networking - have led to increasing competitive pressure on narrowband services and have caused BT to lose market share. Furthermore the report argued that these developments have led to fundamental structural changes in the nature of competition both on the supply and the demand side of the market.
- 3.31 DotEcon argued that customers are increasingly buying narrowband services as part of larger bundles with fixed telephony services being seen by many customers as the less important bundle component. DotEcon also argued that as a result of the increase in bundles, differentiation of services among the different suppliers has increased.
- 3.32 We observe that the focal point of bundles is likely to vary by package and customer. In 2010,⁶⁶ we asked consumers if there was a service which most attracted them to their current supplier and found that customers tended to build their bundles around a particular communications product. This product varies by customer. Recent research for BT shows that broadband and pay TV are by far the most important components for consumers purchasing dual-play or triple-play bundles.⁶⁷
- 3.33 Despite the increasing popularity of bundled offerings, voice services can still be bought individually and 35%⁶⁸ of those with landlines bought it on a standalone basis in Q1 2013 (implying that 65% of those with landlines purchased voice services as part of a bundle).
- 3.34 This fragmentation of consumers (in terms of the types of services and bundles they purchase, and their preferences for individual services) is also evident in attitudes to fixed call alternatives (e.g. mobile, social media, emails etc), which vary according to a range of factors. Ofcom research⁶⁹ found that 29% of the UK population communicate daily with friends and family through voice calls on a fixed landline compared to 58% who communicate with friends and family via text message and 30% who communicate via emails (all of these increased when asked on a weekly basis). However, there was considerable variation by customer type (according to their frequency of communication and the extent to which they use new technologies).
- 3.35 The observations on bundling both from our research, and from the evidence submitted by stakeholders, including the DotEcon report, supports the view that retail

⁶⁴ <http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/annexes/JR-report.pdf>

⁶⁵ BT, *Annex 2, Narrowband Market Review, a paper prepared for BT by DotEcon*, 28 March 2013; <http://stakeholders.ofcom.org.uk/consultations/nmr-13/?showResponses=true&pageNum=1#responses>.

⁶⁶ Ofcom, *Communications Market Report*, 19 August 2010, 61-62; <http://www.ofcom.org.uk/static/cmr-10/UKCM-1.46.html>

⁶⁷ [8]

⁶⁸ This figure was determined by Ofcom, using data collected for the nations and regions technology tracker, Q1 2013.

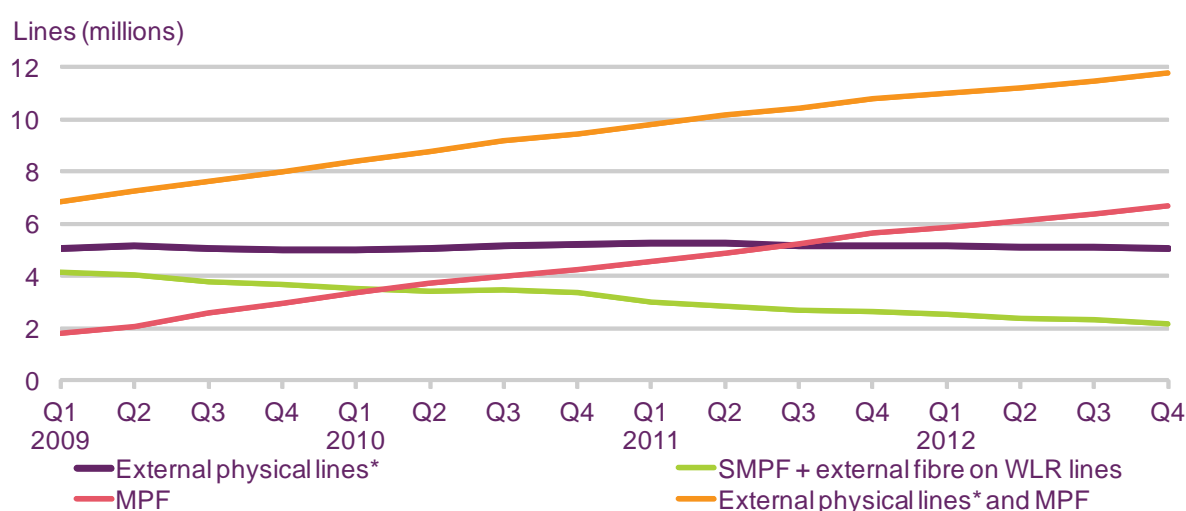
⁶⁹ Ofcom, *Communication choices, a segmentation report on communication methods used by UK consumers*, 13 November 2012, page 14; <http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/communication-choices/>

narrowband services remain competitive. However, a number of the points raised by stakeholders in relation to retail competition are relevant to our analysis of wholesale call origination and are discussed in detail in Section 5.

Wholesale regulation continues to support competition in retail narrowband services

- 3.36 In the 2009 retail review, we noted that retail competition for narrowband services is supported by remedies in place at the wholesale level. CPs use BT's wholesale call origination services in conjunction with WLR to provide retail packages that include both calls and access. Alternatively, they can also choose to deliver retail calls and access using MPF.
- 3.37 In this review, we consider that the wholesale remedies (in particular WLR and LLU remedies), as well as regulated access to wholesale call origination, continue to support retail competition in narrowband markets. Without access to these services, retail competitors that have entered the retail market and won significant market share would find it challenging to serve their existing customers effectively.
- 3.38 Since 2009, the total number of wholesale lines used by non-BT CPs has continued to increase strongly in a mature retail call market (see Figure 3.4). This suggests that an increasing number of retail consumers are purchasing both calls and lines from CPs other than BT, as shown by BT's decreasing market share in the retail market.
- 3.39 This overall increase in non-BT wholesale lines has been driven by a growth in the use of MPF. The shift from SMPF to MPF has been significant.⁷⁰ Since 2009, the number of lines that are fully unbundled has grown (see Figure 3.4). This growth in MPF has offset the decrease in SMPF and the flat trend in the use of WLR.
- 3.40 By using MPF, CPs are able to differentiate their retail offer to a greater extent than if they purchase other wholesale products from BT, as CPs can more freely control the costs and features of their services. Therefore, the growth in full LLU contributes to effective retail competition in narrowband services markets.

Figure 3.4 Lines provided on a wholesale basis by BT



Source: BT quarterly KPIs Note: *External physical lines consists of lines provided by Openreach to CPs, which includes analogue and ISDN lines provided over copper (WLR) but excludes ISDN30

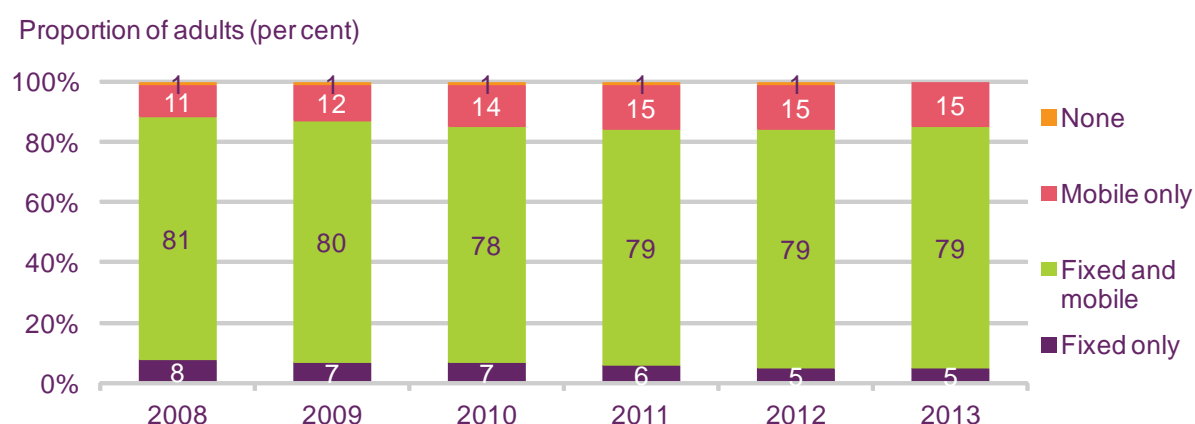
⁷⁰ As discussed in Section 2, paragraph 2.20.

- 3.41 The increased take-up of wholesale services suggests that the level of competition is at least as strong as it was at the time of the 2009 retail review.

Most households use both mobile and fixed-line services

- 3.42 In 2011, for the first time, mobile calls accounted for more than half of all voice call minutes with 52% of calls being mobile originated. However, the trend towards mobile-only households has stabilised in the past three years, increasing only slightly from 12% in Q1 2009 to 15% in Q1 2013, as shown in Figure 3.5.
- 3.43 Most households have both mobiles and fixed lines, accounting for nearly 80% of United Kingdom homes in 2013. This suggests that consumers continue to value access to both fixed and mobile calling services.

Figure 3.5 Household penetration of fixed and mobile telephony



Source: Ofcom research, data as at Q1 of each year

Base: All adults aged 16+

- 3.44 The trend towards increasing volumes of calls being made over mobile services indicates that mobile services are an important part of the communication options available for consumers. But, as stated above, most consumers choose to have access to both fixed and mobile services, which suggests that, at this stage of development, these consumers have not chosen to substitute away from fixed services.

Northern Ireland

- 3.45 In the 2009 review we concluded that Northern Ireland should not be considered a separate geographic market. This was on the basis that, although competition had developed at a slower rate, this was most likely due to geographical factors, in particular the fact that a greater proportion of the population live in rural areas. The responses to our May 2012 CFI supported the view that Northern Ireland should not be defined as a separate market. Furthermore we did not receive any additional information in response to the February 2013 consultation to lead us to believe that Northern Ireland should be treated as a separate market. We therefore conclude that there have been no significant developments in the market since 2009 that would call into question our approach.

Conclusion

- 3.46 Based on the evidence considered above, including market share, price indicators, and trends in the adoption of different types of call services, we conclude that both the business and residential retail fixed narrowband calls markets in the United Kingdom continue to be effectively competitive and are likely to remain so for the period covered by this market review.

Section 4

Retail narrowband services in the Hull Area

Summary of our decision

- 4.1 This section provides our analysis of retail narrowband call services in the Hull Area. We have decided that these markets should not be subject to *ex ante* regulation. In particular, we have concluded that *ex post* competition law is sufficient to address the potential competition concerns we have identified in relation to these markets, and it is therefore not appropriate to maintain *ex ante* regulation in relation to these markets.
- 4.2 This means that the existing *ex ante* SMP remedies imposed on KCOM in relation to retail narrowband calls in the Hull Area will be removed, namely:
- no undue discrimination; and
 - price publication.

Regulatory background

- 4.3 We last reviewed these markets in the 2009 retail review and concluded that there were two separate markets for retail narrowband call services in the Hull Area:
- residential fixed narrowband calls; and
 - business fixed narrowband calls.
- 4.4 We concluded that no further sub-division of the relevant markets by call type was required and found that KCOM had SMP in the business and residential retail fixed calls markets. We maintained two *ex ante* SMP remedies on KCOM's retail operations: no undue discrimination and price publication.
- 4.5 In the 2010 consultation on the bundling of retail services in Hull⁷¹, we noted that as a consequence of the non-discrimination obligation to which KCOM was subject, there may have been a restriction on the bundling of retail services in the Hull Area reducing the choices available to consumers in Hull. We considered that this may therefore have a negative impact on consumers.
- 4.6 We sought to address this issue in our 2010 statement 'Retail Bundling in Hull'⁷², where we indicated that KCOM should be permitted to bundle broadband, narrowband and other services for customers in the Hull Area in a similar way to packages offered by other CPs throughout the United Kingdom. This was conditional on the following:

⁷¹ Ofcom, *Retail Bundling in Hull*, 5 August 2010.

<http://stakeholders.ofcom.org.uk/binaries/consultations/retail-bundling-in-hull/summary/main.pdf>

⁷² Ofcom, *Retail Bundling in Hull*, October 2010 <http://stakeholders.ofcom.org.uk/consultations/retail-bundling-in-hull/statement>

- the bundles are made available to all residents and businesses in the Hull Area;
- the prices of the bundles are published on KCOM's website; and
- prices are set in a way that would not discourage other CPs from offering services to consumers in Hull, should they wish to do so in the future.

Regulatory framework

- 4.7 Under the European Framework, and in particular article 15 of the Framework Directive, in considering whether or not it is appropriate to impose regulation in electronic communications markets, Ofcom must begin by defining markets whose characteristics may be such as to justify the imposition of regulatory obligations. In doing so, Ofcom must apply competition law principles to the definition of the relevant market and take utmost account of the 2007 EC Recommendation.
- 4.8 The 2007 EC Recommendation identifies a set of product and service markets within the electronic communications sector in which *ex ante* regulation may be warranted.⁷³ The market for retail calls is not listed in the 2007 EC Recommendation as a market in which regulatory obligations may be appropriate; however, NRAs may impose regulation in markets different from those identified in the 2007 EC Recommendation where this is justified by national circumstances.
- 4.9 The previous 2003 EC Recommendation on relevant markets⁷⁴ included the market for retail calls. This market was removed from the scope of the Recommendation in 2007. There is therefore no longer a presumption in the 2007 EC Recommendation that regulatory obligations would be appropriate in the retail market for calls.
- 4.10 In our 2009 retail market review we nevertheless identified and analysed the markets for retail call services in the Hull Area. We have now considered the extent to which the conditions of competition within those markets remain such as might warrant the continued imposition of *ex ante* regulatory remedies. In doing so, we have considered the extent to which *ex post* competition law may be sufficient to deal with any competition concerns or whether regulatory obligations ought to be imposed in order to ensure intervention where those concerns become manifest.
- 4.11 The 2007 EC Recommendation seeks to “*identify those product and service markets within the electronic communications sector the characteristics of which may be such as to justify the imposition of regulatory obligations set out in the Specific Directives, without prejudice to markets that may be defined in specific cases under competition law*”.⁷⁵ It therefore lists a number of markets in which the EC considers that regulatory obligations are appropriate, taking into account the particular features of those markets.
- 4.12 The 2007 EC Recommendation also recognises that there may be other markets, aside from those identified, in which it is appropriate to impose regulatory obligations. However, where national regulatory authorities seek to identify such markets, the 2007 EC Recommendation sets out the following three criteria which must all be met:

⁷³ European Commission, *Commission Recommendation*, December 2007 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2007:344:0065:0069:en:PDF>

⁷⁴ European Commission, *Commission Recommendation*, February 2003 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:114:0045:0045:EN:PDF>

⁷⁵ Article 15(1) Framework Directive.

1. the presence of high and non-transitory barriers to entry. These may be of a structural, legal or regulatory nature;
2. a market structure which does not tend towards effective competition within the relevant time horizon. The application of this criterion involves examining the state of competition behind the barriers to entry; and
3. the insufficiency of competition law alone to adequately address the market failure(s) concerned.⁷⁶

Proposals in the February 2013 consultation

- 4.13 We considered in our February 2013 Consultation whether the criteria in the 2007 EC Recommendation were met in relation to the provision of retail narrowband calls in the Hull Area. We proposed that the first two criteria were met, but that competition law would adequately address the competition concerns that we identified. Therefore, we proposed that it is not appropriate to impose *ex ante* regulation in relation to these markets for the period of this review.

Stakeholder responses to the February 2013 consultation

- 4.14 Of the 35 respondents to the consultation, five provided comments in relation to our proposed approach to retail narrowband regulation in the Hull area. Three stakeholders (FCS⁷⁷, [X]⁷⁸ and Lanonyx Telecom⁷⁹) agreed with our assessment that there had been little change to the retail narrowband markets in the Hull area since the last review. A further stakeholder emphasised that it did not have direct experience of operating in the Hull area, but suggested that in its opinion competition had not increased since 2009.⁸⁰
- 4.15 Three stakeholders ([X]⁸¹, KCOM⁸² and Lanonyx Telcom⁸³) also agreed with our proposal that *ex post* competition law remedies would be sufficient to address our competition concerns in relation to these markets. KCOM argued that the current retail SMP conditions were an outdated form of regulation that was an unnecessary burden. It believed that the withdrawal of the retail SMP conditions would have no impact on the potential for competitive entry in the Hull Area and would be beneficial to consumers and businesses, since it would provide greater flexibility for KCOM to offer retail products in a similar way to the rest of the UK.⁸⁴
- 4.16 However, a further stakeholder ([X]) raised some general concerns regarding the effectiveness of *ex post* competition law.⁸⁵ It considered that the threshold for the use of competition law powers was unclear and argued that greater clarity was needed about how these powers would be used. [X]⁸⁶. It emphasised the need to take adequate account of the potential adverse consequences if *ex ante* powers are

⁷⁶ Paragraph 5 of the 2007 EC Recommendation.

⁷⁷ FCS response to February 2013 NMR Consultation, page 2

⁷⁸ [X] response to February 2013 NMR Consultation, question 4.1

⁷⁹ Lanonyx Telecom Ltd response to February 2013 NMR Consultation, question 4.1

⁸⁰ [X] response to February 2013 NMR Consultation, question 4.1

⁸¹ [X] response to February 2013 NMR Consultation, question 4.2

⁸² KCOM response to February 2013 NMR Consultation, pages 2-3

⁸³ Lanonyx Telecom Ltd response to February 2013 NMR Consultation, question 4.2

⁸⁴ KCOM response to February 2013 NMR Consultation, pages 2-3

⁸⁵ [X] response to February 2013 NMR Consultation, question 4.2

⁸⁶ [X]

removed. We have considered the general effectiveness of competition law in paragraphs 4.42 - 4.48 below.

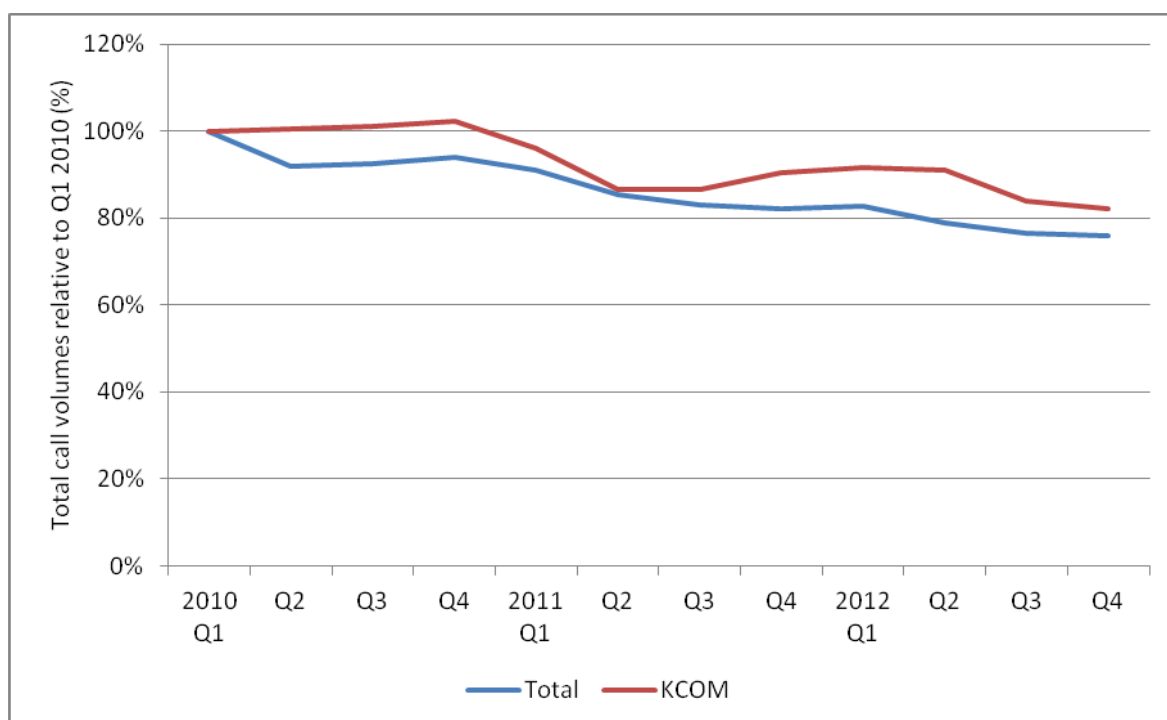
Our analysis and conclusions

Retail narrowband call services

Product market

- 4.17 Residential and business users have a number of different ways in which they can make and receive telephone calls. Understanding their preferences is an important part of considering whether our conclusions regarding product market definitions in the Hull Area remain relevant in this review. As in the 2009 review, our research in this review on residential and business attitudes has focused on United Kingdom wide trends, although the consumer research does include consumers from the Hull Area. In the 2009 review, we concluded that the product market definitions were the same in the Hull Area as for the rest of the United Kingdom, i.e. that there was a separate market for residential fixed narrowband calls and for business fixed narrowband calls.
- 4.18 In this review, we continue to consider that the findings from our United Kingdom wide research on consumer preferences are broadly applicable in the Hull Area. This is because we expect that the value that consumers – both residential and business – place on the same services is unlikely to vary significantly on a regional basis across the United Kingdom, due to the common cultural and economic factors across these areas, and the similar needs and concerns of businesses.
- 4.19 This view is supported by the similar trends in fixed volumes in the Hull Area and the United Kingdom. If attitudes in the Hull Area were significantly different from the rest of the United Kingdom, we would expect to see markedly different patterns in the overall consumption of fixed-line services. As shown in Table 4.1 below, the percentage changes in call volumes in the Hull Area, relative to Q1 2010, have closely tracked the percentage changes in the United Kingdom wide figures. In particular, call volumes in the Hull Area are broadly declining at the same rate as in the rest of the United Kingdom. This supports the view that broad trends in consumer preferences and substitution between different service types are likely to be similar between Hull and the rest of the United Kingdom, and therefore that our United Kingdom-wide data is relevant to understanding market developments in the Hull Area.

Table 4.1 Total call volumes of KCOM and the United Kingdom



Source: Ofcom Quarterly Data

4.20 We also note that although we have not undertaken a detailed price survey in the Hull Area, advertised residential retail packages including narrowband services appear broadly comparable between KCOM and BT, while some packages appear to be more expensive than those offered by other United Kingdom CPs. Table 4.2 provides a comparison of two basic packages offered by KCOM, BT and Sky.

Table 4.2 Retail packages including narrowband services in the Hull Area and the UK

	KCOM	BT	Sky
Fixed access plus 24/7 calls package	£20.99/month (includes £13.49 line rental)	£22.45/month (includes £15.45 line rental) (Does not include 'Line rental saver price')	£19.50/month (includes £14.50 line rental) (Does not include 'Line rental saver price')
Fixed access plus evening and weekend calls	£18.99/month (includes £13.49 line rental)	£17.45/month (includes £15.45 line rental) (Does not include 'Line rental saver price')	£14.50/month (free with line rental) (Does not include 'Line rental saver price')
Fixed access plus fixed calls and broadband (+33GB/month)	£30.99/month (includes £13.49 line rental) 35GB monthly usage Unlimited local calls Evening and weekend UK landline calls 120 UK mobile minutes at weekends Free 0845, 0870 and 197 calls at evenings and weekends	£30.45/month (Infinity up to 38Mbit/s and 40GB allowance) or £31.45/month (Broadband up to 16Mbit/s with unlimited usage) Weekend Calls included Doesn't include line rental saver Doesn't include special offer (free for 6 months) on broadband + unlimited usage 18 month contract	£24.50/month (includes £14.50 line rental) Weekend Calls included Estimated 12.9-19.0M bit/s Unlimited usage

Source: Based on publically available information on 14 May 2013. Terms and conditions described are indicative only, and are not intended as a complete description of the price or package options. Prices do not include discounts or special offers or connection charges.

- 4.21 In the 2009 review, we considered that alternative services (including mobile, VoIP or text-based services) did not exercised a direct constraint at the retail level such that they should be included in the definition of the relevant market.
- 4.22 In Section 5, we define the relevant market for wholesale call origination. As part of that analysis, we consider whether an increase in the retail price of fixed calls for businesses and consumers would cause significant switching to alternatives. Specifically, we consider whether an increase in the price of retail calls or bundle of products including retail calls (caused by a small but significant non-transitory increase in price (SSNIP) in the price of wholesale call origination) would be likely to trigger switching to services provided over alternative networks, such that the SSNIP would be unprofitable.
- 4.23 The analysis and evidence presented in Section 5 indicate that the competitive constraint exercised on fixed narrowband calls at the retail level from calls originated on a mobile network, via VoIP or text-based services does not appear to be sufficiently significant to include those services within the relevant retail market. This conclusion takes into account the most recent retail market developments.⁸⁷

⁸⁷ That also includes developments in relation to VoIP for business customers, which [X] discussed in its submission to the September 2012 Consultation.

- 4.24 In the 2009 review, we found that business and residential services formed distinct markets.⁸⁸ This was based on the observations that the structure of competition is different in the two markets; the competitive landscape is different in the two markets; the strategies employed in each market are different, particularly with respect to bundling; and the attributes of calls that are valued by business and consumers are different.
- 4.25 None of the stakeholders that responded to the consultation commented on the distinction between business and residential services and we have not identified any evidence that the split between business and residential services has changed since the 2009 review.
- 4.26 In the light of the above, we have not identified any changes to the relevant retail markets that would cause us to reconsider the conclusions of the 2009 review. Consequently, we do not consider that it is likely that the definition of the relevant market at the retail level has changed.

Geographic market

- 4.27 In the 2009 review, we concluded that the relevant geographic market for business and residential calls was the Hull Area. We have not identified any changes to the relevant market which would call into question those conclusions either at the present time or during the period of this review.

Market Developments since 2009

Market share

- 4.28 There are no significant alternatives to KCOM in the residential fixed calls market in the Hull Area. The external sales for analogue exchange line services in KCOM's regulatory accounts show external sales of 3,000 lines in 2011/12, which represents just under 2% of total lines. This figure is attributable to resellers who are active in the business market. KCOM's market share of residential services is therefore close to 100%.
- 4.29 Regarding KCOM's share of business fixed-line calls, KCOM has argued that an increasing proportion of businesses are purchasing fixed narrowband calls provided over leased lines. However, on the basis of KCOM's estimates of its market share, it continues to hold a high market share of lines of [X]%.⁸⁹

Other industry developments

- 4.30 Competitive entry into the Hull Area retail narrowband calls market continues to be limited due to significant entry barriers. In particular, the small size of the total addressable market in the Hull Area forms an enduring constraint against profitable market entry.
- 4.31 We note that one company - MS3 Communications – has announced that it is deploying communications networks in the Hull Area. In particular, MS3 recently announced that it had completed the first phase of its network build, which

⁸⁸ See paragraphs 4.12 to 4.21 in the 2009 Retail Consultation (http://stakeholders.ofcom.org.uk/binaries/consultations/retail_markets/summary/fnrsm_condoc.pdf) and Section 4 of the 2009 Retail Statement

⁸⁹ [X].

“...stretches 33km across Hull and East Yorkshire, providing businesses with alternative communications solutions” and that over the next three years it plans to expand its network around the rest of the city to cover around 200km.⁹⁰ MS3 is a privately owned company which intends to concentrate on supplying services for the business sector, although it indicates the potential to partner with other companies in the delivery of residential services.⁹¹ However, until there is greater certainty about how MS3’s network deployment will impact the retail narrowband calls markets in Hull, we do not think it is appropriate to change our view about the prevailing competitive conditions.

- 4.32 We also note that underlying trends in relation to alternative services – such as increases in the use of mobile and VoIP services – are likely to be as relevant in the Hull Area as they are in the rest of the United Kingdom. We also consider that the preferences of consumers and businesses for these alternatives are likely to be broadly similar to the rest of the United Kingdom and that the analysis (in Section 5) – which leads to the conclusion that indirect retail constraints from alternative services do not appear to be sufficiently strong – also applies to the Hull Area.

Appropriateness of regulation

- 4.33 We have not identified any significant changes in relation to retail narrowband calls in the Hull Area which would have an effect on the competitive conditions for such services. However, the 2007 EC Recommendation sets out three criteria, summarised in paragraph 4.12 above, which must be met in order for a market to be susceptible to the imposition of *ex ante* regulatory obligations.
- 4.34 We have considered each of these criteria in order to determine whether *ex ante* regulation might be appropriate for retail narrowband call services.

Barriers to entry

- 4.35 A range of wholesale and retail remedies have been in place since the 2009 retail review (and before this). While there have been clear regulatory mechanisms in place to allow competing CPs to provide retail narrowband calls in the Hull Area, there has been limited take-up of wholesale products to do so.
- 4.36 As identified in 2009, there are economic barriers in place that limit the extent to which competition can develop in the Hull Area. The Hull Area has a relatively small population and another CP would find it challenging to gain market share rapidly. When set against the systems integration and the large outlay in infrastructure costs that would be required to enter the market, there is a large structural barrier to entry in this market.
- 4.37 Although we have noted that there has been some market entry in the business sector, KCOM’s high market share and the lack of market entry in the residential market, suggest that there have not been significant changes to the economic barriers to entry in the Hull Area.
- 4.38 MS3’s network deployment, described at paragraph 4.31 above, may be an indicator that barriers to entry are reducing in relation to the retail and wholesale markets in the Hull Area. However, it is unclear the extent to which any entry by MS3 will act as

⁹⁰ <http://www.ms3communications.com/pages/about-us>

⁹¹ <http://www.ms3communications.com/articles/5>

a competitive constraint on the actions of KCOM in the retail markets during the period of this market review.

- 4.39 In consequence, we continue to consider that there are high and non-transitory barriers to entry in the market for retail narrowband calls in the Hull Area.

Dynamic aspects

- 4.40 As noted above, there has not been any significant entry into the retail markets in the Hull Area by competitors to KCOM to date. Consequently, we do not consider that there is likely to be a tendency towards effective competition during the period under review.
- 4.41 While the entry of MS3 might increase the limited competitive constraints faced by KCOM in the retail market, MS3's operations are at an early stage of development and it is unclear (i) which wholesale and retail markets MS3 will operate in and (ii) the extent to which MS3 will exercise an effective constraint on KCOM in the provision of retail narrowband calls in the Hull Area. We do not therefore consider that, during the period of the current market review, the entry of MS3 is likely to provide a sufficient constraint such that retail call markets in the Hull Area would tend towards effective competition.

Sufficiency of competition law

- 4.42 In the 2009 review we considered whether any pricing remedies were appropriate. We concluded that such remedies were not appropriate, on the basis that KCOM's retail prices were not noticeably out of line with national prices, and that it was likely that retail prices were constrained by other factors, including the potential for regulatory intervention if retail prices were excessive.
- 4.43 We also found in our 2009 review that competition law would not be sufficient to address our competition concerns in relation to this market. However, this is not the case for the period of this review. In our assessment in this review we have the benefit of having observed KCOM's pricing behaviour in the provision of retail calls over a relatively long period during which KCOM was not subject to price regulation and compared it with pricing behaviour in the rest of the United Kingdom, including in the period since 2009 in which there was no retail regulation for narrowband calls in the United Kingdom excluding the Hull Area.
- 4.44 Despite the absence of price regulation, it appears that KCOM's retail prices have continued to remain aligned with national prices (see Table 4.2 above). Since the conclusion of the 2009 review, in which regulation was relaxed in relation to KCOM's ability to offer bundles including fixed calls, we have not received any complaints or disputes meeting the requirements set out in our Guidelines that would trigger an enquiry (the process of deciding whether to conduct an investigation), in relation to KCOM's commercial practices at the retail level.⁹²
- 4.45 If, however, KCOM did engage in conduct amounting to an abuse of a dominant position, competition law provides a means of addressing this behaviour if and when it arises. Depending on the particular circumstances of the case, this could include ordering KCOM to supply services at mandated prices, or to supply on non-discriminatory terms (in case of unlawful discrimination between customers).

⁹² Our Guidelines for dealing with complaints and disputes are available here:
<http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/complaints-disputes/>

- 4.46 Regarding pricing concerns, prices in the rest of the United Kingdom provide a (first order) relevant benchmark for competitive retail rates that would assist in identifying excessive pricing in the Hull Area in an investigation under competition law. This means that any excessive increase in price could be identified by Ofcom or brought to our attention by affected consumers. In addition, retail competitors will be able to indicate the existence of targeted KCOM discounts which will assist in identifying conduct that might constitute exclusionary behaviour.
- 4.47 We recognise that – due to the nature of this market – anti-competitive behaviour could relate to low levels of traffic, or be of low materiality. Nonetheless, when deciding whether to open a Competition Act 1998 investigation we would be mindful of the conclusions of this review, where we have indicated that in our view *ex post* competition law would be sufficient to address our concerns.
- 4.48 As a consequence, for the reasons set out above, we have concluded that competition law remedies would now be sufficient to address any concerns identified in the retail markets for calls (both business and residential) in the Hull Area during the period covered by this review.

Section 5

Wholesale call origination

Summary of our decision

- 5.1 In this section we discuss our position in relation to market definition, market power analysis and remedies for wholesale call origination services.
- 5.2 We have concluded that the relevant product market is "wholesale call origination on a fixed narrowband network", and there are two geographic markets:
- a) the United Kingdom excluding the Hull Area; and
 - b) the Hull Area.
- 5.3 With regard to market power, we conclude that:
- a) BT has SMP in the market for wholesale call origination on a fixed narrowband network in the United Kingdom; and
 - b) KCOM has SMP in the market for wholesale call origination on a fixed narrowband network in the Hull Area.
- 5.4 We have also decided to impose the remedies summarised in Table 5.1:

Table 5.1: Summary of remedies for wholesale call origination

BT obligations ⁹³	KCOM obligations ⁹⁴
<ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requests for new forms of network access • Requirement not to unduly discriminate • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information • Transparency as to quality of service • Cost accounting • Accounting separation • Requirement to provide NTS wholesale call origination until unbundled tariff introduced • Charge control 	<ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requirement not to unduly discriminate • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information • Accounting separation

- 5.5 The rest of this section is set out as follows:
- a) Introduction, including background on wholesale call origination;

⁹³ We have decided to remove the existing obligations on BT to provide CPS and IA to its retail subscribers, but are imposing a stop-sell sunset clause of 12 months for the former and a 12 month sunset clause for the latter.

⁹⁴ We have decided to remove the existing obligations on KCOM to provide CPS and IA to its retail subscribers, but are imposing a sunset clause of 12 months for the existing IA obligation.

- b) Market definition;
 - c) Market power analysis;
 - d) Analysis of competition concerns; and
 - e) Assessment of the appropriate remedies to impose.
- 5.6 In each of our analytical sections, we follow the same structure, whereby we:
- a) Set out our proposals in the February 2013 consultation;
 - b) Provide a summary of stakeholder responses to the February 2013 consultation; and
 - c) Set out our final analysis and conclusions taking into account stakeholder responses.

Introduction

- 5.7 The EC has identified wholesale call origination on the public telephone network provided at a fixed location at the wholesale level as a service market in which *ex ante* regulation may be warranted in its 2007 EC Recommendation.
- 5.8 In the 2009 Wholesale Review, we defined the product market as wholesale call origination on a fixed narrowband network, and stated that wholesale call origination relates to:
- “The conveyance of all signals (including relevant control signals) originating on a customer’s exchange line to the first point in the network where those signals can be accessed by another communications provider.”⁹⁵*
- 5.9 We also found separate geographic markets for the United Kingdom and the Hull Area and identified BT as holding a position of SMP in the former and KCOM in the latter.
- 5.10 As a result, we imposed a number of remedies on BT and KCOM to address the competition concerns identified.

Market background and key developments since 2009

- 5.11 We now set out some relevant background to the market for wholesale call origination and highlight what we consider to be the key developments in this market since it was last reviewed.
- 5.12 Wholesale call origination is provided over an access line, and is an input to providing retail call services. Therefore, before we consider wholesale call origination, it is useful to note the access products over which wholesale call origination is provided. Access is largely provided either on BT’s copper access

⁹⁵ Paragraph 6.41, 2009 NMR Statement.
http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf

network (which has nearly 100% coverage of the United Kingdom excluding Hull⁹⁶), on KCOM's copper access network in Hull, or on Virgin Media's cable network (we note some CPs also have their own direct access networks). In relation to the former, there are currently multiple local access remedies which are relevant for the provision of wholesale call origination, and therefore retail voice services provided by other CPs:

- a) Wholesale Line Rental (WLR): the service offered by BT to other CPs to enable them to offer retail line rental services in competition with BT's own retail services. Line rental is offered along with narrowband calls services to retail customers;
- b) Shared metallic path facility (SMPF): the provision of access to the copper wires from the customer's premises to a BT MDF⁹⁷ that allows a competing provider to provide the customer with broadband services, while BT continues to provide the wholesale narrowband communications for that customer (currently using WLR); and
- c) Metallic Path Facility (MPF): the provision of access to the copper wires from the customer premises to a BT MDF that covers the full available frequency range, including both narrowband and broadband channels, allowing a competing provider to provide the customer with both voice and/or data services over such copper wires.

5.13 Therefore MPF and WLR/WLR+SMPF may be used for the provision of voice and broadband services⁹⁸ (although as we discuss below there are some constraints to its substitutability in relation to wholesale call origination and voice-specific services). Indeed, these specific network access remedies have been in place (in the UK excluding Hull) for the last decade, and several CPs have built businesses based on both MPF and/or WLR/WLR+SMPF access. The recent Fixed Access Market Reviews consultation ('2013 FAMR consultation')⁹⁹ has also proposed to maintain both specific network access remedies in the UK excluding Hull for the next review period.

5.14 In the light of these access approaches, wholesale call origination is currently provided to residential and small business premises in the United Kingdom excluding the Hull area in the following ways:

- a) using WLR/WLR+SMPF – BT currently supplies wholesale call origination to its own retail customers for voice calls using WLR or WLR+SMPF. It also provides wholesale call origination to other CPs using WLR/WLR+SMPF, which enables non-BT CPs to compete and provide voice services to retail consumers;

⁹⁶ The exception being a small number of new build premises which are supplied with access to narrowband voice services using fibre to the premises (FTTP).

⁹⁷ Main distribution frame (MDF) is the equipment where local loops terminate and cross connection to competing providers' equipment can be made by flexible jumpers.

⁹⁸ We also consider that MPF and WLR/WLR+SMPF are substitutes in the 2013 FAMR consultation, because they are alternative wholesale inputs for the same downstream voice and broadband services. See Section 3 of Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30, 3 July 2013, <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

⁹⁹ Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

- b) using MPF – in areas where MPF is in use, operators take over BT's copper loops and provide wholesale call origination directly to retail consumers when the latter make calls (to date, it has only been economic to do this for those who are prepared to purchase voice and broadband access together (i.e. a dual-play offer), as discussed further below). Over 90% of premises in the United Kingdom are connected to an exchange that has been unbundled and MPF lines now account for 42% of all LLU lines;
- c) using the cable network – in areas where Virgin Media has deployed its cable network, Virgin Media delivers wholesale call origination using this network by selling directly to end-users. This service is delivered using a copper based access network (as for BT and KCOM) which shares the same duct as the hybrid fibre/coaxial network used to deliver Virgin Media's cable TV and broadband services. Virgin Media's cable network currently covers just under half of the United Kingdom¹⁰⁰; and
- d) other direct access networks – in some areas/for some customers, some CPs such as Vodafone and Gamma have their own direct access networks, over which they self-supply wholesale call origination.

5.15 Therefore, outside of the cable (and other direct access) network, retail call services can be provided on BT's network either using WLR (where it is provided by BT) and wholesale call origination, or using MPF (where it is provided by the LLU operator). As such, wholesale call origination (as currently regulated, as per the 2009 Review) is currently a necessary additional input for the ultimate provision of retail voice services using other wholesale remedies (WLR/WLR+SMPF), and therefore indirectly supports these. As a result, our analysis of wholesale call origination should be viewed not only in the context of the market we are considering (i.e. wholesale call origination), but also in the context of the role of other wholesale access remedies (i.e. WLR, SMPF and MPF) in securing retail competition for the supply of voice and broadband services, as any change to existing wholesale call origination regulation would directly impact the effectiveness of these other remedies. For example, since wholesale call origination is necessary alongside WLR in order to provide retail voice calls, the removal of wholesale call origination regulation would directly affect the viability of WLR+SMPF as a wholesale substitute to MPF for the provision of retail voice and broadband services.

5.16 In the Hull area, KCOM also provides wholesale call origination via its copper access network. As with BT, the KCOM network is also used to deliver broadband services.

5.17 The market for wholesale call origination has seen a number of key developments since it was last reviewed which we consider potentially relevant to our assessment of market definition and competition. These developments include the following:

- Fixed voice access and calls are now predominantly purchased together.
- There is a continued trend towards purchasing wider bundles, including broadband and pay-TV.
- Fixed-mobile pricing convergence appears to have continued.
- VoIP usage has increased, particularly in the business sector.

¹⁰⁰ Review of the Wholesale Broadband Access markets (the '2013 WBA Review'), 11 July 2013. <http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/>

- The number of residential fixed voice lines has increased, although the volume of residential fixed voice calls has decreased.
- In the business sector, there has been a continued reduction in the number of fixed voice lines and in the volume of fixed voice calls.
- The share of wholesale call origination provided over LLU has increased as SMPF lines have been converted to MPF.
- Broadband take-up has continued to increase, with the majority of households relying on fixed access broadband.
- NGA deployment has begun, and take-up of broadband over fibre is expected to be significant within the period covered by this review.

Market definition

Proposals in the February 2013 consultation

5.18 In the February 2013 consultation, we proposed that the relevant product market is "wholesale call origination on a fixed narrowband network", and that there are two geographic markets:

- the United Kingdom; and
- the Hull Area.

Stakeholder responses to the February 2013 consultation

- 5.19 Of the respondents which commented on our market definition, almost everyone (including EE¹⁰¹, [X]¹⁰², [Y]¹⁰³, Lexgreen Services¹⁰³, Lanonyx¹⁰⁴, TalkTalk¹⁰⁵, Virgin Media¹⁰⁶) agreed with the market definition we proposed in the consultation.
- 5.20 BT was the only respondent which questioned in detail our proposed approach to market definition. It provided several submissions to the February 2013 consultation. Alongside its main submission (which answered the specific consultation questions), it provided several supporting annexes which are relevant for considering wholesale call origination, including:
- a) Annex 1: An economic review of Retail Markets
 - b) Annex 2: Report by DotEcon: Overview on Retail Market Boundaries
 - c) Annex 3: Report by Copenhagen Economics: Review of Ofcom's SMP Assessment and Remedies for Call Origination

¹⁰¹ EE response to the February 2013 consultation

¹⁰² [X] response to the February 2013 consultation

¹⁰³ Lexgreen Services Ltd response to the February 2013 consultation

¹⁰⁴ Lanonyx response to the February 2013 consultation

¹⁰⁵ TalkTalk response to the February 2013 consultation

¹⁰⁶ Virgin Media response to the February 2013 consultation

- 5.21 BT put forward a number of arguments spanning these submissions, with sometimes differing views between them, and so to summarise BT's response we have pulled together the key themes presented across these submissions.
- 5.22 In relation to the analytical framework we applied for market definition, BT raised several concerns. Firstly, BT considered we had not appropriately adopted a modified Greenfield approach¹⁰⁷ in considering the boundaries of the relevant market in the absence of regulation.¹⁰⁸ In particular, it raised concerns around the indirect constraints analysis (i.e. constraints that come from downstream products), arguing we had not justified our approach and failed to take into account possible responses by CPs to a removal of the regulation in the wholesale call origination market. For example, BT maintained that CPs might respond by offering different products in the retail market and changing the design and composition of bundles (e.g. greater availability of broadband-only services, so that consumers are more likely to make calls using alternatives such as mobile). We discuss the modified Greenfield approach in general in paragraphs 5.34 to 5.35 and set out the analysis of the indirect constraints within this context from paragraph 5.54 onwards.
- 5.23 Secondly, BT argued that we had applied the hypothetical monopolist test in a mechanistic way, consequently the conclusions were not robust in the ordering of the market definition steps (i.e. product market followed by geographic market). It also raised concerns with drawing conclusions from the SSNIP test in this case because of its technical limitations, in particular when considering bundles of complementary products and when wholesale inputs become increasingly diluted at the retail level (both vertically because wholesale call origination is a small cost input to retail voice services and horizontally as voice is often bundled with other products). It also argued that the absence of a formal critical loss analysis meant there was insufficient attention to the likely low threshold for a SSNIP to be unprofitable, given the high fixed costs involved in the network.¹⁰⁹ We discuss the interactions between the product market and geographic market definition at paragraph 5.145, while the complexity of the SSNIP test in this case (including the usefulness of a formal critical loss analysis) is discussed in paragraphs 5.39 to 5.47.
- 5.24 Finally, BT commented that any analysis of retail substitution by residential consumers would need to consider the fact that the purchasing decisions of a residential consumer involve a complex set of decisions, as set out by one of their consultants (DotEcon):¹¹⁰
- a) choice of the access service (i.e. mobile-only, fixed-only, both), which may be strongly influenced by the desire to purchase bundles of other services;
 - b) choice of supplier;
 - c) choice of tariff package;
 - d) choice whether to make a voice call at all or use some other mode of communication; and
 - e) choice of which platform to originate a particular voice call on.

¹⁰⁷ See paragraph 5.34 for a description of the modified Greenfield approach.

¹⁰⁸ BT response to the February 2013 consultation, including annex 1 and the Copenhagen Economics annex.

¹⁰⁹ BT response to the February 2013 consultation, including annex 1 and the DotEcon and Copenhagen Economics annexes.

¹¹⁰ Paragraph 65, DotEcon annex to BT's response to the February 2013 consultation

- 5.25 DotEcon considered that the purchasing decisions of business consumers may be even more complex, reflecting factors such as the size of the business, workforce mobility, specific communication needs (including reliability and integration requirements). However, DotEcon did agree that call-level substitution is likely to be of dubious value for many customers who have bundles of inclusive minutes (which consumers seldom exhaust), therefore many services are free at the margin and so convenience factors often drive call choices. We discuss the complexity of consumer purchase decisions and the implications for our analysis in paragraphs 5.59 to 5.62.
- 5.26 BT also raised a number of additional concerns in relation to the evidence we relied on, stating that the market had seen radical changes since the last review (increase in bundling and growth of mobile, greater rollout of MPF, and over the top and non-voice new media alternatives to fixed calls). BT considered that we had ignored the impact of these changes, and defined the product market too narrowly in our consultation document, failing to capture the full set of price constraints from mobile and VoIP. Specifically, it argued:
- a) in relation to mobile, the mobile price-premium no longer exists, and that it is almost impossible (including reputationally) for fixed operators to target price increases on rural customers who are less able to switch to mobile. It also argued that we had not taken account of the impact of the NGCS review and 800MHz and 2.6GHz auction which, it argued, will reduce price and quality differences respectively between fixed and mobile. The assessment of indirect constraints from mobile for residential consumers are discussed in paragraphs 5.63 to 5.83.
 - b) in relation to VoIP, BT considered it self-evident that broadband quality must be currently sufficient for VoIP given the number of customers using it. The assessment of indirect constraints from VoIP for residential consumers is discussed in paragraphs 5.92 to 5.99; and
 - c) further, BT considered that mobile and VoIP are a greater constraint for businesses as indicated in the decline in business fixed voice minutes and, in the case of VoIP, take-up of IP-based services to date. BT also argued that recent research on current and future attitudes of business customers to fixed, mobile and IP calls suggests strong actual and expected decline in fixed business calls.¹¹¹ The indirect constraints from mobile and VoIP for businesses are discussed in paragraphs 5.84 to 5.89 and 5.100 to 5.106 respectively.¹¹²
- 5.27 Additionally, it stated that non-price reasons for choosing a particular call method have no bearing on the assessment of responses to a price change – consumers make trade-offs between price and non-price factors and the SSNIP test looks at this. The relevance of non-price factors is set out in paragraph 5.57.
- 5.28 Further, BT¹¹³ considered the wholesale market definition failed to reflect both geographic and customer variations in retail competitiveness. In particular, it considered that the product market should be defined as follows:
- a) voice-only residential customers;
 - b) bundle (voice+broadband) for residential customers purchasing both; and

¹¹¹ P12, Copenhagen Economics annex to BT's response to the February 2013 consultation

¹¹² BT response to February 2013 consultation, including main response, annex 1 and DotEcon annex.

¹¹³ BT response to the February 2013 consultation, including main response, annex 1 and Copenhagen Economics annex.

- c) much more disaggregated approach to businesses (given wide range of requirements and factors which affect communications decisions), reflecting their complete communications requirements and usage patterns.
- 5.29 BT argued this demonstrates the clear geographic dimension in the focal product, leading to a national market for voice-only customers and geographic markets for bundle customers along the lines of those we found in the 2010 Wholesale Broadband Access (WBA) market review.¹¹⁴ For business customers, it argued that the conditions of competition broadly follow the patterns and methodology adopted in the BCMR (and argued businesses are increasingly buying bundles of access, calls and data). Beyond this, DotEcon¹¹⁵ argued that to understand substitution patterns fully, we need to segment users further into groups based on a variety of factors including other communications needs, household composition, demographics and typical call patterns. The potential to define the market based on the retail bundle provided is discussed in paragraphs 5.118 to 5.128, while the geographic market definition (including the interactions with this suggested product market definition) is discussed at paragraphs 5.135 to 5.149.
- 5.30 BT also raised concerns with the market research we used to inform our analysis. BT argued that we were over-reliant on it and it was not a reliable basis for determining markets, since it is limited in scope and the results are not conclusive, therefore it cannot adequately capture the relevant options for consumers. BT also raised concerns with the actual questions, querying the different approaches for business and residential consumers. Further, it argued that the prevalence of bundles for retail customers compromises such surveys. For businesses it is not possible to reflect the large range of options available and understand commercial dynamics in a survey.¹¹⁶ Our market research and the range of information we have used in our analysis is set out in paragraphs 5.46 to 5.47.
- 5.31 BT also argued our other research was not an accurate description of purchasing patterns or how widespread bundling is, and claimed its own research showed bundling was much higher than Ofcom's data¹¹⁷ (although this appears to have a base of all online adults rather than all adults as is the case with the Ofcom research). Bundling statistics are discussed at paragraph 5.60.

Our analysis and conclusions

- 5.32 We begin by defining the relevant product market(s) in order to establish those products which are regarded as interchangeable or substitutable by reason of the product's characteristics, prices and intended use. This includes the likely extent of switching to alternatives at both the wholesale level (direct constraints) and at the retail level (indirect constraints). We also consider whether there are any market features that might suggest we should define the product market on a more granular basis, segmented by retail customer type.
- 5.33 We then go on to consider the relevant geographic market(s) to determine those areas in which the conditions of competition are sufficiently homogenous, and any

¹¹⁴ Review of the Wholesale Broadband Access Markets, Ofcom, 3 October 2010.

<http://stakeholders.ofcom.org.uk/consultations/wba/wba-statement/>

¹¹⁵ DotEcon annex to BT response to February 2013 consultation

¹¹⁶ BT response to February 2013 consultation, including the main response, annex 1 and Copenhagen Economics annex.

¹¹⁷ BT response to Q3.1 of February 2013 consultation

that can be distinguished from neighbouring areas because the conditions of competition are appreciably different.

- 5.34 Market definition (and the assessment of market power) should be conducted in the absence of any wholesale SMP regulation of call origination services. This approach, referred to as the modified Greenfield approach¹¹⁸, requires us to conduct those assessments in the absence of the existing remedies that were imposed following the finding of SMP in wholesale call origination in the 2009 Wholesale Review. To do otherwise would mean that the subsequent wholesale market power assessment would be informed by a market definition that itself relied on wholesale regulatory remedies arising from the finding of wholesale market power. This would be a circular and incorrect approach to market definition. However, we take into account any other *ex-ante* regulation upstream that exists independently of a finding of SMP in the wholesale call origination market (e.g. LLU remedies).
- 5.35 By considering the market definition (and assessment of market power) in the absence of existing remedies, the modified Greenfield approach therefore also requires consideration of market conditions and CP strategies/behaviour in the absence of regulation. As a result, we have taken into account historical evidence and discuss the current and past behaviour and strategies of different CPs, unless we have reasons to believe that they would not be relevant in the absence of the regulated supply of wholesale call origination. Finally, we note that the market definition exercise is not an end in itself, but a means to an end to aid the assessment of whether it is appropriate to impose *ex-ante* regulation to protect end-users from the risks associated with a finding of SMP.

Product market

- 5.36 To define the relevant product market, we have taken as our starting point the market identified in the 2007 EC Recommendation, namely wholesale call origination on a fixed narrowband network. This candidate market includes wholesale call origination provided over a CP's own exchange line (i.e. using its own network built out to the customer), or provided over an upstream service (e.g. access to unbundled copper loops (MPF) or leased lines), in order to provide narrowband calls to consumers. In either case, the CP can self supply wholesale call origination (i.e. to supply its own retail customers) and/or sell wholesale call origination to other CPs (e.g. to enable them to provide their own retail services).¹¹⁹
- 5.37 Our candidate market therefore includes self-supplied wholesale call origination by direct access operators (including BT, KCOM, and Virgin Media) and by operators using MPF or leased lines to directly connect customers and any provision of these wholesale services by a third party.¹²⁰
- 5.38 This sub-section considering the product market definition is structured as follows:

¹¹⁸ See section 2.5 of the Explanatory Note to the 2007 EC Recommendation.

¹¹⁹ This is currently purchased alone (which requires the CP to build some network capability to accept the wholesale call origination traffic) or as part of an end-to-end wholesale calls product (i.e. bundled with conveyance and/or transit services and termination).

¹²⁰ We recognise there may be some continued limitations to the degree of substitutability of wholesale call origination over MPF for wholesale call origination over BT's network for certain customer groups. We consider these limitations affect the degree of competition within the market rather than the boundaries of the product market itself, and therefore consider it appropriate to consider these in relation to our market power assessment rather than in the context of market definition.

- Discussion of the SSNIP test – see paragraph 5.39 onwards
- Analysis of direct constraints – see paragraph 5.48 onwards
- Analysis of indirect constraints (from paragraph 5.54 onwards) – considering mobile (see paragraph 5.63 onwards), VoIP (see paragraph 5.92 onwards) and text-based alternatives (see paragraph 5.109 onwards).
- Analysis of different call types – see paragraph 5.117 onwards
- Analysis of different retail bundles – see paragraph 5.118 onwards
- Analysis of residential and business customers – see paragraph 5.129.

SSNIP test

- 5.39 In defining the relevant product market, we consider demand-side and supply-side substitutes. The “hypothetical monopolist test” is a useful tool to identify close demand-side and supply-side substitutes. A product is considered substitutable if a hypothetical monopoly supplier could not impose a SSNIP above the competitive level without losing sales to such a degree as to make this unprofitable. If such a price rise would be unprofitable, because consumers would switch to other products, or because suppliers of other products would start supplying the product, then the market definition should be expanded to include the substitute products.
- 5.40 EC guidelines provide that, in undertaking a SSNIP analysis, a 5-10% notional price increase is typically considered “small” and “significant”. It is significant enough to be perceptible to customers, but small enough that a significant element of any switching response involves purchasing alternative services rather than ceasing to buy services altogether.¹²¹
- 5.41 The SSNIP approach is of particular use in identifying the direct constraints faced by a hypothetical monopolist. However it is also a useful tool in identifying whether there are any indirect constraints which might limit the ability of a hypothetical monopolist of a wholesale service to raise prices profitably. Indeed, in defining markets at the wholesale level, indirect (e.g. at the retail level) constraints can sometimes be more important than direct ones. For example, even if there are limited direct substitution possibilities, it may not be profitable for a monopolist to raise the price of wholesale call origination if, in doing so, this led to a large loss of retail end-users relying on wholesale call origination.
- 5.42 While the SSNIP test can be useful in the market definition exercise, we recognise there are complexities in its application to wholesale call origination which need to be reflected in the analysis (BT also raised concerns in relation to the technical limitations of the SSNIP test). Bundling of services and fragmentation of consumers according to the types of services and bundles they purchase add complexity to the demand-side analysis (discussed generally in Section 3, and more specifically to wholesale call origination throughout our analysis of indirect constraints below).

¹²¹ This is not an inflexible rule. EC guidelines state that the “*significance of a price increase will depend on each individual case*”, and that “*the importance of the SSNIP test lies primarily in its use as a conceptual tool for assessing evidence of competition between different products or services*”. Footnote 26, Paragraph 40, Commission guidelines on market analysis and the assessment of significant market power (2002/C165/03) – 11 July 2002, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF>.

Additionally, consumers' purchasing decisions in relation to calls are closely intertwined with a number of related decisions. These may affect (either directly or indirectly) consumers' attitudes and likely reactions to a SSNIP applied to fixed calls, further complicating any analysis of substitution. In its annex to BT's response to the February 2013 consultation, DotEcon puts forward a useful set of decisions for residential consumers¹²², repeated above in paragraph 5.24, which illustrates the difficulty in assessing substitution patterns by consumers.

- 5.43 There is inevitably some interaction between each of these purchase decisions set out above, for example, the consumer's call decision depends on the choice of access services, the supplier and the type of package chosen.¹²³ Further, the relevance of each decision when considering potential indirect constraints for wholesale call origination may vary according to the potential substitute being considered.
- 5.44 We also note that wholesale call origination represents a relatively small input into retail services (particularly as more and more services are bundled together), which inevitably dilutes¹²⁴ the retail price impact of any wholesale price increase (as noted by BT). We have nevertheless considered whether, even in the absence of a dilution effect (i.e. retail prices would increase by the same proportion as the wholesale charge), a SSNIP would be profitable at the wholesale level. We consider this to be appropriate in order to ensure that we have not understated any potential indirect constraint arising at the retail level. If a price increase of 5-10% at the retail level led to significant switching by retail customers, it may be necessary to consider in greater detail the extent to which the retail alternatives exercise a constraint on a hypothetical monopolist's ability to increase prices at the wholesale level.
- 5.45 Therefore there are both demand and supply-side complexities in defining this market that we need to reflect in our analysis of direct and indirect constraints using the SSNIP test. Moreover, a number of these considerations are also relevant for the market power analysis.
- 5.46 These add complexity to the conceptual tools and empirical methodologies that can sometimes be used to inform the market definition analysis. For example, we consider that, despite BT's comments, a critical loss analysis¹²⁵ could be misleading in this case and result in potentially spurious results. This is because it would not allow us to deal with the issues discussed above (e.g. dilution). Furthermore, we consider that we should not put too much weight on our market research to attempt such a quantification, which could not easily overcome the issues highlighted above. In addition, stated preference responses to hypothetical price changes may misrepresent actual behaviour that would occur in reality, and therefore results must be carefully interpreted. This is especially the case when there are a number of decisions (as discussed above in paragraph 5.24) that cannot be easily drafted into survey questions.
- 5.47 As a result, we have adopted a more holistic approach to our market definition and market power assessment. In particular, we have used a range of evidence, including

¹²² Paragraph 65 of DotEcon report for BT. DotEcon states that the purchasing decisions of business consumers may be more complex.

¹²³ For example, where the choice of tariff package includes free minutes, this will affect whether a call is made and which platform is used to make that call.

¹²⁴ This dilution at the retail level is both vertical (because wholesale call origination is a small input to retail voice services) and horizontal (where voice is bundled with other products).

¹²⁵ A critical loss analysis attempts to quantify the reduction in demand (in this case, for wholesale call origination) which would make the hypothetical price increase (SSNIP) unprofitable.

information from Ofcom's CMR and Ofcom's Technology Tracker¹²⁶, market research specifically carried out for this review considering both residential and business consumers¹²⁷ (which purposefully covered questions relating to actual behaviour as well as more hypothetical stated preference responses¹²⁸), data and information collected under s135, responses to the May 2012 CFI and the February 2013 consultation. We consider that using a variety of sources and information (rather than relying on one particular source) would reduce the risk of error. We also apply this approach to the market power assessment to ensure robustness in our approach (see discussion further below).

Direct constraints

- 5.48 A direct constraint is a wholesale substitute that limits the ability to increase the price of a wholesale service (that is, there is potential for direct substitution at the wholesale level), e.g. CPs switching between purchasing wholesale call origination on a fixed narrowband network and potential alternatives.
- 5.49 We consider whether CPs using wholesale call origination on a fixed narrowband network could switch to potential alternatives in response to a 5-10% price increase (as per a SSNIP test) by using:
- wholesale call origination over a mobile network; or
 - wholesale call origination over a (fixed) broadband network.
- 5.50 First, wholesale call origination on mobile networks is provided by each mobile network operator operating in the United Kingdom. Supply-side substitution at the wholesale level between fixed and mobile would occur only if mobile networks could provide fixed wholesale call origination to fixed-line operators selling telephone calls at the retail level.¹²⁹ This would require very significant investment to be undertaken and, in the current market, mobile operators' business strategies are typically focused on mobile markets and the needs of mobile customers. As such, we do not consider that mobile network operators are likely to act as a sufficient direct constraints in the provision of wholesale fixed call origination over the period of this review.
- 5.51 Second, substitution at the wholesale level to call origination on a broadband network could occur. This would result in a VoIP based retail offering. We consider that VoIP services can be characterised as two main types:
- a) **Managed VoIP**: the ISP that provides a customer's broadband service also provides a voice service over the broadband connection. The ISP controls the provision and quality of this voice service. Calls to the PSTN are likely to be supported, and prices may be similar to calls made over the narrowband

¹²⁶ Which uses three separate UK representative samples each year.

¹²⁷ Businesses and residential consumers purchase services in different ways, and so the design of the research and questions posed were adjusted for each group to reflect this.

¹²⁸ We consider that responses based on actual behaviour are important context given stated preference responses are likely to overstate any actual response to price changes.

¹²⁹ Although not critical for this analysis, a 'mobile network' here refers to a provider capable of offering wholesale services sufficient to enable a fixed communications provider to offer a retail (fixed) voice telephony service. It is not necessary for this analysis that the supplier is itself the owner or operators of the mobile network used to serve the end-customer – for example, it would not change this reasoning if the supplier was a virtual mobile network operator (or MVNO). The simpler term 'mobile network' is used here for clarity.

network.¹³⁰ Managed VoIP also includes integrated communications services where a business is provided with a single access connection to support all its traffic (managed voice, private data traffic and internet access).¹³¹ The traffic will not, in general, be passed via the public Internet.

- b) **Un-managed VoIP:** a separate voice SP (such as Skype) provides the service “over-the-top” of a broadband connection. The provider of the broadband connection (whether a residential ISP or a provider of integrated business communications) routes the traffic to the Internet, and there is no guarantee they will prioritise this traffic, so quality of service is likely to be more variable than a managed service. Calling between customers subscribing to the service is likely to be free, and the service may allow the subscriber to make and receive calls to and from the PSTN but this is likely to be charged for.

5.52 If the broadband access network operator could provide fixed wholesale call origination to fixed-line operators selling calls at the retail level the service provided would most likely be a managed VoIP service (since the broadband provider would also be providing the VoIP service, at least at the wholesale level) We consider this for the residential and business consumer segments separately:

- a) **Wholesale call origination on VoIP for residential consumers:** This service, if provided, would require additional investment e.g. customer premises equipment (CPE) to interface the telephone to the broadband connection and to convert voice signals to VoIP. Additionally, as we also discuss below in relation to indirect constraints, consumer attachment to fixed lines (and narrowband services) persists, even in the face of retail price increases. Therefore, given that VoIP does not appear to be a close retail substitute for residential consumers and we understand that the customer would need to opt to be supplied with access to voice services in this way, it is not clear that wholesale call origination over a broadband network would be an attractive alternative for CPs to wholesale call origination on a fixed narrowband network in this review period.
- b) **Wholesale call origination on VoIP for business consumers:** As we discuss below in relation to indirect constraints, managed business services are increasingly becoming a viable alternative to narrowband voice. While we expect businesses to increasingly use these services (especially as fibre rollout increases), there are nevertheless costs associated with switching to this solution from narrowband voice. We consider the potential for this substitution further in relation to indirect demand constraints below.

5.53 Alternatively, if the VoIP service was provided by a different CP than the broadband network operator, the service would have some of the issues related to un-managed VoIP services (such as quality of service concerns), as well as the issues highlighted above for managed VoIP services. Therefore, while we recognise that, for businesses, wholesale call origination over VoIP is likely to increasingly become an alternative to wholesale call origination over a fixed narrowband network (and therefore consider it further as an indirect constraint below), we do not consider that wholesale call origination on a broadband network will act as an effective *direct* constraint over the life of this review.

¹³⁰ Providers of managed VoIP include Virgin Media. BT used to provide managed VoIP (‘Broadband Talk’) but this was discontinued in 2011.

¹³¹ This is sometimes referred to as IP voice and/or session initiation protocol (SIP) trunking.

Indirect demand constraints from competition at the retail level

- 5.54 A wholesale price increase that is passed on to retail consumers will be a key factor in assessing the profitability of any SSNIP. A SSNIP at the wholesale level may appear profitable where purchasers of wholesale products are unable to switch to alternative products in response. However, if the SSNIP at the wholesale level is passed through to retail customers, those customers may switch to other retail products which do not require the wholesale service supplied by the hypothetical monopolist, thus reducing the volume of the wholesale service purchased from the latter and potentially rendering the SSNIP unprofitable. This is called an indirect constraint.
- 5.55 We therefore consider in our analysis below whether, if the price of wholesale call origination increased, there is evidence suggesting that retail customers would switch away from retail fixed narrowband calls products to use mobile, VoIP, or text based services, for a sufficient proportion of calls such that the initial wholesale price increase is unprofitable.
- 5.56 In practice, assessing the level of pass-through to the retail level is complicated as in this case, a wholesale price increase of 5-10% for call origination is likely to translate into a much smaller increase at the retail level. This is because the price of wholesale call origination is very low (currently less than 0.3ppm), and as a result constitutes a very small wholesale component of the total retail price (i.e. the impact is diluted). This is the case both when we consider individual retail call prices, and particularly when we consider the retail price of a larger bundle of products (e.g. with broadband). However, in order to ensure that we have not understated the effect of any indirect constraints arising from the retail level and as set out at paragraph 5.44, we have assessed the extent of retail substitution if the retail price of voice calls increased by up to 5-10%. This is an upper bound on the retail price increases prompted by a SSNIP at the wholesale level as the dilution effect means that the increase in retail prices for fixed calls will always be lower than the price increase at the wholesale level. Consequently, if this analysis reveals only limited indirect constraints arising from switching at the retail level in the event of a 5-10% price increase, the actual constraint on the hypothetical monopolist's pricing freedom will not be significant.
- 5.57 As set out at paragraph 5.24 (and raised by BT), consumer behaviour in making calls involves a number of decisions. The relevant decision(s) for each potential alternative is likely to vary, as will its interaction with other purchase decisions, all of which will affect the analysis of substitutability. As such, we have reflected on the specific decisions that are likely to be most relevant for each potential substitute and considered how this might affect the extent of indirect constraints. Additionally, we recognise that the strength of indirect demand constraints could vary between customer types and accordingly take this into account in our assessment. Non-price factors are also relevant for this analysis of indirect constraints, as these will affect consumers' attitudes to potential substitutes as well as their willingness and propensity to switch in response to a given price increase.
- 5.58 Before we consider the services that could potentially exert an indirect constraint, it is useful to consider how a wholesale price increase for wholesale call origination might, or might not, be passed through to retail prices.

Pass-through to retail prices

- 5.59 The way in which calls are priced has implications on the importance of the pass-through.
- 5.60 Although calls-only products are still offered and bought, this is becoming less common, with calls increasingly sold as part of a bundle. This may be a simple pairing of calls and access (which may offer an amount of call minutes that are purchased for a fixed monthly price) through to more complex bundles (e.g. voice telephony and other services). In particular:
- a) 95% of residential consumers (90% of businesses) with a fixed line in our research use the same supplier for access and calls¹³²;
 - b) 85% of residential consumers with a landline have unlimited calls to United Kingdom landlines included at some time of the day/week¹³³;
 - c) About 65% of consumers who have a fixed line purchase voice as part of a larger bundle including fixed broadband, and for some, pay TV (for a minority, these bundles can also include mobile)¹³⁴; and
 - d) 68% of respondents to our consumer survey reported to considering only the cost of the overall bundle (rather than individual components) when purchasing communications services.¹³⁵
- 5.61 As a result, we consider that the impact of a wholesale call origination price increase on the fixed monthly price of a bundle of fixed access line plus some inclusive voice minutes is most relevant in considering indirect constraints. This is because the vast majority of consumers buy access and calls together from the same CP. Despite the fact that the fixed access market review is conducted separately from this review¹³⁶, we consider the interactions to be important context for the analysis of wholesale call origination.¹³⁷
- 5.62 Therefore, for the majority of retail customers, we consider that any increase in the price of wholesale call origination is more likely to be passed on through the overall retail monthly charge for the line rental and calls bundle, rather than through the per minute call price. We recognise that bundle composition and pricing structures may

¹³² Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012.

¹³³ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹³⁴ Q1 2013, Ofcom Technology Tracker. We note that BT has questioned the accuracy and reliability of this figure. However, we consider the main source of dispute between our data and that put forward by BT is the sample base used, (indeed, [3<]). Contrary to the suggestion by BT, we consider that all consumers with a fixed line is the appropriate base to use for the purposes of considering narrowband services (including the prevalence of bundling) and the impact of price changes, rather than online consumers-only and/or those who have recently switched service as BT appears to suggest in the research it submitted.

¹³⁵ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹³⁶ As discussed in the May 2012 CFI – Fixed narrowband market review and network charge control (call for inputs) – 17 May 2012 <http://stakeholders.ofcom.org.uk/binaries/consultations/narrowband-market-review-call/summary/condoc.pdf>

¹³⁷ See Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

change in the absence of *ex ante* wholesale call origination regulation, as argued by BT (in relation to the modified Greenfield approach). However, we believe that consideration of any such adjustments would be highly speculative on our part. Therefore we consider that existing products do not seem an unreasonable proxy for how retail products might be offered in the absence of regulation at the wholesale level (or at the very least, consumer expectations of those products), as discussed above. While in principle inclusive minutes might be reduced or discontinued in response to a wholesale price increase or call charges apply for a larger proportion of calls (as argued by BT), we consider it unlikely.¹³⁸ As such we consider that, following a wholesale price increase, CPs are likely to continue to offer inclusive calls, and instead pass the wholesale price increase on through the overall retail monthly charge for access plus calls. This implies that for these consumers, for consumer switching to be an effective constraint on the price of wholesale call origination, they would need to be prepared to switch their entire fixed voice bundle to another service (e.g. mobile) in order to avoid the price increase (i.e. the access decision is most relevant).

Indirect demand constraint – competition based on mobile

- 5.63 Between 2007 and 2012, the volume of mobile calls increased by 16%, while fixed-line calls steadily decreased year on year.¹³⁹ The decline in fixed call volumes we have seen is also expected to continue.¹⁴⁰ In 2011, for the first time, mobile calls accounted for more than half of all voice call minutes and in 2012 approximately 54% of all call minutes were mobile originated.¹⁴¹ This upward trend in mobile calls was present for both business and residential consumers, and suggests that consumers consider mobile to be a substitute for at least some fixed-line calls (not least given that 94% of fixed households also have access to a mobile telephone¹⁴²). We note however, that in each of the last two years, total mobile call volumes have also declined slightly¹⁴³ (along with fixed call volumes). Nearly half of respondents to our consumer survey stated that they frequently make calls from a mobile that could have been made from a landline (46%) and a similar proportion stated that they agreed with the statement “I have a landline but generally use mobile” (47%).
- 5.64 As discussed above, we consider that for the majority of consumers (who have inclusive minutes and so would need to consider switching access), a sufficient proportion would need to consider mobile access a realistic alternative to fixed-line access in order for retail switching to constrain the price of wholesale call origination (i.e. the access purchase decision). Therefore we first assess whether consumers would consider mobile a substitute for their fixed-line and calls package.

¹³⁸ We understand that if the charges for wholesale call origination are substantial they could affect the retail price structure currently observed, as argued by BT. However, the current level of the ppm wholesale call origination charge is currently very low and so while we would expect retail price levels to change in response to a wholesale price increase, we consider that an effect on retail price structures would only occur if price increases were extremely large.

¹³⁹ Decreasing by approximately 31% over the same period. Figure 5.1, Ofcom, *Communications Market Report 2013*, August 2013,

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CM.R.pdf

¹⁴⁰ See, for example, [X].

¹⁴¹ Ofcom Telecommunications Market Data Update Q4 2012, 29 April 2013.

<http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/tables/q4-2012/>

¹⁴² As at Q1 2013. Ofcom Technology Tracker, Q1 2013.

¹⁴³ By approximately 2% in total between 2010 and 2012. Ofcom, *Communications Market Report 2013*, August 2013.

- 5.65 We then consider the potential for switching on a call-by-call basis in response to an increase in the price of individual calls for the minority of consumers who might be exposed to individual fixed call prices (e.g. those who do not have inclusive calls within their fixed-line bundle, or for those call types not typically included in bundle minutes, e.g. international calls and premium non-geographic calls). For these, the choice of platform is likely to be most relevant.¹⁴⁴ The number of residential consumers likely to be exposed to such a change is relatively low and decreasing, and we take this into account when considering the strength of this constraint.

Increase in bundle price

- 5.66 Consumers facing a higher monthly bundle price for fixed access and calls could:
- a) Option 1 – give up the bundle of access and calls and become mobile-only consumers (possibly together with mobile broadband if the consumer also had a fixed broadband service) – the choice of access decision; or
 - b) Option 2 – give up the call package/plan and switch all calls to mobile but keep the fixed access line for broadband – a choice of tariff package decision; or
 - c) Option 3 – downgrade to a cheaper fixed call package/plan that would imply more out-of bundle calls (e.g. from an ‘Unlimited Anytime United Kingdom calls’ to an ‘Unlimited Week-end calls’ plan) and switch some out-of bundle calls to mobile on a call-by-call basis – a choice of tariff package decision. This is akin to considering the potential for switching on a call by call basis by a minority of consumers who might be completely exposed to individual fixed call prices (i.e. who have no inclusive minutes), and therefore we consider the two together.

Option 1 – become mobile only

- 5.67 We believe that becoming a mobile-only consumer is unlikely for two main reasons: a general attachment to fixed lines and use of broadband.
- 5.68 First, most residential customers appear unlikely to give up the ability to make fixed voice calls in favour of relying on mobile. Most respondents to our consumer survey (72%) agreed (either strongly or slightly) that they would “never” give up their landline access.¹⁴⁵ Among these respondents, the most popular reasons for this were the need for internet access (31%) and the fact that they had always had a landline (31%). Others explained their attachment to a fixed line on the grounds of reliability (29%) and price (25%).
- 5.69 Widening the focus across the full sample, to include those that would consider giving up their landlines, shows that a significant proportion of respondents agreed that security, the wish to avoid upheaval and reliability were the main reasons for keeping a landline. In particular, 44% stated that mobiles were not reliable enough to enable them to give up their landline. While there was a slightly greater willingness to

¹⁴⁴ The choice of whether to make a voice call or use an alternative form of communication is also likely to be relevant, but is considered further under the text-based alternatives.

¹⁴⁵ Section 4.3 of Jigsaw research. We note that there is some variation in willingness to become mobile-only by demographic group. In particular, our consumer survey found that older respondents (55+) (70%), the retired (78%) and rural dwellers (64%) are the most likely to ‘agree strongly’ that they would never give up their landline, compared to 55% of all respondents. Similarly, those indicating they would give up fixed access in response to an increase in their monthly bill was higher among certain customer groups, including the city-based (21%), those who are not working (17%), the less affluent (14%) and those aged between 18 and 34 (14%).

consider giving up landline calls than there was for access, most respondents still said they would never give up their landline calls package (60%). We do not consider that the factors cited by residential consumers for their continued attachment to landlines are likely to be affected by an increase in the price of their fixed-line and calls bundle, nor do we have any reason to believe they are likely to change during the course of the period covered by this review. Indeed, we asked interviewees in our market research¹⁴⁶ how they would respond to a 10% increase in the price of their monthly landline bill, and only 11% said they would give up their fixed-line calls package and 10% that they would give up fixed access.¹⁴⁷

- 5.70 This indication of a limited willingness to give up a fixed line (irrespective of the underlying motivations) is best reflected in the fact that the proportion of mobile-only households has stabilised in the past three years, increasing only slightly from 12% in Q1 2009 to 15% in Q1 2011, and staying at this level until Q1 2013.¹⁴⁸ This is despite the fact that mobile call prices appear to have become cheaper relative to fixed calls over time (see below). Instead, households with both mobiles and fixed-lines continue to be the largest group, which suggests that consumers continue to value access to both fixed and mobile services, i.e. most consumers do not seem to regard the two forms of access as close substitutes.
- 5.71 Second, we consider that the need for a fixed line to support a fixed broadband connection is likely to mean that the majority of residential consumers will remain very unlikely to become mobile-only over the period of this review. As at Q1 2013, 83% of landline owners also have broadband¹⁴⁹ (either purchased as a bundle with, or separately to, their fixed line). While take-up of internet on a mobile phone and mobile broadband¹⁵⁰ have grown since the last review, they are almost always used alongside (rather than in place of) this fixed broadband access. In Q1 2013, 4% of adults relied solely on their mobile phone for home internet access, and only 3% of households relied solely on mobile broadband (a figure which has been slowly declining since its peak of 7% in 2011).¹⁵¹ Instead, most broadband households rely solely on a fixed broadband connection (over 90% of those with broadband).¹⁵² Further, although take-up of mobile broadband had been increasing, it has more recently declined (to 5% of households in Q1 2013), although internet use on a mobile phone has increased significantly (see Figure 5.3 below).
- 5.72 While a move to 4G will increase the speeds available (as argued by BT), we consider that this is unlikely to significantly reduce the demand for broadband via fixed-line access within the time horizon of this review. This is due to two reasons:
- a) given the timeline for 4G deployment (rollout is underway following the completion of the auctioned 4G spectrum¹⁵³), it is unclear whether these services

¹⁴⁶ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012.

¹⁴⁷ We consider that these numbers are likely to overstate any actual response to a SSNIP since they are stated preferences rather than based on actual behaviour.

¹⁴⁸ Figure 5.52, Ofcom, *Communications Market Report 2013*, August 2013.

¹⁴⁹ http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

¹⁵⁰ Ofcom Technology Tracker, Q1 2013

¹⁵¹ Mobile broadband in this context means access via a mobile network using a USB stick or dongle, or built-in 3G connectivity in a laptop, netbook or tablet PC with a data card, but excludes access from mobile handsets.

¹⁵² Ofcom Technology Tracker, Q1 2013

¹⁵³ Ofcom Technology Tracker, Q1 2013

¹⁵⁴ E.g. Although EE are already offering 4G services, Vodafone, O2 and H3G are all in the process of rolling out their 4G services. For example, O2 is launching 4G in the summer of 2013 covering the

will be available to – and adopted by – a significant proportion of consumers within the period of this review such that they are an alternative to fixed broadband access¹⁵⁴; and

- b) the expected continued deployment of higher-speed fibre broadband (take-up is expected to be significant within the period covered by this review¹⁵⁵) makes it unclear whether the material difference in broadband speeds between fixed and mobile will significantly narrow in the period of this review notwithstanding the availability of 4G mobile broadband.

5.73 Our view is therefore that mobile access for broadband is not and will not be considered to be a sufficiently close substitute for fixed line access for broadband for the majority of retail customers during the period relevant to this review.

5.74 At the margins, some consumers may give up their fixed line and switch all calls to mobile, resulting in a loss of fixed call volumes and revenues for the hypothetical monopolist. In particular, those without broadband could be more likely to become mobile-only, as they do not require the fixed line for anything other than making calls. However, the non-price factors in access choice remain relevant and we also note that households without broadband are heavily concentrated among older age groups¹⁵⁶ who, our research indicates, also show a lower willingness to become mobile-only.¹⁵⁷

5.75 Therefore given the general attachment to a fixed line and the need for broadband, as evidenced in our research and demonstrated by the stabilisation of the proportion of mobile-only households (even in the presence of a reduction in the price difference between mobile and fixed calls), we consider it unlikely that a sufficient number of residential customers would completely switch to mobile bundles of access and calls (even in response to a 5-10% retail price increase, as per our analytical approach set out above), such that it would render the increase in the price of wholesale call origination unprofitable.

Option 2 – keep fixed line for broadband only

5.76 In relation to giving up the call package and switch calls to mobile (but keeping the access line for broadband), the existing trend in bundling retail access and calls implies that such an option would either be available at a price which is not significantly different from the status quo price (of the whole bundle), or may not be available at all.¹⁵⁸ This is because the price of access is a significant proportion of

major UK cities only, rolling out to the rest of the UK subsequently <http://www.o2.co.uk/4g/uncovered>, and Vodafone are planning to roll-out later in 2013 <http://www.vodafone.co.uk/4g/ready-for-4g/>

¹⁵⁴ For example, the requirement to offer indoor coverage to 98% of the United Kingdom population (and to 95% of the population of each of the nations) in one 4G licence available in the auction would be phased in and would not fully take effect until 2017.

¹⁵⁵ See for example Section 3 of Review of the Wholesale Broadband Access markets, 11 July 2013. <http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/>

¹⁵⁶ See Figure 5.54, Ofcom, Communications Market Report 2013, August 2013.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

¹⁵⁷ Our consumer survey found that while 55% of all respondents would ‘agree strongly’ that they would never give up their landline, older respondents (55+) (70%) and the retired (78%) were significantly more likely to ‘agree strongly’. Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012.

¹⁵⁸ We note that at the time of consultation, some mobile operators (O2 and EE) also offered fixed line access with broadband only (i.e. without calls packages). However, these no longer appear to be available.

the price of a bundle of calls and access, while call packages are offered for a relatively small incremental price once access has been purchased.¹⁵⁹ Because of this, there is unlikely to be a significant saving in giving up a package that bundles access and calls after the price increase in favour of an access only service. This is especially true once the costs (both monetary and non-monetary) of switching access (to a provider that offers access-only) and any adjustments to mobile subscriptions to reflect the increase in mobile-originated calls have been taken into account.¹⁶⁰ Additionally, the general attachment to a landline and having the ability to make fixed- line calls (set out above) is also relevant.

Option 3 – downgrade fixed package and switch to mobile calls on a call by call basis

- 5.77 Finally, customers with inclusive minutes could downgrade their calls package to a lower-priced alternative with fewer inclusive minutes (e.g. switching from all free calls to a weekend calls package) in response to a wholesale SSNIP. This would leave them exposed to individual fixed call prices, as per the minority of customers who do not have an inclusive calls package within their bundle and those who make calls outside their bundle. These customers would be exposed to a change in retail call prices, and could therefore switch to mobile on a call-by-call basis in response.
- 5.78 We now therefore consider if mobile might be an effective constraint for these calls at the point at which consumers choose which platform to use to originate a voice call.
- 5.79 According to our survey, price appears to be the most important factor preventing even greater use of mobile, although reliability is also considered important. When asked why they did not make all their calls from a mobile when at home, 56% of respondents cited price as a reason, with reliability (10%), coverage (6%) and quality (5%) also cited.¹⁶¹ This is despite the fact that there appears to have been a convergence in average fixed and mobile call prices over time.¹⁶²

¹⁵⁹ For example, Virgin Media offers a broadband only service (i.e. without a phone line), but only within its cable footprint, which is approximately £5.80 per month cheaper than the equivalent broadband service with a phone line (although this includes free weekend calls as a phone line without any inclusive minutes is not available). A 30Mb broadband service plus phone line (and inclusive weekend calls) with Virgin Media costs £14.50 a month (£7.25 for six months) plus £14.99 a month for the phone line (18 month contract), which averages at approximately £27 a month (reflecting discount). The equivalent broadband service on a broadband only contract costs £22.50 a month (£17.50 for three months) on a 12 month contract, which averages at approximately £21.25 a month (reflecting discount). Prices correct as at 13 June 2013.

http://store.virginmedia.com/broadband/compare-broadband/index.html?buspart=bb_solus_2

¹⁶⁰ As such, we could expect that those more likely to switch consumption of calls to mobile are those fixed consumers that have a mobile tariff which allows them to increase mobile calls at limited extra expenditure (i.e. those who have large mobile call bundles).

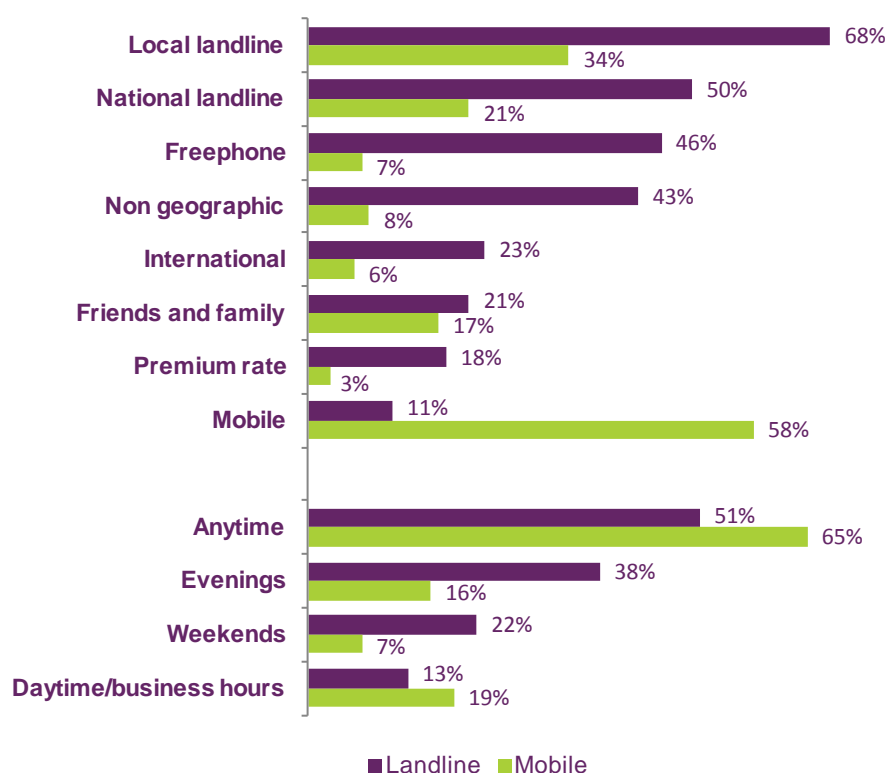
¹⁶¹ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹⁶² See for example Figure 5.53, Ofcom, Communications Market Report 2013, August 2013.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf While this data is useful for general trends, it should be interpreted with caution, particularly for considering consumers exposed to individual call prices, as it is only an approximate measure of average retail call prices (reflecting the increasing complexity in identifying individual price elements as bundle take-up – particularly for access and calls – increases). This is because it is calculated by dividing total line rental and out-of-bundle call revenues by total voice call minutes, which, as well as reflecting the access element of each service, means it will be affected by trends in call volumes and the relative consumer composition of fixed and mobile. For example, it will be sensitive to the penetration of inclusive minutes in fixed line packages, the balance of pre-pay and post-pay mobile consumers (the latter have inclusive minutes while the former pay an explicit price on a call-by-call basis), and how

- 5.80 In general, respondents had strong perceptions of whether a call was more expensive on a mobile than on a landline, with the majority identifying calls to landlines, international calls and calls to non-geographic numbers as being more expensive from a mobile (with calls to mobile being identified as more expensive from a landline).¹⁶³ Further, there is evidence that consumers adjust their relative use of landline and mobile in line with these perceptions (see Figure 5.1). In particular, while mobile is used significantly more to call other mobile phones, landlines are used significantly more to call other landlines and other numbers which consumers perceive to be less costly to call from landlines. This suggests that where a fixed call has an explicit price, a change in relative call prices is likely to lead to some switching to mobile on a call-by-call basis. If price convergence continues and consumer perceptions adjust accordingly, we are likely to see more switching to mobile as a result of an increase in the price of fixed calls, by those exposed to individual call prices.

Figure 5.1: Outgoing calling patterns when at home



Source: Narrowband Market Review Consumer 2012.

Base: All using landline/mobile for outgoing calls from home in the past six months, where $n=1908/1607$ respectively

Q8c/d: Types of number most likely to be used with landline/mobile when at home

- 5.81 On the other hand, despite rationalising choices on the basis of price, when making a call most respondents said they do not consider the call price: 66% stated that they either never or rarely consider call prices when choosing which method to use. The evidence suggests that the choice between fixed and mobile calls is driven not only

inclusive minutes are offered (i.e. a fixed number or by time of the day). As such, it is not necessarily fully reflective of the explicit (absolute) call prices consumers are exposed to on a call-by-call basis.

¹⁶³ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

by price but also by reliability of connection, quality of network coverage and ease of use.¹⁶⁴ Whether the consumer uses a pre- or post-paid mobile service¹⁶⁵, the type of calls made, and the needs of the customer at the time the call is made (e.g. out of the house or no interference¹⁶⁶) will also affect the decision. There are also demographic differences in likelihood of switching, with our survey suggesting that those more likely to switch include younger people and those living in urban areas.¹⁶⁷

- 5.82 In addition, although there appears to have been some convergence in average fixed and mobile call prices, for some call types (such as non-geographic numbers), the current price differential between fixed and mobile calls can still be large.¹⁶⁸ More generally, we could expect that those more likely to switch to mobile on a call-by-call basis to be those fixed consumers who have a mobile tariff that allows them to increase mobile calls at limited extra expenditure (e.g. those with large mobile call bundles).
- 5.83 Therefore, there is likely to be some switching at the margins for those consumers who are exposed to individual call prices if the relativity between mobile and fixed call prices were to be affected. However, while we recognise that mobile calls represent an increasingly close substitute for fixed calls for many residential consumers, we consider that the average constraint from mobile is unlikely to be sufficiently strong to constrain wholesale call origination prices (even in the event of a 5-10% retail price increase, as per our analytical approach set out above), since:
- a) for many consumers, retail price is not the main consideration when choosing the method to make calls;
 - b) some retail call prices may have to increase significantly to trigger switching to mobile; and
 - c) the majority of customers are unlikely to be exposed to such an individual call price change (as discussed above), and mobile access is not a sufficiently strong substitute to fixed access for the vast majority of these consumers (nor do we believe it will be during the period covered by this review).

Business consumers

- 5.84 The analysis set out above also largely holds for business customers, although there is some evidence that mobile may be a closer alternative for businesses (as also argued by BT). The steady decline in total fixed call volumes discussed above is

¹⁶⁴ Ibid. These were all expressed as reasons that consumers do not currently make all calls by mobile when at home.

¹⁶⁵ For example, for mobile post-pay contract customers the marginal price of a call is effectively zero within a bundle, and so these retail customers may be more sensitive to changes in retail fixed call prices than pre-pay mobile customers who often pay a ppm charge.

¹⁶⁶ In our research, quality within the home was raised as a potential concern with mobile.

¹⁶⁷ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012.

¹⁶⁸ Table 3.1, Ofcom, *Simplifying Non-Geographic Numbers: Improving consumer confidence in 03, 08, 09, 118 and other non-geographic numbers*, December 2010, <http://stakeholders.ofcom.org.uk/binaries/consultations/simplifying-non-geo-numbers/summary/non-geo.pdf>. Mobile call prices for non-geographic numbers can be (and have historically been) many multiples of the fixed line equivalent. Changes to the existing NGCS regime may affect this in the future (see *Simplifying non-geographic numbers - Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges*, <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>)

evident in the business-specific volumes, where there has been a continued reduction in the volume of fixed voice calls (approximately 8% between 2011 and 2012¹⁶⁹). This trend may reflect continued fixed-mobile substitution (and potentially greater use of VoIP, discussed further below), as the general reduction appears to at least in part have been compensated by an increase in mobile minutes.¹⁷⁰ Bundling of inclusive minutes is potentially relatively less important in the business market compared with the residential market, and our research found that despite the landline accounting for the majority of all outgoing calls from office premises, there is little evidence that the choice of using a fixed line for outgoing calls is due to free or pre-paid minutes of landline calls.¹⁷¹ As a result, businesses may be more exposed to individual call prices, and therefore may be more likely to switch calls at the margin than residential customers.

- 5.85 Although an analysis of long-term trends in consumption of fixed and mobile calls is useful, what matters for market definition (and SMP assessment) is the extent to which consumers would switch away from fixed calls following a price increase over and above any long term sectoral trends that may be due to a number of factors unrelated to price changes.
- 5.86 Furthermore, these trends need to be weighed against other evidence. Like residential consumers, the vast majority of businesses (90%) purchase fixed line rental and calls from the same provider, and the majority also appear to have a general attachment¹⁷² to a fixed line.¹⁷³ In particular, only 6% of businesses in the Jigsaw survey stated they would cancel their fixed-line and switch all calls in response to a 10% increase in costs of calls from their fixed line (although most of these indicated they would switch to mobile).¹⁷⁴ Additionally, the call-by-call switching decision within businesses is generally removed from the purchaser, and instead made by employees who are likely to prioritise non-price factors (such as needs at the time of the call, e.g. convenience) over price considerations. Indeed, 74% of businesses in our survey claim that staff rarely or never consider how much calls will cost based on the technology used.¹⁷⁵
- 5.87 More significantly, there are other non-price considerations that would be likely to limit the extent of switching to mobile by business customers in response to a price increase. Overall, 70% of businesses indicated that they would not consider switching more/all calls from their fixed line to mobile, with price, reliability, quality and coverage cited as the main barriers to further future mobile substitution.¹⁷⁶ While

¹⁶⁹ Figure 5.46, Ofcom, Communications Market Report 2013, August 2013.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

¹⁷⁰ For example, total business voice call volumes (mobile+fixed) appeared relatively unchanged between 2010 and 2011 (-0.6%), with the 9% fall in business fixed call volumes largely offset by an increase in business mobile voice call volumes (of 4%). Figure 5.46, Ofcom, Communications Market Report, July 2012, http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf

¹⁷¹ Q8a. Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹⁷² For example, as with residential consumers, the majority (88%) stated they would not consider cancelling their fixed line altogether, with having always had a landline (36%), quality of customer service (25%), reliability of connection (17%) and need it for the internet (12%) being the most stated barriers to cancelling altogether. Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹⁷³ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹⁷⁴ Ibid

¹⁷⁵ Ibid

¹⁷⁶ Ibid

nearly a fifth (19%) of businesses in our survey stated they would switch at least some calls to mobile if the price of calls from a fixed line increased by 10%, 47% stated they would do nothing (and did so with greater certainty than for the alternative options).¹⁷⁷ This would be particularly true on a call-by-call basis where callers are often separate from the bill-payer, so any desire to rebalance in favour of mobile calls might be difficult to implement.

- 5.88 Furthermore, these qualitative non-price factors, plus the need for a data/broadband connection, might also limit switching of fixed line entirely to mobile-only by businesses (as per residential consumers).
- 5.89 As a result, we consider that while some switching to mobile would be likely to occur (both for some calls, and potentially to a lesser extent, for all calls), this would be limited to a relatively small proportion of business users, who together account for a small proportion of the total fixed calls market. Therefore, we do not consider that this switching is likely to render unprofitable a price increase in wholesale call origination.

Overall conclusions on mobile

- 5.90 While mobile calls appear to constitute an increasing competitive constraint in the retail market for calls (particularly for businesses and on a call-by-call basis), we do not believe this is sufficient to affect the relevant wholesale market definition in the period covered by this review. This is because while there is some degree of substitutability for some users, we consider that mobile access is not a sufficiently strong substitute for fixed access for the vast majority of these consumers, nor do we believe that it will be during the forward-looking period covered by this review. This is primarily due to the increasing tendency for providers to bundle fixed access with calls and with consumers' unwillingness to give up fixed voice access, but also reflects non-price factors. Indeed, we note that most consumers appear to have strong preferences for purchasing both fixed and mobile access.
- 5.91 Therefore, our view is that a price increase in wholesale call origination would not trigger sufficient switching to mobile to render the price increase unprofitable (even if it led to a 5-10% retail price increase, as per our analytical approach set out above), and therefore mobile calls should not be included in our market definition.

Indirect demand constraint – competition based on VoIP

- 5.92 As discussed above, there are two main types of VoIP: managed VoIP and unmanaged VoIP.
- 5.93 Currently, residential consumers are much more likely to use unmanaged VoIP services. In Q1 2013, more than one in four adults (28%) stated that they currently use VoIP (although this is more concentrated among younger consumers)¹⁷⁸, and 16% of adults stated they use internet based voice/video calls at least once a week to communicate with friends and family.¹⁷⁹ While we recognise that managed VoIP for residential consumers may increase over time (particularly as fibre roll-out

¹⁷⁷ Ibid

¹⁷⁸ Q1 2013. Figure 5.59, Ofcom, *Communications Market Report 2013*, August 2013.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf Note, this figure is not directly comparable to the figure in 2012 due to question changes in the research.

¹⁷⁹ Figure 1.52, Ofcom, *Communications Market Report 2013*, August 2013.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

continues), we consider this is likely to be beyond this review period, and we therefore focus on unmanaged VoIP for residential consumers.

- 5.94 Businesses use managed and un-managed VoIP in roughly equal measure¹⁸⁰, and use of VoIP by businesses is increasing (see discussion below). Although only one in ten businesses with a fixed line claim to use VoIP, more than 50% of large businesses (employing more than 250 people) use some form of VoIP communication.¹⁸¹
- 5.95 This use suggests a growing potential for substitution from fixed voice calls to voice over broadband calls, which could act as a constraint on wholesale call origination over a narrowband network.

Residential consumers – increase in bundle price

- 5.96 For the reasons discussed in paragraphs 5.59 to 5.62, we consider that – as for mobile – for the majority of consumers, a sufficient proportion would need to switch their entire bundle of fixed voice calls to VoIP in order for VoIP to exercise a strong constraint on wholesale call origination (i.e. at the choice of access service decision point). However, a fixed line is required to provide the broadband connection over which the VoIP service is provided¹⁸², so that customers need to retain the access line even where they choose to make calls via VoIP. This means that once a consumer decides to keep his or her access line (and call package), calls from a fixed line are included within the package and do not incur additional charges. Therefore, for the same reasons as discussed in paragraph 5.76 (in relation to the limited availability and cost savings associated with broadband only services), we do not consider that an increase in the price of wholesale call origination would be likely to trigger significant retail switching towards VoIP by consumers with calls plus line bundles (even if it led to a 5-10% retail price increase, as per our analytical approach set out above) such that it would no longer be profitable.

Residential consumers – increase in price of out-of-bundle calls

- 5.97 As with mobile, some consumers could downgrade their calls bundle and, alongside those without any inclusive minutes, switch to VoIP on a call-by-call basis. Residential customers are likely to consider unmanaged VoIP calls to be a substitute for some fixed-line calls at the point at which they choose which platform to originate a call from (35% of VoIP users in our consumer survey choose VoIP for outgoing calls based on price, the most commonly cited individual reason¹⁸³). As a result, they are likely to be fairly sensitive to material changes in the relative price of calls at the margin. Indeed, our research suggests that residential consumers currently use VoIP mainly for international calls¹⁸⁴ (which critically are often excluded from bundles), where it is likely to provide a much cheaper alternative to fixed and mobile methods (as well as the possibility of video telephony).

¹⁸⁰ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹⁸¹ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

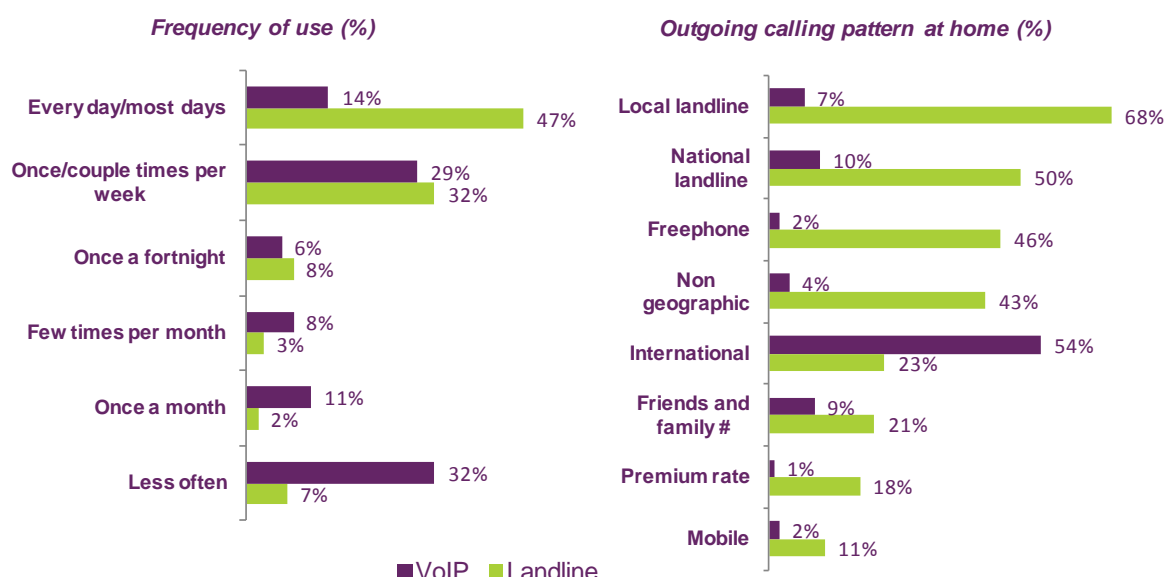
¹⁸² Unless they use mobile broadband, although as discussed above, mobile broadband uptake is more limited and tends to be purchased alongside (rather than instead of) fixed broadband, which suggests fixed broadband is more likely to be used for VoIP.

¹⁸³ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹⁸⁴ Ibid

5.98 However, there are additional factors affecting the choice between fixed voice calls and VoIP besides price, which would significantly limit the degree of further switching. For example, VoIP requires a broadband connection of sufficient quality and reliability¹⁸⁵, and there may be issues with convenience (e.g. if the VoIP service is provided via software installed on a computer so that the computer needs to be on before calls can be made or received), quality of sound and the perceived reliability which a fixed landline is said to possess.¹⁸⁶ This is reflected in the relatively few respondents to our survey who indicated that they would be likely to switch some calls to VoIP in response to a 10% increase in their monthly landline bill (9%). This is also supported by actual behaviour: despite what can be a substantial price differential, we note that VoIP calls still account for only a small percentage of overall residential call volumes (and tend to be focused on particular call types). Respondents to our consumer survey reported that VoIP accounts for only 2% of all outgoing calls. Indeed, as shown in Figure 5.2, VoIP is currently used by residential consumers much less frequently than fixed lines, and tends to be focused on international calls (with limited United Kingdom calls).

Figure 5.2: Use of VoIP and landlines by residential consumers¹⁸⁷



Source: *Narrowband Market Review Consumer 2012*. Q14: How often do you normally use your <landline/VoIP> to contact other people? Base: All with landline/VoIP n=2058/434. Q8c: Thinking about the calls you make from home, what types of numbers are you more likely to call using your <landline/VoIP> rather than your <other products used>? Base: All using landline/mobile for outgoing calls from home in the last 6 months n=1908/284.

5.99 These non-price factors and current VoIP usage patterns suggest that the cost saving from VoIP would need to be higher, and the non-price barriers lower, to see greater switching across all call types. Therefore any such switching to VoIP on a call- by-call basis (even in the event of a 5-10% retail price increase as per our analytical approach set out above) would not appear to be sufficient to constrain

¹⁸⁵ The anticipated rollout and subsequent uptake of superfast broadband could reduce some of the quality concerns for particular consumers with slower/more unreliable connection speeds.

¹⁸⁶ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

¹⁸⁷ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

wholesale call origination prices, since there continue to be non-price factors which are relevant in this switching decision (as well as the fact that the majority of customers are unlikely to be exposed to such an individual call price change, discussed above).

Business consumers

5.100 The purchase decision of businesses covers a wider range of communications needs and services, and is highly complex, potentially spanning multiple locations. Given the significant variations in business customers (both in terms of needs and actual services available/purchased) it is complex to consider potential retail substitution at an aggregate level. For example, incidence of VoIP use was found to vary by company size, rising from a low of 7% in companies with 1-4 employees to a high of 54% in companies with 250 or more employees. Indeed, there are various ways in which VoIP services may currently be used to supply business users with voice calls. For the purposes of this analysis, these can be grouped into two broad types: those providing VoIP calls over a fixed broadband connection (therefore requiring a fixed line) and those offering VoIP calls over an alternative access solution.

5.101 Starting with the latter, we note that some businesses have moved away from a traditional fixed line for calls entirely, using managed VoIP services alongside alternative access products (e.g. Ethernet provided by a direct access network or a leased line). We consider that these alternative IP-based access solutions are more likely to be taken up by the larger businesses traditionally using digital lines such as ISDN30¹⁸⁸ due to the additional functionality (and higher price) relative to traditional (residential-type) products (although this will not always be the case). This could mean a switching of all calls to VoIP, not just on a call-by-call basis. Indeed, it appears that some businesses are replacing narrowband lines with IP-based solutions, and this trend is likely to continue during the review period. The number of business fixed lines (PSTN+ISDN lines) has been declining steadily since 2007¹⁸⁹, and the increased use of IP-based services for business telephony was one factor identified as likely to have contributed to this in 2012¹⁹⁰ (in fact, corporate data services connections have been increasing since 2007¹⁹¹). Of the applications used over businesses' wide area network connections, VoIP was used by 45% of businesses in Q1 2012 and 'PSTN grade' voice services were used by 47%.¹⁹²

5.102 This general longer-term trend towards IP-based voice services is likely to be driven at least in part by the greater flexibility that they offer. In particular, as businesses

¹⁸⁸ ISDN is a set of standards for digital transmission over ordinary telephone copper wire (and other media). There are two main types of ISDN: ISDN2 (which consists of two 64kbit/s channels and a 16kbit/s signalling channel) and ISDN30 (thirty 64kbit/s channels and a 64kbit/s signalling channel). Each channel can be used independently, so an ISDN2 line can be used as two voice lines, one voice line and a 64kbit/s data connection, or as a 128kbit/s data connection. See the 2013 FAMR consultation for more details of ISDN and comparisons with IP-based services. Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

¹⁸⁹ Figure 5.44, Ofcom, *Communications Market Report 2013*, August 2013
http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

¹⁹⁰ Section 5.2.5, Ofcom, *Communications Market Report*, July 2012,
http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf.

¹⁹¹ This includes Ethernet, IP VPN, digital leased lines, and frame relay/ATM. See Figure 5.49, Ofcom, *Communications Market Report 2013*, August 2013.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

¹⁹² Figure 5.47, Ofcom, *Communications Market Report*, July 2012,
http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr12/CMR_UK_2012.pdf.

increasingly use voice and other services, an IP-based solution is advantageous because it allows an integrated access connection over which all services can be carried, which provides greater flexibility and reduces costs. As a result, those businesses that require additional services to voice may be more likely to switch away from a traditional fixed line towards VoIP. As discussed in Section 4 and 5 of the 2013 FAMR consultation¹⁹³, ISDN30 and ISDN2 volumes have been gradually declining, and this is expected to continue in the period covered by that review (until 2017). At the same time, there has been a growth in volumes of IP-based voice services (SIP/IP trunking and hosted VoIP), and this growth is forecast to continue.¹⁹⁴ This suggests that for many (particularly larger) businesses there is a general longer-term trend whereby managed VoIP becomes a viable substitute. Indeed, our research indicated that, when asked about future planned changes to their communications (in the next 2-5 years), VoIP was more likely than average to feature in the plans of larger businesses (250+ employees).¹⁹⁵

- 5.103 However, while IP-based alternatives are particularly strong for large businesses, the picture is much less clear for small and medium sized businesses (which make up the vast majority of businesses in the United Kingdom¹⁹⁶), particularly those that do not require the greater functionality of these alternative access methods.¹⁹⁷ Use of VoIP for these businesses will – as is the case with residential consumers – require a fixed broadband connection, and therefore a fixed line. Therefore, to the extent that businesses pay on a call-by-call basis (rather than purchasing a bundle of inclusive minutes¹⁹⁸), we could see some switching to VoIP (managed or unmanaged) in response to an increase in fixed call prices. In fact, we already observe businesses with a fixed line making use of both methods for voice calls, with one in ten businesses with a fixed line claiming to use VoIP, and of these, 53% claiming to use it very often or sometimes for calls that could have been made using a fixed line.¹⁹⁹ However, the need for a fixed line to support broadband access will limit the extent to which businesses can switch to VoIP to counter an increase in the price of their line and calls bundle price (as is the case for residential consumers).
- 5.104 That said, many of these SME businesses may currently take more than one narrowband line, and such users would have the option of retaining a single fixed line connection to support broadband access and cancelling all other lines in favour of VoIP calls over the broadband line. We are aware that some CPs serving business users are trying to encourage their customers to adopt this model. We also understand that take-up has remained relatively low to date despite the fact this

¹⁹³ Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

¹⁹⁴ Ibid. See in particular paragraph 4.38 et seq. for ISDN30 and IP volumes, and paragraph 5.30 et seq. for ISDN2 volumes.

¹⁹⁵ For example, see Figure 46 of the *Jigsaw Research Narrowband Market Review 2012 report*, January 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/annexes/JR-report.pdf>

¹⁹⁶ SMEs (defined as having between 0-249 employees) accounted for 99.9% of all private sector businesses in the UK at the start of 2012. *Business Population Estimates for the UK and Regions 2012 Statistical Release*, Department for Business Innovation and Skills, 12 October 2012. <http://www.bis.gov.uk/assets/biscore/statistics/docs/b/12-92-bpe-2012-stats-release.pdf>

¹⁹⁷ There may also be some barriers to switching, as discussed further below.

¹⁹⁸ For those businesses with inclusive minutes, the arguments are likely to be the same as for residential consumers.

¹⁹⁹ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

option offers significant cost savings over fixed narrowband access.²⁰⁰ This is because the quality of VoIP calls depends on the speed and contention of the broadband connection available and the other demands on its capacity. As most businesses rely on broadband for data services as well, many potential users of VoIP who currently use fixed narrowband services may be deterred from adopting this solution by lack of available bandwidth or contention on their current broadband connection (particularly as their wider needs may not justify the extra expense associated with existing higher bandwidth business-specific services e.g. leased lines). An increase in the price of a fixed line plus calls is therefore unlikely to significantly affect the speed of migration. Our discussions with the CPs rolling out this model suggest instead that take-up depends on the speed at which NGA is made available to a greater number of potential users.

5.105 Additional roll-out of fibre and the anticipated take-up of superfast broadband²⁰¹ within the period of this review may facilitate higher quality VoIP at a lower price than traditional business services, and so could potentially increase the competitive constraint from VoIP on wholesale call origination. However, it is difficult to predict how business users will react as this continues, given the range of factors relevant in the purchase decision. For example, switching to VoIP is not costless or risk-free.²⁰² Moving to a VoIP solution may involve investment costs related to the change of equipment which, depending on the size of business, could be significant. Additionally, changing equipment can represent an operational risk.

5.106 Therefore for businesses (particularly larger businesses), we recognise that switching voice services to VoIP may be more viable than for residential consumers (as argued by BT). Indeed, as set out above, there has been a gentle and reasonably constant increase in IP-based services to date (while ISDN volumes have also declined²⁰³). Therefore we expect competition in the business segment from VoIP to increase in the longer term. However, given the significant number of small and medium sized businesses (which, in total, make up the vast majority of all private sector businesses in the UK²⁰⁴) for the majority of whom VoIP is unlikely to be an immediate substitute, it is unlikely that this would be sufficient to constrain wholesale call origination in the period covered by this review.

²⁰⁰ Indeed, as discussed in the 2013 FAMR consultation, while it seems likely that ISDN2 and ISDN30 volumes will continue to fall we consider that there is considerable uncertainty about the rate of decline. See Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013.

<http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

²⁰¹ As discussed in the 2013 WBA Review. See for example Section 3 of Review of the Wholesale Broadband Access markets, 11 July 2013. <http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/>

²⁰² The 2013 FAMR consultation identified some barriers to switching from ISDN to IP-based services, as set out in paragraph 4.52 et seq. (ISDN30) and 5.37 et seq. (ISDN2) of the consultation. Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

²⁰³ However, there is a disparity in rates of growth and decline of the respective services which suggests that there is not a one to one relationship, and therefore we cannot assume that the growth of IP is purely as a result of switching behaviour of ISDN customers. See paragraph 4.42 of the 2013 FAMR consultation.

²⁰⁴ Business Population Estimates for the UK and Regions 2012 Statistical Release, Department for Business Innovation and Skills, 12 October 2012. <http://www.bis.gov.uk/assets/biscore/statistics/docs/b/12-92-bpe-2012-stats-release.pdf>

Overall conclusions on VoIP

- 5.107 In the light of the above, while VoIP services are increasingly substitutable for fixed voice calls on a call-by-call basis, we do not believe that VoIP provides a substitute for narrowband access for the vast majority of residential (and indeed, small business) users. Therefore, our view is that a price increase in wholesale call origination would not trigger sufficient switching to VoIP to render the price increase unprofitable (even if it led to a 5-10% retail price increase, as per our analytical approach set out above), and therefore we do not include it within our market definition.
- 5.108 While we recognise the general trend towards managed VoIP services for businesses, this is currently predominantly the case for larger businesses, which make up the minority of business consumers. Further, it is not clear that an increase in wholesale call origination prices would significantly affect the migration decision for SME businesses discussed above. As a result, we do not consider this general trend would affect our market definition in the period under review, and so do not include managed VoIP in the market definition²⁰⁵.

Indirect demand constraint – competition from text-based and social media services

- 5.109 In addition to mobile and VoIP calls, texting using a mobile phone and potentially emails and social media may act as a substitute for some types of calls when a consumer is choosing whether to make a voice call or use some other mode of communication.

Residential consumers

- 5.110 Text messages are the most-used method for daily communication with family and friends: 54% of United Kingdom adults texted friends and family at least once a day in Q1 2013, a slight decline (4%) from 2012, whereas 45% of United Kingdom adults talk on a mobile every day. Social networking was used daily to communicate by 28% of adults in Q1 2013 (this also saw a slight decline (4%) from 2012).²⁰⁶ Our consumer survey found that 54% of residential consumers agree that sending a text message is a viable alternative to making a call via landline.²⁰⁷ While 39% agreed that sending an email is a viable alternative to making a call.
- 5.111 However, there are barriers to the increasing use of text-based communication. When asked why they do not use text messaging more often at home, versus landline calls, consumers stated a preference to talk to the person, thought that it was not suitable for certain conversations, mentioned the need to obtain an immediate response, and that text would take too long or was inconvenient to use.²⁰⁸ Similar objections were raised to increasing the use of emails.²⁰⁹ While 21% stated

²⁰⁵ In any event, it is not clear that the inclusion of managed VoIP in the market would significantly affect the analysis given the low proportion of the total fixed voice market this constitutes. See for example paragraph 4.97 et seq of the 2013 FAMR consultation. Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

²⁰⁶ Figure 1.50, Ofcom, *Communications Market Report 2013*, August 2013 http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

²⁰⁷ Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom), December 2012

²⁰⁸ Ibid

²⁰⁹ Ibid

that they would switch some landline calls to text messages in response to a 10% price increase in their overall landline bill (16% to email), it is not clear what proportion of calls they would be willing to switch, particularly in the light of the identified barriers to increased use. Critically, as noted in relation to mobile calls (see paragraphs 5.67 to 5.74), relatively few customers would be prepared to give up fixed-line access (10%) or all fixed line calls (11%), and switch to alternatives. As a result, we do not consider it likely over the period of this review that any switching to text or email would be sufficient to make a price increase in wholesale call origination unprofitable.

Business consumers

5.112 As with residential consumers, text messaging and emails may provide an alternative to some fixed-line calls for businesses. In our business survey, 43% agreed that sending a text message is a viable alternative to making a fixed line call, and 67% agreed regarding emails. However, respondents identified that there are barriers to increasing the use of both of these as alternatives to fixed line calls, including the preference to talk, lack of suitability for some types of communication, inappropriateness for contacting clients, the need for the ‘personal touch’ and immediate response, and inconvenience.²¹⁰ Only 6% of respondents stated they would switch some landline calls to email in response to a 10% increase in fixed-line call prices (even fewer stated that they would switch all calls to email).²¹¹ Therefore, combined with the drivers for using fixed line calls set out above, we do not consider that any switching to text or email would be sufficient to make a price increase in wholesale call origination unprofitable.

Overall conclusions on alternative networks

- 5.113 There are a range of potential alternatives to fixed voice calls that are relevant across the range of decisions that consumers make.
- 5.114 While mobile and VoIP (especially for larger businesses) are potential alternatives for fixed calls, the competitive constraint exercised on fixed narrowband calls at the retail level from calls originated on a mobile network or via VoIP, or by text-based services, does not appear to be sufficiently significant for the period covered by this review to justify widening our product market definition (even in the event of a 5-10% retail price increase, as per our analytical approach set out above).
- 5.115 We also do not consider that the constraints posed by these retail alternatives are sufficient *collectively* to constrain a hypothetical monopolist in wholesale call origination. Due to the limited substitution of each alternative individually (as set out for mobile, VoIP, and text-based alternatives in paragraphs 5.90, 5.107 and 5.110 respectively), and particularly as a result of the line+inclusive calls bundle purchase, we do not consider that the combination of these constraints would be sufficient to constrain wholesale call origination prices. In particular, even when combined, we would still expect any actual reduction in fixed calls volumes arising from a SSNIP (over and above any long term trend) to be relatively limited.
- 5.116 Although we do not consider the indirect constraints from mobile and VoIP calls to be sufficient to justify widening the wholesale market definition, we do recognise their interaction with fixed calls at the retail level. As a result, we consider the potential indirect competitive constraints from mobile and VoIP (particularly for larger

²¹⁰ Ibid

²¹¹ Ibid

businesses) in the market power assessment below, even though they are not in the relevant product market.

Different call types

5.117 Retail consumers use their fixed lines to make various types of calls, including to other geographic numbers, to mobile numbers, international calls and for non-geographic call services. A hypothetical supplier of wholesale call origination for one call type could easily switch to providing call origination for another call type following a change in relative prices. Indeed, suppliers provide wholesale call origination services for a number of call types using the same wholesale services set out above in our candidate market (reflecting the fact that CPs tend to provide call services which enable their retail customers to make all types of calls). This suggests that all wholesale call origination services should be treated as part of the same market, irrespective of the type of number being called, on the basis of supply-side substitutability.

Different retail bundles

5.118 We recognise the continuing trend towards bundling of voice and broadband in the retail market, as set out in Section 3, with a significant proportion of residential consumers purchasing bundles of broadband and voice together (65% of those with a landline as at Q1 2013). At the same time, a material proportion of residential customers with a landline (16% in Q1 2013) continue to take fixed voice but not broadband – voice-only customers – with the most popular reasons given being they do not want or need it.²¹² BT has argued (as summarised above) that we should assess these customer groups separately.

5.119 At the retail level, we consider there is likely to be limited substitution between dual-play and voice-only packages in response to relative price changes in either direction. Those who already take broadband with their fixed line are unlikely to downgrade to a fixed voice-only package if the price of their dual-play package increased, particularly given that many of these customers take a fixed line to support broadband access (see discussion above, in paragraphs 5.71). The majority of dual-play customers are also unlikely to switch to purchasing the two products separately, given the higher price this typically entails. Similarly, most voice-only consumers would be unlikely to switch to a dual-play offer in response to an increase in the price of their voice-only package as this would be likely to entail an increase in their expenditure for a service which their current behaviour suggests they do not value. We consider any substantial migration particularly unlikely, given the current differential in prices²¹³ and we would still consider it unlikely even if this differential were to narrow significantly.

5.120 At the wholesale level, the alternatives for supplying voice-only customers with wholesale call origination differ from the alternatives for supplying those taking bundled offers. As discussed above, wholesale call origination can currently be

²¹² In Q1 2013 44% of customers not purchasing internet services stated they do not do so because they do not need it and 25% because they do not want a computer. 16% of these customers are likely to be very price sensitive, saying that price is the main reason for not purchasing broadband services (although some respondents that do not want a computer may do so for the expenditure that this would involve. See Figure 5.68, Ofcom, *Communications Market Report 2013*, August 2013.

http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

²¹³ For example, the price differential between BT voice-only offer for residential customers “Unlimited Evening & Weekend Calls” and the corresponding dual-play offer “Unlimited Broadband” is £9/month, (see <http://www.productsandservices.bt.com/products/landline/packages>).

provided over WLR (with or without SMPF), MPF, or cable, but their suitability for different customer types varies:

- a) voice-only customers – MPF is not used as an input for all retail voice calls, as it is typically commercially viable only when used to provide a bundle of voice and broadband. This is because although MPF can technically be used to provide fixed voice calls to voice-only consumers, the level and structure of regulated wholesale charges relative to retail prices means that it is not typically economic to use MPF to supply voice-only customers, and this would remain the case even following a relatively significant increase in the retail price of a voice-only package. These customers can therefore only be supplied using wholesale call origination provided over WLR on BT's network or, in areas where cable is present, over Virgin Media's cable network. An increase in the price of call origination at the wholesale or retail level would be unlikely to lead to any supply-side substitution by MPF operators into this market as the price rise would need to be substantial for it to become economic to do so.
- b) dual-play bundle customers – for customers taking voice and broadband services from the same CP, wholesale call origination can economically be provided using MPF, WLR (alongside SMPF for the broadband service) or cable, subject to respective footprints/availability.

5.121 We have therefore considered whether there might be a case for defining separate wholesale call origination markets according to whether it is used to supply voice-only customers or customers taking a dual-play offer (who can be served using MPF within the MPF footprint).²¹⁴

5.122 However, these are not the only relevant customer groups. While bundling is undoubtedly increasing overall, it is possible to purchase broadband and fixed voice separately, and a material proportion of consumers purchasing both products exercise this option. This is despite the (often) material savings offered by the dual-play packages. This includes approximately 18% of residential consumers with a landline²¹⁵, and we also consider it likely that a large number of business users who purchase business-specific offerings (who in total account for 16% of fixed analogue exchange lines²¹⁶) purchase voice and broadband separately. These customers cannot be supplied wholesale call origination using MPF unless they switch to a retail dual-play bundle (as it is not economic for voice-only over MPF, as discussed above for voice-only customers). We consider that any barriers to migration to a dual-play bundle by these customers are likely to vary within the segment:

- a) some of these customers will be purchasing voice and broadband separately for legacy reasons only. Such customers could easily migrate to a dual-play offer over MPF where it is available (and it is likely to be in the LLU operators' interests to switch these customers onto a dual-play package wherever possible).

²¹⁴ The impact of bundles on the retail market was also discussed in the 2013 WBA Review, see for example paragraph 3.53 et seq. (the relevance for the wholesale market was discussed in paragraph 3.148 et seq.). Review of the Wholesale Broadband Access markets, 11 July 2013.

<http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/>

²¹⁵ These figures are based on data collected from the Ofcom Technology Tracker, Q1 2013, http://stakeholders.ofcom.org.uk/binaries/research/statistics/2012apr/Ofcom_Technology_Tracker_Wa1.pdf Note, this 18% is made up of 11% who buy voice and broadband from different CPs, and 7% who purchase both services from the same CP but not in bundle or package (they consider their fixed line as a standalone product).

²¹⁶ As estimated in the 2013 FAMR consultation.

Therefore these customers are likely to be more comparable to dual-play customers.

- b) however, not all split purchasers are legacy customers, and in fact some appear to be buying voice and broadband separately as it gives them something that the dual-play bundle cannot.²¹⁷ For example, there is evidence that some switchers in the last year have purchased voice and broadband separately: [X].²¹⁸ Many businesses may also be in this group, as many are likely to have needs that would not be well-served by the dual-play MPF offer (e.g. because they need additional fixed lines for voice-only services²¹⁹) or require a service with features not commonly supported in the MPF-based offers of the largest LLU operators (given that not all major LLU operators offer a comprehensive suite of services aimed at the business sector). This is reflected in the lower penetration of the LLU operators in this segment, which we discuss in more detail in paragraph 5.195. For this group of non-legacy customers, the barriers to migration to a dual-play bundle may be material, and so are likely to be more comparable to voice-only customers for the purposes of considering voice services.

5.123 These residential and business customers who purchase voice and broadband separately for non-legacy reasons could account for a relatively significant proportion of those taking both fixed voice and broadband services, for whom there are constraints in the suitability of MPF (even where it is available) for the provision of wholesale call origination. As such, it would appear that MPF is not necessarily a perfect substitute for WLR+SMPF for all voice and broadband customers, even where it is available, in this review period.

5.124 Finally, customers living in non-MPF areas will have to be supplied using BT's wholesale call origination (using WLR) – regardless of whether they are dual-play or not.

5.125 As a result, if we segment the market for wholesale call origination between voice-only customers and all voice+broadband customers (i.e. split purchasers and dual-play bundle customers combined, as we consider it is likely to be difficult for BT to accurately distinguish between them²²⁰), there would still be a material group of customers in the latter market that are not voice-only customers but for whom a dual-play bundle over MPF may nonetheless not be suitable. This includes those who live in non-MPF areas and (to some extent) those who purchase the two products separately (including a large number of business users). For these voice and

²¹⁷ Some may also be doing so because they are outside of the MPF footprint.

²¹⁸ [X]

²¹⁹ Alternatively, some businesses that require multiple voice lines may actually purchase voice and broadband in a bundle, and then purchase additional solus voice lines (although the lower penetration of LLU operators in businesses may suggest this is limited). In any event, to the extent this was the case, the competitive conditions for the solus lines purchased would be akin to voice-only customers (while the bundle element would be reflective of the dual-play customers).

²²⁰ We consider that BT would in theory be able to distinguish (although not necessarily perfectly) between wholesale call origination intended for a voice-only customer and that intended for a customer taking voice and broadband (either separately or together) by looking at whether SMPF is also provided on the WLR line (either purchased by the same CP or another). However, we consider it unlikely that BT could precisely distinguish at the wholesale level between wholesale call origination purchased by a CP for the provision of retail services to a split voice and broadband customer and that for the provision of retail services to a dual-play bundle customer (particularly given the presence of resellers). Therefore on this basis, we consider it appropriate to consider the split purchasers of voice and broadband together with the dual-play bundle customers in a single voice+broadband market segment for the purposes of this analysis.

broadband customers, the provision of wholesale call origination using MPF is not economically viable, and so these customers will have limited or no alternative to retail services based on BT's wholesale call origination (provided over WLR), despite buying both voice and broadband services (albeit separately).

- 5.126 Therefore we do not consider that defining separate markets according to retail customer segments results in clearly defined and demarcated variations in competitive conditions for wholesale call origination. On this basis, we consider the two segments are sufficiently homogenous in terms of competitive conditions to define a single market encompassing both.
- 5.127 We consider this view may be reinforced by the anticipated move towards broadband over fibre. As MPF cannot be used to provide superfast broadband (rather VULA is currently required instead²²¹), this migration to fibre may limit any further increase in deployment of MPF and the competitiveness of the dual-play segment (this is discussed further in paragraph 5.179).
- 5.128 As a result, we consider that all wholesale call origination (irrespective of the retail offering it is an input for) should be considered part of the same market. However, although we have defined a single market for wholesale call origination used to supply voice-only customers and customers purchasing both voice and broadband, we recognise that these competitive variations may have an impact on our analysis of SMP and consideration of remedies, which we reflect further below.

Residential and business

- 5.129 Retail competition for calls (and suitability of alternatives) may differ between residential and business consumers, as reflected in the above analysis of indirect constraints. Additionally, we recognise that at the wholesale level the CPs targeting the business sector are currently more reliant on BT's wholesale call origination than the CPs operating in the residential sector²²², where MPF and cable penetration is significantly higher (see paragraph 5.195). However, we do not consider this is a sufficient basis to define two separate markets.
- 5.130 Firstly, we note that the wholesale call origination product used for calls made by businesses and for calls made by residential consumers will effectively be the same (although different features may be supported, for example for ISDN calls). A supplier of wholesale call origination to residential customers could therefore easily supply wholesale call origination to businesses (and vice versa) depending on access network requirements. As a result, identifying different wholesale charges on a call-by-call basis according to whether the retail CP is supplying a business or residential customer is likely to be complex, and the supplier of wholesale call origination is unlikely to be able to accurately identify whether, for many retail CPs, it is business or residential consumers who are being served (particularly when purchased alongside WLR, as they will each use identical lines).

²²¹ VULA (or virtual unbundled local access, currently provided as Openreach's GEA wholesale product) is the external fibre product allows competitors to deliver services over BT's NGA network with a degree of control that is similar to that achieved when taking over the physical line to the customer. The voice service can be provided alongside VULA via WLR (and therefore wholesale call origination) or via MPF.

²²² We note that there are other business-specific communications services available, as discussed in the Business Connectivity Market Review – Final Statement, 28 March 2013.
<http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/>

- 5.131 Secondly, we acknowledge that there is likely to be some blurring at the retail level between business and residential consumers (for example, with some SMEs purchasing “residential” telecommunications services). Further, we note there is likely to be a wide range of business needs even within this segment. However, we do not consider a detailed segmentation exercise and assessment of substitution patterns for business users to be proportionate (even if it were practical) given the breadth of the relevant considerations for businesses.
- 5.132 Finally, the wholesale call origination product used to support business and residential services is likely to be sufficiently interchangeable as to be viewed by customers (retail CPs) as effective substitutes.
- 5.133 We therefore consider that there is a single market for wholesale call origination which should not be segmented according to residential and business end users. However, we recognise that variations in competitive conditions between the two customer groups at the retail level might have an effect on the assessment of SMP and consideration of remedies, which we reflect further below.

Conclusion on product market

- 5.134 Based on the assessment above, our conclusion is that wholesale call origination is not sufficiently constrained by mobile, VoIP or text based services for these other services to be included within the same relevant market. As a result we define a product market for wholesale call origination, which includes all wholesale call origination (including that used to supply retail CPs targeting both the residential and business segment, and voice-only and dual-play customers).

Geographic markets

- 5.135 The purpose of geographic market definition in the context of a market review is to identify areas where competitive conditions are similar. This enables us to assess which CPs, if any, have SMP and, if so, in which geographic areas. Depending on the degree and type of variation (and homogeneity) in competitive conditions, a market review may reflect geographic variations by defining separate geographic markets and consider market power and specific remedies in each individually.
- 5.136 We start with two candidate geographic markets in line with the retail markets they serve, and from which demand for wholesale call origination is derived:
- a) The United Kingdom; and
 - b) The Hull Area.
- 5.137 The characteristics of these geographic areas are sufficiently different to consider these areas separately as the competitive conditions (in terms of market participants and their relative positions) vary significantly between the two areas. The provision of wholesale call origination in these areas is by different networks with no overlap in market participants. In addition, there is no prospect of supply-side substitution between the two areas unless significant infrastructure investment were to occur. This has not happened to date and does not seem likely in the period of this review – even in response to a significant price increase in one area.
- 5.138 We have also considered the extent to which the geographic markets might be further segmented according to differing conditions of competition in different geographic areas.

- 5.139 First, as argued by BT, we recognise there may be some variation in the competitive conditions in different areas of the United Kingdom due to the availability of MPF²²³ and cable.²²⁴
- 5.140 Where LLU is present, the majority of lines (excluding BT's own internal use of LLU²²⁵) are MPF, with SMPF representing approximately a quarter of external LLU lines (March 2013²²⁶ – see Figure 3.4 in Section 3 for how this has changed over time). This means that in many LLU-enabled areas, there is likely to be at least one MPF-based wholesale alternative to BT's wholesale call origination (over WLR) for the supply of retail services to dual-play customers. In LLU-enabled areas where more than one operator has invested in MPF, there could be multiple operators able to supply wholesale call origination in competition with BT. Therefore in these areas, MPF and WLR+SMPF are likely to be close wholesale substitutes for dual-play customers. Where such areas overlap with Virgin Media's cable network, the number of wholesale alternatives could increase further still. In contrast, where there is no MPF and Virgin Media's cable network is not present, CPs supplying dual-play customers with calls will be completely reliant on BT's wholesale product to do so.
- 5.141 There is therefore a range of competitive conditions across areas for wholesale call origination. The most competitive of these localities may offer a degree of choice comparable with the local markets we chose to deregulate in the 2010 WBA market review. As a result, we recognise there may theoretically be a case for defining separate geographic markets on the basis of the number of LLU operators that use MPF present in an exchange. Indeed, BT suggested (as set out above) this could be done along similar lines to the 2010 WBA market review²²⁷.
- 5.142 In the WBA markets, geographic markets are defined on the basis of the number of operators alone since an LLU operator will always offer broadband services in those exchanges. However, the presence of an LLU operator in an exchange does not guarantee that it is capable of offering voice services to all customers even where it is present. Rather, it will also depend on the form of LLU (SMPF does not support the self-supply of voice services²²⁸) and the type of customer (as discussed above in paragraph 5.120 to 5.123), even MPF cannot economically be used to provide wholesale call origination to all retail fixed voice customers). This means that the approach to geographic market definition adopted in the WBA markets (based on the number of LLU operators in an exchange) is not as meaningful for wholesale call origination
- 5.143 Therefore, even in areas where there are multiple operators, there is a material group of customers (including voice-only customers, split purchasers of voice and

²²³ As at December 2012, approximately 94% of premises were connected to an LLU-enabled exchange, although not all is MPF. Figure 1.2, Ofcom, *Communications Market Report*, August 2013. http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr13/2013_UK_CMR.pdf

²²⁴ The cable footprint is largely within the LLU footprint.

²²⁵ BT uses SMPF to supply its broadband customers, and so including its own internal use in this analysis risks overstating the extent of SMPF use by LLU operators.

²²⁶ BT quarterly KPIs.

²²⁷ See Review of the Wholesale Broadband Access Markets, Ofcom, 3 October 2010. <http://stakeholders.ofcom.org.uk/consultations/wba/wba-statement/>. Geographic markets are also proposed in 2013 WBA Review consultation (see Review of the Wholesale Broadband Access markets, 11 July 2013 <http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/>).

²²⁸ This issue does not arise in broadband as all LLU (both MPF and SMPF) can be used to supply broadband services to any retail broadband customers in those exchanges.

broadband, and some business customers²²⁹) whom LLU operators will not be able to self-supply wholesale call origination using MPF unless they can successfully migrate them to a bundle also containing broadband. This may be relatively easy to achieve where customers purchase separate voice and broadband for legacy reasons alone. However, voice-only customers are unlikely to be willing to switch to a dual-play offer (as discussed above), and some customers who currently purchase voice and broadband separately are likely to have incentives to continue to do so because it offers something the dual-play offer cannot (see paragraph 5.122). For this group of people, the barriers for CPs to migrate them to MPF are more significant.

- 5.144 As a result, the presence of a material group of customers in LLU areas who cannot be economically served using MPF during the course of this review period – even in areas where there are multiple MPF operators – means that the competitive differences between LLU and non-LLU areas are not clear cut (nor as marked as those we found in the 2010 WBA market review²³⁰). As discussed at paragraph 5.125, BT’s ability to differentiate between particular customer groups (and particularly those that have a choice of operator in LLU areas) for the purposes of setting wholesale charges is unclear, but potentially limited. Therefore the competitive conditions for wholesale call origination would be an average, reflecting both the number of operators and the presence of each of these different customer groups. While we consider that the competitive conditions where there are CPs in addition to BT (such as LLU operators using MPF and/or Virgin Media) are likely to be different to those in areas without competitors to BT, the material proportion of fixed-line users without alternatives in all areas mean that the differences in competitive conditions are likely to be relatively low (and substantially less than what was found to be the case in the 2010 WBA market review. Because of this, it is not clear that we could establish effective measures to meaningfully delineate competitive conditions in order to define separate geographic markets for the purposes of carrying out a market assessment for the period covered by this review.
- 5.145 We also recognise that as submitted by BT (summarised above) there is a degree of interaction between product and geographic market definition in this context. In particular, we are aware that if we were to define separate markets for voice-only and dual-play customers, there may be a case for defining different geographic markets for each. For voice-only customers, we would be likely to define a single market for the United Kingdom excluding the Hull Area on the basis of similar competitive conditions throughout. For customers taking both voice and broadband, we recognise there would be a stronger case for defining more localised geographic markets based on the number of LLU operators using MPF present in an area.
- 5.146 However, we are not convinced that this would be appropriate for this market review. In particular, the interactions with the upstream unbundled remedies described above (which are currently imposed nationally), in paragraph 5.11 to 5.15 remain relevant. Further, as also noted above a material proportion of customers taking both voice and broadband in LLU enabled areas are currently supplied with wholesale call origination using BT’s wholesale product. We are not confident that these customers

²²⁹ Voice-only customers and split purchasers together account for approximately 35% of all residential landline users and are present across the UK excluding Hull. In addition, we consider that a large number of business users (accounting for 16% of total lines) are also likely to have limited alternatives to BT’s wholesale call origination given that LLU operators do not tend to offer business-focused services – see further discussion in paragraph 5.195.

²³⁰ Or indeed as proposed in the 2013 WBA Review.

would be willing or able to switch to an MPF alternative in the event of an increase in the price of their fixed access and calls bundle. This includes:

- a) customers who currently choose to purchase voice and broadband separately because doing so provides something that dual-play cannot (up to 18% of residential fixed lines customers);
- b) business fixed-line consumers who purchase voice and broadband separately and/or for whom MPF cannot meet their needs (up to 16% of fixed lines); and
- c) dual-play customers served by LLU operators using a combination of SMPF plus WLR, or indeed VULA plus WLR (approximately 7% of retail (residential and business) exchange lines²³¹). We understand from LLU operators that they intend to convert as many SMPF lines to MPF as possible since it is more profitable for them. However, the speed and extent to which they do so is affected by factors which are not related to the price of wholesale call origination, and the impact of fibre take-up on further conversion is also uncertain.²³²

5.147 The existence of these customers for whom MPF is not a suitable substitute for WLR+SMPF means that the competitive conditions for wholesale call origination even for customers taking voice and broadband are likely to be more homogenous between geographic areas than if all customers were able to take a dual-play bundle over MPF.²³³

5.148 Therefore, even though the competitive conditions vary between geographic areas, we do not believe that the variation is sufficient to define different geographic markets for dual-play customers (or indeed the degree of variation is as stark as is the case for the WBA market review). Further, we consider that the interactions with upstream unbundled remedies means it is more appropriate to define a single geographic market for the United Kingdom for this review period. However, in recognition of the fact that there are potentially geographic variations in competitive conditions (reflecting, also, retail products purchased) and the fact that market definition is not an end in itself, we consider the impact of these variations in the market power assessment and in the remedies discussion below.

5.149 We also conclude that there is a separate (but single) market within the Hull Area. Since there is no cable or LLU footprint in this area, there are no geographic variations in competitive conditions that justify defining more localised markets.

Conclusion on market definition

5.150 In the light of the above, we consider that the relevant product market is wholesale call origination on a fixed narrowband network (including self-supplied services), and there are two geographic areas:

- a) the United Kingdom; and
- b) the Hull Area.

²³¹ Based on 33.1m exchange lines in Q4 2012 (Ofcom Telecoms Data Updates) and 2.3m SMPF + external fibre on WLR lines in Q4 2012 (BT Revised Key Performance Indicators 2011/12 & 2012/13).

²³² These factors are discussed further in paragraph 5.179..

²³³ This is different to the situation in WBA where the variations in competitive intensity are more closely linked to geography.

Market power assessment

5.151 Having set out our analysis and conclusions on market definition, we now consider the market power assessment within the identified markets.

Proposals in the February 2013 consultation

5.152 We proposed that:

- a) BT has SMP in the market for wholesale call origination on a fixed narrowband network in the United Kingdom; and
- b) KCOM has SMP in the market for wholesale call origination on a fixed narrowband network in the Hull Area.

Stakeholder responses to the February 2013 consultation

5.153 Several respondents (including EE²³⁴, [X]²³⁵, [X], Lexgreen Services²³⁶, Lanonyx²³⁷, TalkTalk²³⁸, Virgin Media²³⁹, and Vodafone²⁴⁰) explicitly agreed with our proposed finding that BT has SMP in the market for wholesale call origination on a fixed narrowband network in the United Kingdom.

5.154 However, BT²⁴¹ did not agree with our proposed market power assessment, and argued that:

- a) Our analysis in the February 2013 consultation largely replicated the market definition analysis, without any quantitative evidence. Instead it argued that we relied on assertions of dependency on BT of a minority of customers and some CPs, without any allowance for indirect constraints (which should be considered, even if not included in the market definition). BT also argued against using LLU operators' current purchases of wholesale call origination as key evidence of limited constraint on BT, stating that Ofcom asserts dependency rather than demonstrates it. The analysis of indirect constraints (including for mobile and VoIP which are outside of the market definition) is set out in paragraphs 5.201 to 5.207, which also includes detailed analysis of the constraints available for particular customer groups (including how they differ) and from LLU operators.
- b) The SMP finding is effectively based on a single market share indicator, which is in itself unreliable. In particular, BT argued that the market share figure we relied on in the February 2013 consultation is too high, and that in the absence of regulation it is likely to be even lower (even below 25%) because LLU operators will self-supply even more.²⁴² Our approach to the market power assessment, including the range of factors we have considered, is set out in paragraph 5.162 to 5.165. We discuss BT's market share (including in the light of revisions it made to the volume data it provided) in paragraph 5.169 onwards, while the ability of

²³⁴ EE response to the February 2013 consultation

²³⁵ [X] response to the February 2013 consultation

²³⁶ Lexgreen Services Ltd response to the February 2013 consultation

²³⁷ Lanonyx response to the February 2013 consultation

²³⁸ TalkTalk response to the February 2013 consultation

²³⁹ Virgin Media response to the February 2013 consultation

²⁴⁰ Vodafone response to the February 2013 consultation

²⁴¹ BT response to the February 2013 consultation

²⁴² P13-15, Copenhagen Economics annex to BT's response to the February 2013 consultation

LLU operators to increase self-supply further (in the absence of wholesale call origination regulation) is considered in paragraph 5.179.

- c) We have not adopted true modified Greenfield assumptions in our analysis, e.g. we have not reflected BT's true incentives to continue to supply in the absence of regulation. Our analysis of BT's incentives in the absence of regulation, including maintaining supply, is set out in paragraph 5.222 onwards.

5.155 BT also argued that there was no equivalent discussion of MPF alternatives for businesses as is done for residential consumers. Further, in the light of the strong actual and expected decline in fixed calls for businesses and greater alternatives for them from mobile and VoIP, it argued that there are limited concerns around business customers. MPF alternatives for business consumers is discussed in paragraph 5.195, while the potential constraints for these customers from mobile and VoIP are discussed in paragraph 5.201 onwards.

5.156 BT also argued that we expressed a static view of the market rather than a forward look in the market power analysis. We consider that our analysis is forward looking throughout (see for example our analysis of consumers throughout the review period, set out from paragraph 5.187 onwards).

5.157 All the respondents who commented on the SMP assessment in the Hull area ([X], [X], Lexgreen Services, Lanonyx²⁴³, TalkTalk) agreed with our assessment that KCOM has SMP in the market for wholesale call origination on a fixed narrowband network in the Hull area.

Our analysis and conclusions

5.158 Having identified the relevant product and geographic markets, Ofcom is required to analyse each market in order to assess whether any person or persons have SMP as defined in Section 78 of the Act (Article 14 of the Framework Directive).

5.159 Section 78 of the Act provides that SMP is defined as being equivalent to the competition law concept of dominance in accordance with Article 14(2) of the Framework Directive which provides:

"An undertaking shall be deemed to have significant market power if, either individually or jointly with others, it enjoys a position equivalent to dominance, that is to say a position of economic strength affording it the power to behave to an appreciable extent independently of competitors, customers and ultimately consumers."

5.160 In assessing whether an undertaking has SMP, Ofcom has taken due account of the EC's SMP guidelines²⁴⁴ ('SMP Guidelines') as it is required to do under Section 79 of the Act and, where relevant, we have had regard to the equivalent guidelines published by Oftel²⁴⁵ and the ERG's revised working paper on SMP²⁴⁶ ('ERG Revised SMP Paper').

²⁴³ Lanonyx response to the February 2013 consultation

²⁴⁴ Commission guidelines on market analysis and the assessment of significant market power (2002/C165/03) – 11 July 2002, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF>

²⁴⁵ Oftel's market review guidelines: criteria for the assessment of significant market power, http://www.ofcom.org.uk/static/archive/oftel/publications/about_oftel/2002/smpg0802.htm

- 5.161 The purpose of the market analysis conducted under Article 16 of the Framework Directive is to determine whether a market is effectively competitive. Where national regulatory authorities determine that a market is not effectively competitive, they shall identify undertakings holding SMP on that market.
- 5.162 The analysis is undertaken through a forward-looking evaluation, assessing whether the market is prospectively competitive, taking account of foreseeable developments. As well as considering any variations in competitive conditions according to geography and/or customer segments (as set out above), we also consider any competitive constraints coming from services which we considered to be outside the scope of the relevant market (e.g. mobile and VoIP), as discussed above.
- 5.163 Market share is an indicator of market power although the SMP Guidelines state that high market share alone is not sufficient to establish the possession of significant market power. The SMP Guidelines further state that:²⁴⁷
- “In the Commission's decision-making practice, single dominance concerns normally arise in the case of undertakings with market shares of over 40 %, although the Commission may in some cases have concerns about dominance even with lower market shares [...], as dominance may occur without the existence of a large market share. According to established case-law, very large market shares — in excess of 50 % — are in themselves, save in exceptional circumstances, evidence of the existence of a dominant position [...] An undertaking with a large market share may be presumed to have SMP, that is, to be in a dominant position, if its market share has remained stable over time [...]. The fact that an undertaking with a significant position on the market is gradually losing market share may well indicate that the market is becoming more competitive, but it does not preclude a finding of significant market power.”*
- 5.164 However dominance cannot be established on the basis of market share alone. A thorough and overall analysis is required before coming to a conclusion on the existence of SMP. The SMP Guidelines list a number of non-exhaustive criteria to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers.²⁴⁸
- 5.165 We have considered the following criteria to be of particular relevance to this review:
- a) market share (current and future);
 - b) pricing and profitability;
 - c) degree of substitution of competing services at the wholesale and retail level, and constraints provided; and
 - d) barriers to expansion (particularly of LLU operators), and the strength of countervailing buyer power.
- 5.166 In the light of our conclusions on market definition, we have undertaken the SMP assessment in the national market as a whole for the United Kingdom, and for all wholesale call origination (irrespective of the retail service it is an input for). In doing so, we reflect on potential variations in competitive conditions for different customer

²⁴⁶ Revised ERG Working paper on the SMP concept for the new regulatory framework, ERG (03) 09rev3, September 2005.

²⁴⁷ Ibid. See paragraph 75

²⁴⁸ Ibid, See paragraph 78

segments and areas (as discussed in paragraphs 5.118 onwards and 5.135 onwards) as part of our market power assessment.

The United Kingdom

Summary of market power analysis

5.167 The increase in the use of MPF by LLU operators since the last market review and higher dual-play take up by consumers mean that there are more effective constraints on BT since the last review. However, our conclusion is that BT continues to have SMP in wholesale call origination, and will continue to have for the period covered by this review, for the following reasons:

- a) BT still has approximately a 62% market share of wholesale call origination on fixed narrowband networks (although BT's market share has declined from a level of approximately 73% in 2009 when the market was defined on the same basis).²⁴⁹
- b) In the absence of regulation, BT would not face a sufficiently strong constraint on the price of wholesale call origination:
 - i) Despite the significant development of LLU, wholesale call origination provided using MPF is not currently a perfect substitute for all wholesale call origination using WLR, so LLU operators (even in on-net MPF areas) cannot fully compete with BT for a number of important customer segments and this is unlikely to change significantly during the review period. Further, the impact on MPF of customer migration to broadband over fibre is uncertain.
 - ii) At the retail level, there are constraints to switching away from services based on wholesale call origination both in relation to certain groups of customers and in relation to bundles of services:
 - o Certain customer groups have no retail substitutes to a service using BT's wholesale call origination input e.g. voice-only customers and those outside the MPF/cable footprint. Additionally, business users and some of those residential consumers who currently purchase voice and broadband independently of each other may not be willing or able to switch to a bundled offer if the split purchase provides them with something the bundle cannot. As such, they also have limited alternatives to products based on BT's wholesale call origination. We consider that this limits the constraints on BT, and we do not consider that mobile or VoIP provide a sufficiently close substitute to a sufficient proportion of customers within these groups.
 - o Bundling (of inclusive minutes, as well as other services such as broadband and TV) might mean that even consumers who do have an alternative are less likely to switch their entire bundle as a result of a price increase on their fixed calls package alone.
 - iii) There are non-price barriers to the speed and extent of increased self-supply (and to the supply of third-party wholesale call origination) in the review period, therefore the constraint from LLU operators in on-net MPF areas will remain somewhat limited.

²⁴⁹ Ofcom, *Review of the fixed narrowband services wholesale markets*, March 2009, Paragraph 6.83, http://stakeholders.ofcom.org.uk/binaries/consultations/review_wholesale/summary/fnwm.pdf

- iv) The countervailing buyer power of CPs is not likely to be significant, and the trend in BT's wholesale call origination prices would tend to suggest that BT was constrained only by the price cap in place.

5.168 Therefore, our conclusion is that – although BT's market share has declined since the last review reflecting the greater competitive constraints BT faces (particularly for some customer segments in some areas) – BT will continue to hold a position of SMP in wholesale call origination for this review period.

Market share

5.169 Current suppliers of wholesale call origination on a fixed narrowband network in the United Kingdom include:

- a) BT;
- b) CPs using MPF (including Sky, TalkTalk, and for some customers, Vodafone) who self-supply to their own retail business but may also provide wholesale call origination to other CPs; and
- c) CPs using their own direct access network (for example, Virgin Media, Vodafone, Gamma, COLT and Verizon) who self-supply to their own retail businesses but may also provide wholesale call origination to other CPs.

5.170 The shares of these players in the wholesale call origination market are set out in Table 5.2.²⁵⁰ There are also some other CPs who resell wholesale call origination they have purchased from BT. As they are reselling BT's wholesale inputs, we have not reflected them in the market share analysis.

²⁵⁰ To calculate the market shares, we have used the self-reported self-supply wholesale call origination minutes for each of the six main CPs issued with an s135 (BT, Sky, Virgin Media, TalkTalk, Vodafone, and Gamma). The determination of these market shares does not take into account the self-supply of smaller CPs for whom we have not gathered volumes for this market review. However, comparison of the total volume from data gathered during this market review with total volume from Ofcom's Quarterly Telecoms Update show that the volumes of these smaller CPs is not significant enough to have any material impact on the market share of the large CPs and BT in particular.

Table 5.2: Estimated share of the wholesale call origination market

	BT	Other network operators' self-supply ²⁵¹
Estimated market share 2011/12 (restated ²⁵²)	66%	34%
Estimated market share 2012/13	62%	38%

Source: CP s135 data. Due to categorisation issues, one stakeholder [X] provided an upper and lower bound for their self-supply wholesale call origination volumes. We have used the upper bound in these market share estimates, so as not to overstate BT's market share.

Another CP [X] was unable to provide all wholesale call origination volumes purchased from BT (specifically, some limited call types were excluded), but we note that any impact of this omission on the data presented would also tend to be to understate BT's market share.²⁵³

Note, self-supply means the CPs supply using their own network, whether to supply their own retail customers or to wholesale to other CPs.

5.171 BT has a market share of approximately 62% for wholesale call origination in 2012/13 (inclusive of that which is supplied for its own retail service and that which it sells to other CPs). In line with the SMP guidelines and competition law principles, BT is therefore likely to enjoy a dominant position in the defined market due to a market share in excess of 40%. However, dominance cannot be established on the basis of market share alone and an overall analysis is required before coming to a conclusion on the existence of SMP. We therefore consider the extent of future constraints posed by other CPs on BT in paragraph 5.177 onwards.

BT's pricing and profitability

5.172 As explained above (see paragraph 5.34), our analysis of market power is conducted on the basis of an absence of regulation in wholesale call origination (the so called 'modified Greenfield' approach). However, evidence of BT's actual behaviour is informative for the assessment of this hypothetical scenario.

5.173 Based on confidential information received from BT, in the first three years of the existing charge control (years ending 2010 to 2012), BT has essentially been pricing at (or very close) to the level of the cap set by Ofcom.

5.174 In some wholesale markets subject to a charge control, the presence of (some) competitive constraints during the control period has led to prices below the cap and, in some cases, substantially below the cap.

5.175 Although pricing at the cap does not necessarily mean that removal of the cap would lead to a substantial increase in prices, the evidence on BT's pricing strategy for

²⁵¹ This includes self-supply by CPs using LLU and/or their own direct access networks (where relevant).

²⁵² In the February 2013 consultation, we estimated that BT held a 67% market share for supply of wholesale call origination. Since then, BT has revised downwards its internal volume figures for 2011/12. The self supply by another respondent has also subsequently been revised upwards. The impact on 2011/12 market share of these two changes has however been relatively limited.

²⁵³ This data collection issue also affected self-supply wholesale call origination volumes from that CP, meaning the CP relied on estimates for some (limited) call types. However, cross checks conducted by the CP indicated that the final self-supply data submitted (reflecting these estimates) was free from material error. [X].

wholesale call origination suggests that there are limited competitive constraints that prevent BT from pricing at the maximum level permitted. However, BT has also been subject to a no undue discrimination obligation, which may mean its current average price is not reflective of the level it would price at in the absence of *ex ante* regulation (or indeed the no undue discrimination obligation). In particular, without regulation, we could see BT increasing charges for some customers and/or market segments, and decreasing prices for others, which could result in a different average price level to that observed to date. We therefore do not draw firm conclusions about BT's pricing in the absence of regulation from its pricing to date, other than that it does not appear to have been constrained by competition to set an average price below the price cap.

- 5.176 We now examine wholesale constraints from cable and MPF operators, before considering indirect constraints from other retail services.

Wholesale constraints from MPF and cable

- 5.177 LLU operators using MPF and Virgin Media provide an alternative wholesale service to BT's wholesale call origination, which they currently use predominantly to self-supply wholesale call origination. Since the last market review, LLU operators have increasingly focused on supplying customers using MPF and there has been an increase in dual-play bundle take-up. This means wholesale call origination using MPF is a potential substitute for BT's wholesale call origination for a large number of CPs (and retail customers) in those areas where it is available. Voice services originated over MPF lines have increased since the last review, increasing the competition to BT's wholesale call origination and contributing to the decline in BT's share of the market from an estimated 73% in 2007.²⁵⁴
- 5.178 Despite the significant increases in self-supply over MPF (or cable), operators using these infrastructures still purchase BT's wholesale call origination to complement offers based on their own networks in the retail market, even though it is usually more profitable for them to self supply for dual-play customers using MPF (or cable). For example, in 2012/13, approximately [X] of total wholesale call origination minutes used²⁵⁵ by the two main LLU operators (Sky and TalkTalk) was purchased from BT, with the rest self-supplied using their own networks. This holds true not only in areas where they do not have a footprint, but also in areas where they do (as discussed in paragraph 5.142). This therefore suggests that while MPF is a close substitute to wholesale call origination using WLR/WLR+SMPF for the provision of voice and broadband services, there are constraints in its substitutability for wholesale call origination in this review period when all customer segments/geographic areas are considered.
- 5.179 While we expect that the use of MPF may continue to erode BT's market share during the period covered by this market review, we consider that there are a range of factors which suggest that the rate of increase of MPF lines, beyond where they are currently available could be slower than it has been in the past three years (even in the absence of wholesale call origination regulation):

- a) **The pace of unbundling exchanges is likely to slow down.** We expect the pace at which exchanges are being unbundled by LLU operators to slow in the

²⁵⁴ Ofcom, *Review of the fixed narrowband services wholesale markets*, March 2009, Paragraph 6.83, http://stakeholders.ofcom.org.uk/binaries/consultations/review_wholesale/summary/fnwm.pdf

²⁵⁵ This could be used for supplying their own retail customers and/or for supplying other CPs at the wholesale level (to enable them to offer their own retail services).

future, because the remaining exchanges are smaller, more remote exchanges where unit costs (and total costs) increase sharply. The sunk cost of extending the LLU footprint to these areas is likely to be significant, and expected revenues are likely to be limited due to the substantially smaller number of customers served by these (more marginal) exchanges.²⁵⁶ The cost of extending the cable footprint to these areas is even higher, as this requires build-out to each premise. While an increase in wholesale call origination prices may bring forward some investment in increased self-supply, wholesale call origination costs alone are not a major driver in these investment decisions and so such expansion investment is likely to be limited to few areas (i.e. where profitable). We consider it unlikely that such a marginal increase in self-supply by LLU operators and/or Virgin Media would act as a material constraint on BT.

- b) **There may be operational constraints on the speed at which remaining SMPF lines will be converted to MPF.** Approximately 24% of LLU lines purchased by CPs other than BT are SMPF.²⁵⁷ Therefore LLU operators still purchase not insignificant volumes of SMPF despite having strong economic incentives (and intentions) to move their dual-play subscribers to MPF, suggesting that migration speed is limited by factors not related to the price of wholesale call origination (such as sunk costs²⁵⁸). Therefore while, in the absence of regulation, we could see LLU operators increasing their self supply of wholesale call origination by additional migration of SMPF to MPF, we consider that this is not driven by wholesale call origination prices, and is unlikely to act as a sufficient competitive constraint on BT in this review period.²⁵⁹
- c) **Anticipated roll-out and take-up of fibre-based broadband may impact on demand for MPF.**²⁶⁰ Although the expected take-up and impact of fibre is uncertain, we consider that developments in fibre may limit future increases in demand for MPF. This is because MPF cannot be used to provide superfast broadband. As consumers switch to fibre, the voice element can be provided by MPF (so the CP would purchase VULA+MPF) or by WLR (so the CP would purchase VULA+WLR and wholesale call origination). While it is likely to make sense for LLU operators who already have MPF to continue to provide the voice element to fibre customers using MPF, it may reduce the incentives for further LLU roll-out/migration of SMPF to MPF. We consider it likely to be more economic to continue to provide fixed voice access alongside fibre broadband using the same wholesale voice product the customer previously had.²⁶¹ As a

²⁵⁶ Future LLU roll-out was discussed in Section 4 of the 2013 WBA Review. Review of the Wholesale Broadband Access markets, 11 July 2013. <http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/>

²⁵⁷ Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

²⁵⁸ For example, CPs may consider that the most efficient way of converting SMPF lines to MPF is to use bulk migration, which requires a critical mass of customers to be economic.

²⁵⁹ We also note that the majority of LLU lines are already MPF lines, limiting the number of those which can still be migrated.

²⁶⁰ In particular, we are conscious that BT plans to continue to roll-out its fibre access network within the period covered by this review (reaching approximately 66% of premises by Spring 2014), while Virgin Media is also investing in increasing the speed for its customers, as set out in fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

²⁶¹ This is because of the investment costs associated with MPF deployment, as well as the migration charges associated with moving a customer from WLR to MPF. Since, as discussed above, it is not economic to provide a voice-only service using MPF, this is also likely to mean it is not economic to

result, operators may be less likely to migrate existing SMPF to MPF as fibre take-up continues. However, given the uncertainty we have not placed much weight on this.

- d) **Dual-play offers provided over MPF are not demanded by, or suitable for, all customers.** As discussed above in paragraph 5.120 to 5.123, MPF cannot economically be used to provide voice services for voice-only customers or those who purchase their broadband and voice services separately. As a result, LLU operators will not be able to supply wholesale call origination to these customers unless they can induce them to purchase a combined line rental, calls and broadband bundle. As described above, this may be easier to achieve for some customers (e.g. split purchasers for legacy reasons) compared to others (e.g. deliberately purchasing voice and broadband separately). These customer groups are discussed further below.
- e) **Proposed future reduction in the wholesale price differential may affect further MPF roll-out.** In 2005, the MPF rental charge was set lower than that for WLR+SMPF, and this differential enabled CPs using MPF to price their dual-play offers significantly below the total retail price of taking voice and broadband access from CPs using WLR and SMPF. This differential between regulated MPF and WLR/WLR+SMPF charges started to reduce in 2008 and has continued to decline over time²⁶² (with expectations that it will continue to do so²⁶³). Consistent with this, we have recently published a consultation for the next WLR and LLU charge controls²⁶⁴, in which we have proposed to set WLR and LLU charges so that the differential between MPF and WLR/WLR+SMPF is equal to the incremental cost differences in the final year of the charge control (2016/17). This will have the effect of further reducing the charge differential which, if confirmed, may reduce the extent of further MPF deployment relative to the rate we have observed to date.

5.180 As a result of these constraints around the substitutability of MPF, we consider it unlikely that the potential to increase self-supply using MPF and cable would provide a sufficiently strong constraint on BT in the period of this review. We consider this to be the case both outside existing LLU footprints (in relation to further rollout investment) and within the LLU footprint (in relation to investment in migrating SMPF to MPF). As a result, the alternatives to the self-supply of wholesale call origination to BT in particular areas or for certain customers are few and require non-negligible investments by CPs.

5.181 As well as self-supply, LLU operators and Virgin Media could also supply third-party CPs with wholesale call origination as an alternative to BT's wholesale call origination product. We note that it is technically possible for CPs to purchase wholesale call origination and access from a third-party LLU operator in any exchange where the

convert a new fibre customer (i.e. one not currently supplied using MPF) from WLR to MPF purely to provide the voice element (alongside VULA for the broadband service).

²⁶² See Figure 7.4, Ofcom, *Charge control review for LLU and WLR services*, 7 March 2012, <http://stakeholders.ofcom.org.uk/binaries/consultations/wlr-cc-2011/statement/statementMarch12.pdf>

²⁶³ In 2012, we signalled that, longer term, we expected to continue to reduce the charge differentials further (ultimately, to the differences in long run incremental costs (LRICs)). See Paragraph 7.65, *Charge control review for LLU and WLR services*, 7 March 2012,

<http://stakeholders.ofcom.org.uk/binaries/consultations/wlr-cc-2011/statement/statementMarch12.pdf>

²⁶⁴ For the full explanation of this proposal and the rationale, see Section 3 of *Fixed access market reviews: Approach to setting LLU and WLR Charge Controls*, 11 July 2013, <http://stakeholders.ofcom.org.uk/consultations/llu-wlr-cc-13/>

LLU operator has deployed MPF lines and has spare capacity in these exchanges²⁶⁵, or from a cable operator within its network area. Indeed some LLU operators, notably TalkTalk and Vodafone, offer wholesale products to third-party CPs on this basis. However, we consider there to be limitations to increasing the purchase of wholesale call origination inputs from such alternative (non-BT) network operators:

- a) **There are factors limiting increased LLU supply:** supply to third-party CPs would be limited by the same issues as self-supply explained in paragraph 5.179.
- b) **LLU/cable operators' limited incentives to supply:** there are several reasons why operators may not want to offer wholesale access, e.g. for strategic reasons (to maintain control over their own networks and avoid cannibalisation of own sales); and
- c) **Additional costs for CPs:** Additional costs involved with managing multiple contracts due to sub-national coverage of LLU and cable (and a lack of a voice-only service) may mean that unless there is a substantial price difference, CPs would not have incentives to switch away from BT to purchase wholesale call origination from a third party. One-off switching costs could include connecting with the LLU or cable operator's network, any quality issues arising from migrating customers, and establishing a new commercial relationship (e.g. negotiating terms, adapting billing systems etc).

5.182 Therefore, we consider that the potential for CPs currently purchasing BT's wholesale call origination to switch to alternative wholesale services from LLU operators is likely to be limited during the period covered by this review. As a result, we do not consider that this alternative represents a material direct constraint on BT's SMP in wholesale call origination.

Retail constraints by LLU (MPF) based services, mobile and VoIP

5.183 While we consider that the wholesale constraints from MPF and cable to be limited in this review period, we now consider whether there are sufficient constraints arising at the retail level from these services. Additionally, although we have concluded above that mobile and VoIP are not sufficient indirect constraints on wholesale call origination for the purposes of market definition, we recognise that both exercise a constraint on BT, and so we also consider this further below.

Constraints on retail switching implied by bundling and limitations of LLU

5.184 In relation to constraints from MPF and cable, we note that not all CPs would be affected equally by an increase in the price of wholesale call origination.²⁶⁶ As a result, an increase in the price of wholesale call origination could create a difference in retail prices between those who are able to self-supply some wholesale call origination and those that are not (i.e. if the wholesale price increase is fully passed onto retail prices). To the extent that this differential leads to consumers switching to CPs who can self-supply (notwithstanding the potential limiters on self-supply

²⁶⁵ In the 2009 market review we found that these operators could easily start providing a wholesale product given the investment they had already undertaken in relation to their retail product.

²⁶⁶ LLU operators and other operators with direct access, such as Virgin Media, would likely see their cost base increase by less than CPs who are wholly reliant upon BT's wholesale call origination to offer retail services because their self-supplied wholesale call origination will not be affected by BT's charges. The ability of different LLU operators to avoid increased wholesale call origination charges varies, as they are at different stages in the LLU roll-out and SMPF to MPF conversion process.

expansion discussed above), the alternative fixed networks used for self-supply will exert an indirect constraint on BT's wholesale call origination.

- 5.185 We recognise competitive conditions within the defined market could vary between customer segments and geographic area (depending on the availability of MPF), with some potentially subject to more and some potentially less competitive conditions.
- 5.186 In particular, in relation to the former, we acknowledge that some consumers (particularly those with a dual-play offering within an MPF area) could switch in response to a price increase in wholesale call origination by BT.²⁶⁷ However, we consider that prices would have to increase significantly even for these customers, before retail switching is likely to occur to the extent necessary to counter such a price increase. This is because for dual-play and triple-play customers in MPF/cable-enabled areas who do have a retail alternative, bundling of voice calls with access, broadband, and also other services (like Pay TV) may mean they are less likely to switch their entire bundle (or indeed “unbundle” their package in order to purchase voice separately) following a price increase in fixed calls alone. This is because other elements of the bundle are likely to be more important to the customer than the voice service, consequently it is not key in the purchase/switching decision.²⁶⁸ As a result, attachment to other elements of the bundle may reduce the sensitivity of consumers to increases in the fixed voice element (and the resulting impact on the total bundle price). This reduces the likelihood of retail switching from dual- and triple-play services even if a price increase in wholesale call origination is passed through.²⁶⁹
- 5.187 For those consumers with limited retail alternatives to services provided using BT's wholesale call origination (i.e. the potentially less competitive segments), the constraint on BT is likely to be limited. As discussed in more detail in the market definition section, all voice-only customers (inside and outside the LLU/cable footprint), all customers outside the MPF/cable footprints, and some of those who choose to purchase voice and broadband from different CPs (including businesses, inside and outside the LLU/cable footprint) may be unlikely or unable to switch to a dual-play (MPF-based) offer to a sufficient extent to act as a competitive constraint. While we recognise that there is likely to be some degree of overlap in these customer groups, we have concerns that a material proportion of customers would not have an alternative to services provided through BT's wholesale call origination and therefore would not act as a constraint on BT.
- 5.188 We also consider that the barriers for those who are not currently able or willing to switch to a dual-play MPF offer (in addition to the factors which may slow the rate of increase in MPF lines, discussed in paragraph 5.179) are likely to persist at least for this review period, limiting the constraint on BT. In particular, this includes voice-only

²⁶⁷ Notwithstanding the potential limits to increased self supply discussed above.

²⁶⁸ As discussed in Section 3, the focal point of bundles is likely to vary by package and customer, and recent research shows that broadband and pay TV are by far the most important components for consumers purchasing dual-play or triple-play services. This is further supported by [X] which showed that broadband or TV are the most important services in the bundle for triple-play customers (with home phone calls significantly less important). Additionally, as noted at paragraph 5.60 onwards, there has been a large increase in bundling and, for the majority of consumers, the overall price of bundles has become an increasingly important consideration in purchasing decisions. This makes it less likely that many dual- or triple-play customers will switch their whole bundle of services in response to an increase in the price of the fixed voice component alone, as voice is unlikely to be the most important component in the purchase decision (and therefore driver in any switching decision).

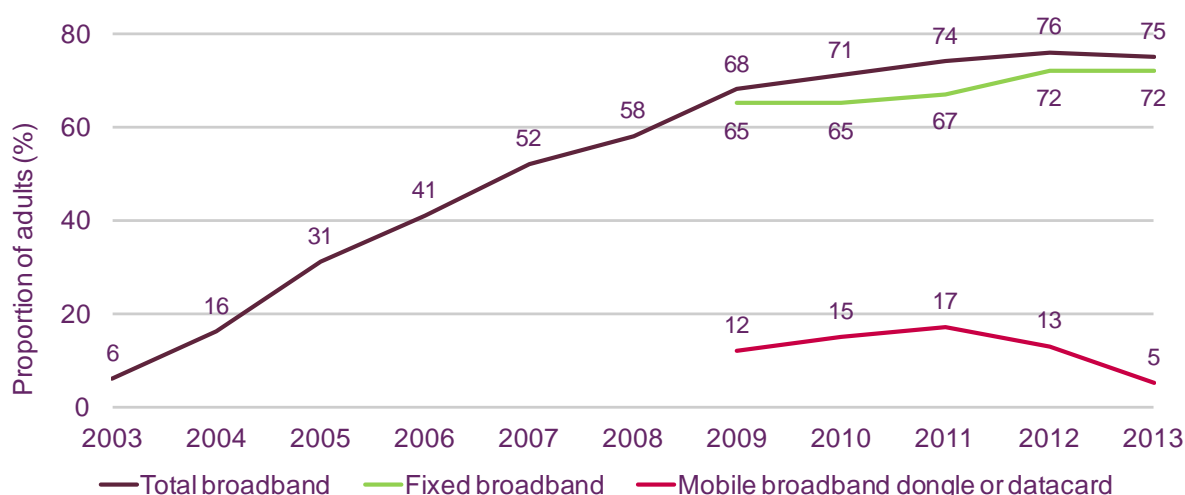
²⁶⁹ This is further supported by the way in which we would expect an increase in wholesale call origination prices to affect retail prices (set out above), so it is unlikely to visibly affect the price of making calls at the margin.

customers, customers outside the MPF footprint, some purchasing voice and broadband separately and business customers, which we now discuss in turn.

Voice-only customers – 16% of residential fixed-line customers

5.189 We recognise that the proportion of voice-only customers is likely to decline during the period covered by this review, as broadband take-up continues.²⁷⁰ However, we expect the rate of decline to be slow, reflecting the already-high broadband penetration rate, the slow incremental uptake in recent years (as shown in Figure 5.3 below, which also shows a slight decline in 2013) and the type of consumers that currently purchase voice-only products (discussed in paragraph 5.74). Therefore, we consider the majority of voice-only customers are unlikely to be willing to switch to a dual-play offer provided over MPF or cable for the reasons discussed in paragraph 5.119.

Figure 5.3: Household penetration of key telecoms technologies



Source: Adapted from Figure 5.51, Ofcom Communications Market Report 2013

5.190 As a result, we consider that voice-only customers are likely to remain a material proportion of all landline users within the period covered by this review. The only CP serving voice-only customers with non WLR-based products is Virgin Media in its on-net areas. As voice-only provision based on MPF is not a realistic option (as discussed above), the constraint on BT is likely to be limited for voice-only customers and its market share in this segment is likely to be significantly higher than its share in the overall market (and this is unlikely to change in this review period).

Customers outside the MPF/cable footprint – 6% of United Kingdom premises outside the LLU footprint (plus to a potentially lesser extent those currently served using SMPF within the footprint);

²⁷⁰ Indeed, LLU operators and Virgin Media could react to an increase in the price of providing voice-only services (following an increase in the wholesale call origination price) by promoting their dual-play package more aggressively to encourage these consumers to upgrade to a service they could provide over their own MPF or cable network. However, these CPs already have strong incentives to do this as the provision of voice-only services is significantly less profitable than dual-play.

5.191 Customers outside the MPF/cable footprint are likely to have very limited alternatives to wholesale call origination-based services. Therefore in off-net areas BT's market share in wholesale call origination is effectively 100%, so the competitive constraint is limited. We consider that significant additional roll-out of MPF is unlikely (see paragraph 5.179). As a result of this, we consider it unlikely that MPF will act as a sufficiently strong constraint on BT for what are currently customers in off-net areas.

Some customers purchasing voice and broadband separately – up to 18% of residential fixed-line customers

5.192 We recognise that a proportion of customers who buy broadband and voice separately are likely to be doing so for legacy reasons only (as discussed in paragraph 5.122), and so it is probable there will be some decline in this group of customers during the period of this review. However, such customers have already demonstrated an unwillingness to switch to a dual-play offer in response to existing price differentials.²⁷¹ It is, therefore, likely that, at the retail level, the most price sensitive consumers have already switched to LLU operators. Consequently, it may be more difficult for LLU operators relying on MPF to attract remaining consumers who have not yet switched (particularly in the light of the proposed further reduction in this differential, set out above). This suggests that some legacy customers may continue to purchase voice and broadband separately, even if the price of voice services increased. We do not consider that a more aggressive promotion of dual-play offers by LLU operators and Virgin Media would be effective in constraining BT's ability to increase wholesale call origination prices.

5.193 Further, as set out in relation to market definition in paragraph 5.122, we consider that some of these customers are likely to be purchasing voice and broadband separately because doing so offers them something the cheaper dual-play offer cannot (e.g. an additional line). Although these customers may be more price aware, they may still choose to continue sourcing voice and broadband separately for non-price reasons. These customers are also unlikely to switch in response to a limited price increase at the retail level caused by a wholesale price increase, but might be more likely to switch for a greater price increase.

5.194 We therefore consider that there are likely to remain a material number of customers purchasing voice and broadband separately throughout the period covered by this review. These customers are analogous to those in the voice-only segment, as they require the provision of a standalone voice service which cannot be economically supplied over MPF. Therefore the retail CPs serving these customers will be likely to have in a number of cases limited alternatives to continue purchasing BT's wholesale call origination to serve them, and so BT's market share of this group of customers is likely to be significantly higher than in the overall market.

Business customers – up to 16% of all fixed lines

5.195 With regard to the business segment, we do not have detailed evidence on usage, preferences and purchasing patterns as we have for the residential segment. Nonetheless, we consider there to be two broad categories. To an extent, some businesses may purchase "residential" communications services, in which case they are reflected within our residential retail data and our analysis above. However, others (16% of all fixed lines) purchase business-specific retail offerings, which

²⁷¹ As discussed above, the regulated WLR/WLR+SMPF charge differential was previously set such that CPs using MPF have been able to price their dual-play offers significantly below the total retail price of taking voice and broadband access from providers using WLR and SMPF/WBA.

suggest that residential-focused offerings may not be appropriate to meet their needs. We consider there are likely to be further constraints on retail switching for these business customers due to the fact that, in the business sector, there is significantly less scope for switching to a business-specific service from an operator with its own fixed network. Historically, LLU and cable operators have focused more on residential customers. As a result, BT has a much higher share of retail business lines than for residential consumers.²⁷²

- 5.196 While LLU and cable operators could attempt to increase retail business services, this would require time and planning due to the differing (and variable) needs of businesses. In particular, the business segment is highly diversified and requires services tailored to specific customer needs, which vary significantly from one customer to another. As a result, we consider that developing a wholesale commercial strategy better suited to serving retail CPs serving business customers is likely to be a relatively lengthy and costly process. Further, the same constraints around switching to self-supply for residential customers are also relevant. We also do not consider that the provision of wholesale call origination by LLU operators to other CPs focused on the business segment at those exchanges where MPF is active would be a viable option for the reasons discussed at paragraph 5.181.²⁷³
- 5.197 We therefore consider that significant entry or expansion by LLU and cable operators in the business segment is unlikely within the period covered by this review. As a result, businesses tend to have fewer fixed-line alternatives, so they may be less able to switch to alternatives to services based on fixed wholesale call origination in response to a price increase. Therefore, we consider that BT's market share and market power for this customer segment is likely to remain high. The substitutability of VoIP based services for businesses is discussed further below.

Conclusions on retail switching to fixed alternatives

- 5.198 As a result, despite the significant number of retail customers who now have an alternative to wholesale call origination-based products, there remains a material proportion of retail customers who we consider are likely to have limited alternatives to services provided using BT's wholesale call origination during this review period (even within the MPF/cable footprint).
- 5.199 In practice, we recognise that there is likely to be some degree of overlap in these customer groups (e.g. voice-only customers in non LLU areas) and that the actual figure will be somewhat lower. Nonetheless, our indicative calculations in the 2013 FAMR consultation suggest the total number of customers with limited alternatives to WLR (and therefore wholesale call origination) is likely to be high, over 39% of the

²⁷² For example, in 2012 BT's market share of wholesale analogue exchange lines (WFAEL) used to supply business customers was 82% (with 'LLU(MPF) and others' holding a 16% market share, and Virgin Media 2%), compared to its 61% share in the lines market as a whole (with 24% and 15% for 'LLU(MPF) and others' and Virgin Media respectively). See paragraph 3.100 et seq. of the Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

²⁷³ We recognise that CPs focused on the business sector could alternatively invest in their own network, but although there has been some recent investment in LLU infrastructure intended for use in the business sector (e.g. by Virgin Media and Zen), we note that their impact on BT's market share of business users has been limited to date. We therefore consider there are material barriers to expansion in the business sector, even for CPs focused on this segment.

residential segment.²⁷⁴ With regard to the business segment, as discussed above we do not have detailed evidence on usage and preferences, but the limited penetration of LLU or cable-based alternatives in this segment to date suggests that the percentage of those with limited alternatives could potentially be higher.

- 5.200 Therefore, as a material proportion of retail customers would not have an alternative, we are concerned that the fixed alternatives (MPF and cable) may not provide a sufficient constraint on BT's pricing of the wholesale call origination service, even within their respective footprints. As a result, we consider that in the absence of regulation, BT could profitably increase its wholesale call origination price above competitive levels. In addition, we consider there to be a risk that some of the limitations to switching set out above may allow BT to price discriminate, with more significant price increases to retailers who are more reliant on BT's wholesale call origination service.

Constraints from mobile and VoIP

- 5.201 We now consider whether mobile and/or VoIP may act as a constraint. As discussed in paragraph 5.77, we consider that to the extent residential consumers are exposed to individual call prices, switching to mobile (and to a lesser extent, VoIP) could constrain wholesale call origination. In the future we may see mobile become a greater substitute on a call-by-call basis, particularly as the proposed changes to the non-geographic calls regime are implemented (via the NGCS Review²⁷⁵). This may improve transparency of pricing for (and to the extent it affects pricing levels, may reduce any price differential between) fixed and mobile, for specific call types. As such, there could be switching at the margin on the basis of out-of-bundle call prices that could constrain BT.
- 5.202 However, we do not consider this is currently sufficient to constrain BT's ability to increase wholesale call origination rates. This is because the majority of consumers purchase access and calls together, and this often includes inclusive call minutes (as discussed in paragraph 5.60). Therefore, the majority of consumers face zero marginal call prices and, once the access decision has been made, there is unlikely to be a significant call substitution. This is likely to be the case for mobile and VoIP for the majority of consumers. This is particularly true when we consider the range of factors (other than price) that affect the call-by-call decision (discussed in paragraphs 5.69 and 5.98 for mobile and VoIP respectively) which will affect consumers' willingness to respond to a change in fixed call prices.
- 5.203 Mobile (4G) might potentially become a stronger constraint in the future, as better quality mobile data services may make consumers less reluctant to give up their fixed line for broadband. However, this remains speculative at this stage, particularly in the wake of the deployment of fibre broadband (which will increase fixed speeds further) and given that mobile broadband is currently most frequently purchased alongside fixed broadband. In addition, 4G is only really relevant for potential substitution at the access decision, as it will not necessarily significantly affect calls (although the

²⁷⁴ Our estimate is based on the assumption that voice-only customers and customers buying voice and broadband separately are evenly distributed across areas within and outside the LLU footprint. We have not included business users in this calculation. See paragraph 3.131 of fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30. 3 July 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

²⁷⁵ See *Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges* (consultation) 15 April 2013 <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

spectrum allocation could potentially improve coverage and therefore quality for some consumers). Further, 4G is unlikely to affect the non-price factors for businesses' lack of willingness to become mobile only (discussed in paragraph 5.87).

- 5.204 Therefore we do not believe that mobile or VoIP will act as a sufficiently strong constraint to negate BT's SMP in wholesale call origination services in this review period.
- 5.205 For businesses, we recognise that the potential constraints from VoIP may differ from those for residential consumers. We consider that business customers, particularly larger businesses, may have more potential than residential customers to switch voice services to VoIP (see the discussion of this potential in relation to market definition, paragraphs 5.100 onwards), and therefore expect competition in the business segment from managed VoIP to increase (as commented by BT). As such, managed VoIP is likely to become a stronger competitive constraint for some business users. Continued fibre deployments and take-up may also further facilitate switching by businesses to IP-based voice services, including potentially smaller businesses. As a result, fibre-based VoIP is likely to become a stronger competitive constraint in the future.
- 5.206 However, we note that BT is in a strong SMP position for businesses, as reflected in its market share of fixed lines in the business segment (which is also higher than for residential, as discussed above). Further, SME businesses may have a slower propensity to switch to VoIP-based services, as discussed in paragraph 5.103 onwards. As a result, we consider that these changes are unlikely to be sufficient to negate BT's SMP during the review period.
- 5.207 While the combination of fixed and mobile alternatives to wholesale call origination are expected to act as an increasing constraint in the future, we consider that this combined constraint would not be sufficient to negate BT's SMP during this review period.

Conclusion on overall constraint on BT

- 5.208 While there are a range of potential direct and indirect constraints on BT from both inside and outside the defined market (which also vary by customer segment and geographic area), we do not consider it likely that they will sufficiently constrain BT's SMP in the defined wholesale call origination market during the time period of this review.
- 5.209 In particular, while it is likely that BT's market share of wholesale call origination will continue to decline over the period of this review (particularly as LLU operators continue to migrate to MPF), we consider this is likely to be at a slower rate than previously observed.
- 5.210 Irrespective of our market power assessment in the defined market, it is clear that competitive conditions do vary to some extent between areas and across some customer groups (as discussed above). As a result, we consider further below whether this variation is such that differentiated remedies would be appropriate.

The Hull Area

- 5.211 KCOM is the only supplier of retail and wholesale analogue lines in the Hull area, and so it has 100% market share of wholesale call origination, which creates a presumption of dominance.

- 5.212 We note that entry has been limited to date, implying that alternative networks do not provide a constraint on KCOM in the Hull area.
- 5.213 Barriers to entry are high in the market for wholesale call origination in the Hull area as an operator that wanted to compete with KCOM in the Hull area would need to incur significant sunk costs to develop a fixed narrowband access network (either a direct access network or a solution based on LLU). Further, the market in the Hull area is relatively small, therefore there is a comparatively smaller potential customer base over which to recover these costs. As set out above, there has been no entry so far into the residential access market and we are not aware of any planned cable expansion or LLU-rollout in the Hull area. This indicates that barriers to entry are higher than in the rest of the United Kingdom where we have seen entry based on LLU.
- 5.214 While this also largely holds for business customers, we note that there have been deployments of alternative infrastructure in the Hull area since the last market review targeting business customers via leased lines and radio links. In response to the CFI, KCOM has also noted the deployment of fibre which is currently taking place by MS3, for the same purposes.²⁷⁶ However, market entry has been limited to date and, as we discuss in more detail in Section 4, we consider that MS3's operations are at an early stage of development and it is unclear which markets MS3 will operate in. In particular, it is not clear whether this development would be sufficient to constrain KCOM in the supply of wholesale call origination services such that it would not be considered to have SMP. Until there is greater certainty about how MS3's network deployment will impact the wholesale call origination market in Hull, we consider that this situation will continue over the period of this review.
- 5.215 Further, for the reasons set out at paragraphs 5.201 onwards, we do not consider that mobile or VoIP act as a significant constraint on fixed services at this stage. We do not consider that the markets in the Hull Area present any significant differences which might call into question that conclusion. We do not therefore consider that mobile operators are likely to exercise a sufficiently strong constraint on the activities of KCOM in the relevant market which might call into question our SMP finding.
- 5.216 Therefore, we conclude that KCOM has SMP in wholesale call origination in the Hull Area.

Conclusions on market power

- 5.217 Having taken into account the analysis above, we conclude that BT has SMP in wholesale call origination on a fixed network in the United Kingdom.
- 5.218 We also conclude that KCOM has SMP in wholesale call origination on a fixed network in the Hull Area.

Competition concerns

Proposals in the February 2013 consultation

- 5.219 In the absence of regulation, we have identified two main competition concerns regarding BT and KCOM's SMP. They could:

²⁷⁶ KCOM has also made a slightly more detailed submission on this issue in response to a CFI for a separate market review (we discuss this in more details in Section 4).

- a) stop providing a wholesale call origination product (refuse access); and/or
- b) increase prices for external sales of wholesale call origination above the competitive level.

Stakeholder response to the February 2013 consultation

5.220 BT argued that our assessment of competition concerns did not reflect BT's true incentives to continue to supply in the absence of regulation, and instead considered refusal to supply unlikely.²⁷⁷ This is in the light of the alternatives available to CPs (e.g. broadband access and mobile and cable infrastructure), and the fact that it would lose if affected retail customers moved to its competitors rather than BT (which it considered more likely). Further, it noted that price discrimination can be a good thing for consumers. However, and contrary to BT's assertion in its main submission, economic consultants instructed by BT (DotEcon) argued that market developments (including bundles, alternative non-voice services etc) can be pro-competitive provided there is no undue discrimination.²⁷⁸

Our analysis and conclusions

5.221 In the absence of regulation, we identified two main competition concerns in paragraph 5.219 above.

The United Kingdom excluding the Hull Area

Refusal to supply wholesale call origination services

5.222 In the absence of regulation BT might have an incentive to refuse to supply access to wholesale call origination services if the profits it would make from selling wholesale call origination (and WLR) were lower than the profits it would make from the retail customers it would gain if it stopped supplying wholesale call origination.

5.223 Currently, approximately 24% of call origination minutes are sold by CPs in the retail market using BT's wholesale call origination services.²⁷⁹ Therefore, there is potentially a material customer base available for BT to retail directly to if it stopped offering wholesale call origination (subject to existing wholesale contracts, which may limit its ability to cease supply immediately). In addition, the refusal to supply wholesale call origination would effectively undermine the WLR/WLR+SMPF upstream remedies, as it would prevent other CPs from being able to offer voice calls using WLR purchased from BT (either with or without broadband).

5.224 The availability of retail alternatives not based on BT's wholesale call origination (i.e. MPF, cable) for at least some of these customers means it is unlikely that BT would gain all the residential customers currently being supplied by these CPs in the event that it stopped providing wholesale call origination to them. We nonetheless consider that switching to BT in this review period would be significant despite the availability of retail alternatives for some customers due to the limitations of such alternatives, namely:

²⁷⁷ BT response to the February 2013 consultation, including annex 1 and the Copenhagen Economics annex.

²⁷⁸ Annex 2 of BT response to the February 2013 consultation, Report by DotEcon: Overview on Retail market Boundaries.

²⁷⁹ This reflects purchases of CPS and wholesale calls products from BT.

- a) Consumer preferences (particularly for voice-only or those who purchase their broadband and voice services separately) – discussed in further detail in paragraph 5.185 onwards;
 - b) Continued use of SMPF by LLU operators, even for some dual-play customers due to external and operational constraints – discussed in further detail in paragraph 5.179; and
 - c) Sub-national coverage for MPF and cable footprints – discussed further in 5.191.
- 5.225 BT may therefore have an incentive to refuse to provide access to wholesale call origination to some or all CPs with which it competes at the retail level. Such conduct could lead to an increase in customers switching to BT at the retail level which would more than offset any reduction in wholesale revenues. BT would therefore be able to distort competition at the retail level as a result of its conduct at the wholesale level.
- 5.226 However, the extent to which refusal to supply is profitable will depend on a range of factors, including attitudes of consumers, availability of alternatives, current purchasing patterns etc. Therefore considering whether the profits from retail gains outweigh the wholesale losses is complex and uncertain.
- 5.227 As argued by BT, it may continue to supply wholesale call origination. However, given the relatively large pricing freedom BT is likely to have over the supply of wholesale call origination (due to the limited constraints, as discussed above) and the widespread use of it by CPs at the retail level (including LLU operators), an unregulated BT may instead be more likely to continue to provide wholesale call origination but at substantially higher prices (quite likely on a discriminatory basis according to the availability of substitutes to the different CPs).

Increased prices for wholesale call origination above the competitive level

- 5.228 In the absence of regulation, BT might increase prices for wholesale call origination if doing so would increase its profits. This would require a trade-off between various effects, the outcome of which will determine which strategy is more profitable. In particular, BT would need to trade off:
- a) The extra revenue it would make from charging a higher price for wholesale call origination (arising from the extra per unit price on volumes sold and any retail customers it subsequently acquires as a result of increasing the costs (and therefore prices) of its competitors); against
 - b) Any revenue lost as a result of the higher price (i.e. if retail consumers of CPs buying wholesale call origination reduce the volume of calls made and/or switch all their calls to alternative CPs not using BT's wholesale call origination).
- 5.229 Calculating this trade-off is uncertain, as again it will depend on consumer responsiveness to retail price changes, availability of alternatives, types of services purchased (e.g. bundles) etc. However, in the absence of regulation, we consider that BT is likely to be able to increase prices for wholesale call origination (both generally across all customers and potentially further increases for specific segments) due to the limitations in the competitive constraints it faces as detailed in the market power assessment (and summarised at paragraph 5.167 above). As a result, a price increase above the competitive level for wholesale call origination (for all wholesale customers and/or specifically a subset of those customers) is likely to

be profitable. We therefore believe that BT would be able to charge excessive prices at the wholesale level and will likely have an incentive to do so.

- 5.230 Without regulation, there is a risk that BT would increase prices differently to different CPs. Some retailers are more reliant on BT's wholesale call origination input because they do not have available substitutes, including resellers of BT's wholesale inputs nationwide (serving both voice-only and dual-play customers), and to a lesser extent LLU operators (where they supply voice-only services, and for the provision of voice and broadband bundles both outside their network footprints and where they have not migrated from SMPF to MPF). This would also have implications for the effectiveness of the WLR/WLR+SMPF upstream remedy, given wholesale call origination is a necessary input for the provision of voice calls to broadband customers served using WLR+SMPF.
- 5.231 Price increases at the wholesale level might then be passed through by the different retailers to the detriment of consumers, although not all consumers would be affected in the same way. We consider this detriment to be significant given the potentially large proportion of consumers (over 39% of residential consumers) who would be affected as discussed above in paragraph 5.199.

The Hull Area

- 5.232 In the absence of regulation, we consider that KCOM might refuse to supply wholesale call origination and, in doing so, remove the opportunity for CPs to compete at the retail level.
- 5.233 Compared to the rest of the United Kingdom, potential competition in the Hull Area is weak because there are higher barriers to entry for any CP wishing to develop an LLU or cable network (as set out in Section 4). KCOM currently supplies wholesale call origination to CPs supplying business customers through IA (although with relatively small volumes). Without regulation, KCOM would have an incentive to refuse to supply wholesale call origination to these CPs as it would be likely to gain customers and this would prevent the development of competition in the Hull Area.
- 5.234 Alternatively, KCOM might continue to supply wholesale call origination at prices above the competitive level (either for all wholesale customers or a subset of those customers). As with BT, such a price increase is likely to be profitable either as a result of increased wholesale revenues or as a result of a competitive advantage at the retail level.

Conclusions

- 5.235 We consider that BT and KCOM have the incentives and ability to exploit their position of SMP in each relevant market. While we consider this to be the right approach for this review period, we consider that the constraints on BT (direct and indirect) for wholesale call origination may increase in the future, and therefore our judgement might change for the next market review, even if there remained a proportion of voice-only customers.
- 5.236 We therefore believe that it is appropriate to impose regulatory obligations on BT and KCOM in the wholesale call origination markets in which they hold SMP in order to address those concerns.

Remedies

Proposals in the February 2013 consultation

5.237 We proposed imposing the remedies set out in Table 5.3 below.

Table 5.3: Summary of proposed remedies for wholesale call origination in February 2013 consultation²⁸⁰

BT obligations	KCOM obligations
<ul style="list-style-type: none"> Requirement to provide network access on reasonable request Requests for new forms of network access Requirement not to unduly discriminate Requirement to publish a reference offer Requirement to notify charges Requirement to notify technical information Transparency as to quality of service Cost accounting Accounting separation Specific form of network access (Carrier Pre-Selection on non-BT Retail lines only)²⁸¹ Requirement to provide NTS wholesale call origination until unbundled tariff introduced Charge control 	<ul style="list-style-type: none"> Requirement to provide network access on reasonable request Requirement not to unduly discriminate Requirement to publish a reference offer Requirement to notify charges Requirement to notify technical information Accounting separation

Stakeholder response to the February 2013 consultation

BT obligations

5.238 Of the 35 respondents, 15 (BT, [X], Alternative Networks plc, Lanonyx, [X], FCS, [X], ITSPA, Verizon, TalkTalk, Lexgreen, Sky, EE, Virgin Media and an individual respondent) provided comments relating to our proposed remedies for BT in wholesale call origination markets.

5.239 At a high level, BT argued that Ofcom's understandable desire to protect the minority of consumers who have limited choice in certain places has the unfortunate by-product of heavy handed regulation on BT alone in fiercely competitive markets (if all remedies are applied equally). In the light of this, it considered that even if the market definition remains unchanged, competitive conditions vary such that different remedies should apply, with lighter-touch regulation in competitive areas. We discuss the potential for differentiated remedies in paragraph 5.281 onwards.

5.240 We now summarise the main issues concerning our specific proposed remedies for BT in wholesale call origination markets raised in these responses.

²⁸⁰ We also proposed to remove the obligation on BT and KCOM to provide Indirect Access. However, we also proposed to include a sunset clause of 12 months on this obligation.

²⁸¹ We proposed to include a sunset clause for the current CPS obligations on BT and KCOM of 12 months.

5.241 BT was the only respondent to comment on a number of the proposed remedies including: requests for new forms of network access, requirement to publish a reference offer and requirement to notify technical information. BT agreed with all of these proposals.²⁸² We set out our conclusions for these remedies in paragraphs 5.291 and 5.341 (requests for new forms of network access), 5.294 and 5.366 (requirement to publish a reference offer) and 5.387 (requirement to notify technical information) respectively. We discuss the issues raised regarding the remaining remedies below.

Requirement to provide network access on reasonable request

5.242 Two respondents (BT and Virgin Media) commented on the requirement to provide network access on reasonable request. BT agreed with this obligation.²⁸³

5.243 Virgin Media²⁸⁴ was concerned that the proposed fair and reasonable access condition did not cover charges. Virgin Media stated that an access condition that requires charges to be set on a fair and reasonable basis can provide additional and important protection to that offered by a charge control and particularly, where a control covers a specified service, a generic condition applying across a market will ensure regulatory reassurance for all services, including new services introduced to the market. Virgin Media also argued that a fair and reasonable charges obligation would provide an additional safeguard on top of any voluntary commitments and to ensure that links between different regimes exist, such as the NTS call origination condition and the condition to provide network access on fair and reasonable request. The relevance of new services and the interaction with NTS is discussed in paragraph 5.327.

5.244 We consider whether charges should be included in the fair and reasonable access condition in paragraph 5.327, and we consider specific regulatory requirements for the NTS call origination condition in paragraph below 5.428.

Requirement not to unduly discriminate

5.245 Only BT commented on the requirement not to unduly discriminate.

5.246 Irrespective of the SMP decision, BT²⁸⁵ considered that the materiality of direct and indirect constraints mean BT should be given much more flexibility in the pricing of wholesale call origination, and traditional restrictive remedies are inappropriate. In the light of this, it argues that the no undue discrimination obligation is not appropriate, as it considers it should have the freedom to offer lower prices on a selective basis when competing for wholesale contracts for broadband and voice combined deals. Similarly, Copenhagen Economics²⁸⁶ argued that while a price cap might be justified, there should be no undue discrimination remedy for BT. We consider this point in our analysis in paragraph 5.285 to 5.286 below.

Requirement to notify charges

²⁸² BT response to Q5.5 of February 2013 consultation

²⁸³ BT response to Q5.5 of February 2013 consultation

²⁸⁴ Virgin Media response to February 2013 consultation

²⁸⁵ BT response to Q5.5 of February 2013 consultation

²⁸⁶ Copenhagen Economics annex to BT's response to the February 2013 consultation (p35-36)

- 5.247 Three respondents (BT, EE and Vodafone) commented on the requirement to notify charges. BT was in favour of the move from a 90 to a 56 day notification period and considered it a step in the right direction towards its aim of 28 days.²⁸⁷
- 5.248 Vodafone had no objection in principle to BT's notice period on certain services being reduced to 56 days as it believes this still allows sufficient time for any changes to be cascaded through. However Vodafone highlighted the importance of ensuring the harmonisation of notice periods and as such stated its agreement on making the change is conditional on the introduction of a reciprocal increase in BT's Standard Interconnect Agreement (SIA) 28 day contractual notice period for its own services to 56 days. Vodafone further argued that should BT fail to honour an increase in notice from 28 days to 56 days then it believes it would be appropriate for CPs not to agree to the SIA modifications reducing the 90 day notice requirement to 56 days, so it would remain a contractual commitment on BT's part, even if it wasn't underpinned by specific regulation.²⁸⁸
- 5.249 EE²⁸⁹ disagreed with Ofcom's proposal, arguing that the notice period should remain at 90 days to allow CPs to reflect wholesale price increases from BT in their retail pricing before changes come into effect, (given the limited human, financial and IT resources to monitor and implement wholesale and retail price changes).
- 5.250 Our analysis and conclusions in relation to the notice period for notifying charges are in paragraphs 5.294 and 5.375 onwards.

Cost accounting and accounting separation

- 5.251 Three respondents (BT, Virgin Media and EE) commented on cost accounting and accounting separation.
- 5.252 BT²⁹⁰ agreed with our proposal to remove the requirement to publish Distributed Long Run Incremental Cost (DLRIC) and Distributed Stand Alone Cost (DSAC). However, BT disagreed with our proposal to retain other detailed cost accounting obligations. It considered that reporting at a detailed level, greater than the market or even basket level, is disproportionate where cost orientation obligations do not apply. BT would still be required to produce and to publish, with the exception of DLRIC and DSAC information, a large amount of revenue, cost and volume information on an annual basis. This would be at the same high degree of component/service granularity as previously, when cost orientation did apply. It also considered that the provision of data based on a top down model would be misleading, given that a bottom-up model is being used to set the NCC.
- 5.253 BT also referred to the concerns that it had stated more generally, in its response to the Business Connectivity Market Review (BCMR) further consultation²⁹¹, about the rationale for maintaining these cost accounting and accounting separation obligations. BT argued that if Ofcom were not able to fully implement its suggestions as part of this review, then they should be considered as part of the on-going wider 'Regulatory Financial Reporting Review'. Ofcom addressed these issues as part of

²⁸⁷ BT response to Q5.5 of February 2013 consultation

²⁸⁸ Section 7.6 of Vodafone response to February 2013 consultation

²⁸⁹ Section 5 of EE response to February 2013 consultation

²⁹⁰ BT response to Q5.5 of February 2013 consultation

²⁹¹ Business Connectivity Further Consultation, Ofcom 15 November 2012

<http://stakeholders.ofcom.org.uk/consultations/bcmr-reconsultation/> BT response available here
<http://stakeholders.ofcom.org.uk/consultations/bcmr-reconsultation/?showResponses=true>

the BCMR final statement²⁹². In that document we also stated our view that BT's wider concerns about the amount of regulatory financial information currently required to be published would be best considered in our wider review of the regulatory financial reporting obligations. For the same reasons, we do not consider these issues further here.

- 5.254 Virgin Media and EE disagreed with our proposal to remove the publication of LRIC from the financial reporting obligations. Virgin Media²⁹³ considered it important to continue to require BT to publish LRIC-based cost information, in order to maintain transparency towards stakeholders, who will be facing a regulated origination charge that will, unusually, contain cost elements that are attributable to a different service (particularly for informing the next market review). It considered that the relative FAC and DSAC costs in this case will also have a raised importance to ensure that, aside from the charge control being complied with, the effect of the new regulatory regime can remain fully transparent. Virgin Media argued that it does not consider the removal of cost orientation should automatically lead to the removal of the publication of LRIC data and considered that the incremental effort required by BT to publish LRIC data (which it is already required to maintain), is minimal.
- 5.255 EE²⁹⁴ also argued that the publication of cost benchmarks should be continued as it is an important source of information for purchasing CPs. Such information enables them to understand the extent to which individual prices are related to costs and whether such prices are within reasonable bounds. In particular, it argued that understanding the extent to which actual charges deviate from a stand alone cost ceiling would ensure that CPs negotiating with BT were placed in a more equal bargaining position. It also argued that cost accounting information enables CPs to assess whether undue discrimination might arise from increasing call origination charges and whether or not this might lead to inappropriate margins between wholesale and retail prices. Therefore the removal of such cost accounting information would likely lead to greater confusion.
- 5.256 We provide our analysis and conclusions in relation to the cost accounting remedy in paragraph 5.402 onwards below. We provide our analysis and conclusions in relation to accounting separation in paragraph 5.420 onwards below.

Specific form of network access (Carrier Pre-Selection on non-BT Retail lines only)

- 5.257 Twelve respondents commented on our proposals to modify the CPS obligation on BT.
- 5.258 BT had no objection to providing CPS on WLR lines that are not serving BT retail customers.
- 5.259 However, other respondents to this proposal raised concerns with various aspects of the proposed remedies and our analysis.
- 5.260 Firstly, concerns were raised about the impact of removing BT's obligation to provide CPS over its retail lines on competition and product choice by [X], Vodafone, Verizon, [X], Alternative Networks, FCS, Lexgreen Services and an individual respondent. In particular, Alternative Networks²⁹⁵ and [X] pointed out that many

²⁹² See Section 16 of Business connectivity market review - final statement, 28 March 2013
<http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/>

²⁹³ Response to Q5.5 of Virgin Media response to February 2013 consultation

²⁹⁴ Section 5 of EE response to February 2013 consultation

²⁹⁵ Alternative Network response to Q5.5 of February 2013 consultation

services are designed as an 'overlay' to line rental, with the latter suggesting that if we were to remove BT's obligation to provide CPS over its retail lines, there would need to be a long period of adjustment due to 'knock on effects'. Alternative Networks referred to a business model that would be prevented by the change, whereby packages can be created for businesses that have 'home workers', whereby business calls can be billed to a different provider (this was relevant to both CPS and IA). [3X] also argued that this change would reduce choices for voice-only customers, while FCS²⁹⁶ and a individual respondent explained that Featureline or Redcare, and other 'incompatible product' customers would not have a choice of calls provider. Similarly, Vodafone²⁹⁷ argued that it seemed wrong to force end users to purchase line rental and calls from the same provider, given that they were regarded as separate product markets (otherwise, it suggests that CPS and WLR are in the same product market, contrary to our analysis). We discuss the rationale for our proposal to remove BT's obligation to provide CPS over its retail lines, alongside the role of calls-only competition in the United Kingdom excluding Hull in our analysis in paragraphs 5.300 to 5.308 below.

- 5.261 Secondly, some respondents raised concerns about the implementation of the removal of BT's obligation to provide CPS over its retail lines. In relation to existing contracts:
- a) Sky argued that a 12 month sunset clause does not allow CPs sufficient time to make alternative arrangements where required and that 24 months would be more appropriate.²⁹⁸
 - b) FCS were concerned about managing the process at the retail level by which current BT line rental customers with third-party call providers were moved to third-party line rental or BT calls, particularly where the customers are in a minimum contract period arrangement with their calls provider. Vodafone were also concerned that forcing customers to change providers did not appear to be consistent with Ofcom duties – i.e. acting in the interests of citizens and consumers.
 - c) At the wholesale level, Vodafone argued that it would be very difficult to implement the proposal in relation to existing contracts, as they are not currently able to distinguish between a CP that is purchasing CPS as well as WLR to provide access and calls to the end customer, and a CP that is purchasing CPS to provide a calls-only product to an end customer who has a BT retail line.
- 5.262 However, BT argued that it is not necessary or proportionate to impose a 12 month sunset clause (due to the small impact of its removal given the limited number of consumers affected), and instead argued that Ofcom should remove the existing CPS obligation with immediate effect. It argued that if necessary, Ofcom could retain an obligation on BT to allow customers with a BT Retail line who are currently with a CPS provider for their calls to continue with this arrangement for a further 12 months (i.e. a 12 month 'stop-sell' sunset clause).²⁹⁹
- 5.263 The transition arrangements for CPS (including for existing contracts) are discussed in paragraph 5.308.

²⁹⁶ Section 2.1 of FCS response to February 2013 consultation

²⁹⁷ Section 1 of Vodafone response to February 2013 consultation

²⁹⁸ Paragraph 19 of Sky response to February 2013 consultation

²⁹⁹ BT response to Q5.5 of February 2013 consultation

- 5.264 Vodafone was also concerned that the proposal would place BT at a competitive advantage in providing wholesale end-to-end calls products, as it would be the only provider able to provide Wholesale Calls over all lines. We consider this point in our analysis in paragraph 5.303 below.
- 5.265 Some respondents (ITSPA, [X], Vodafone, Magrathea, and FCS) raised issues relating to the wording of the CPS conditions in the February 2013 consultation. We have clarified our position on CPS over non-BT retail lines in paragraph 5.311.
- 5.266 Verizon³⁰⁰ was concerned about how competition would be supported over an NGN (and FTTP), and whether CPS/IA products would still be required after 2016. We discuss the network access requirement (including requests for new access) in paragraph 5.332 onwards. We consider that remedies beyond 2016 are outside the scope of this market review.
- 5.267 We provide our conclusions on the proposal to remove the existing CPS obligation on BT (which requires the provision of CPS over its retail lines) in paragraphs 5.300 to 5.309 below.

Removal of the condition to provide Indirect Access (IA)

- 5.268 Nine respondents commented directly on our proposal to remove the IA remedy. Of these respondents BT supported the proposal to remove IA as it argued that it is no longer a significant driver of competition and the number of customers using it continues to decline.
- 5.269 Other stakeholders were concerned that the removal of IA would be detrimental to competition. FCS and Alternative Networks in particular argued that IA (and CPS) still provides a choice of calls provider for some customers and some types of calls, such as international calls. FCS argued that the obligation to provide IA should continue on any BT line not on equivalence management platform (EMP), as an important form of competition for those lines.³⁰¹ Alternative Networks offers 'home worker' solutions. These solutions allow for calls made from a line for business purposes to be billed to the home worker's business rather than to the home worker via their residential package. Alternative Networks states that the combination of CPS and IA plus underlying carrier gives access to three different providers, [X].³⁰² We discuss the impact on competition in paragraph 5.304 to 5.308 below.
- 5.270 Some stakeholders also argued that the ways in which industry uses the IA product support the continued provision of this service by BT. [X] and ITSPA described how it was a useful diagnostic tool to check network quality without disrupting the customer's services. ITSPA³⁰³ and Magrathea³⁰⁴ pointed out that IA is used for routing calls through specialist providers for satellite phones. [X]. We discuss other special uses of IA in paragraphs 5.307 and the sunset clause in paragraph 5.308 below.
- 5.271 In relation to transition, BT stated it did not believe that it is necessary or proportionate to impose a 12 month sunset clause.³⁰⁵ However, Sky argued for an extended 24 month sunset provision to allow CPs time to find alternative solutions

³⁰⁰ Verizon response to February 2013 consultation

³⁰¹ Section 2.1 of FCS response to February 2013 consultation

³⁰² Alternative Network response to Q5.5 of February 2013 consultation

³⁰³ ITSPA response to February 2013 consultation

³⁰⁴ Magrathea response to February 2013 consultation

³⁰⁵ BT response to Q5.5 of February 2013 consultation

and/or enter into discussions with BT about the continued provision of required services.³⁰⁶ We discuss the transition period for IA in paragraph 5.308.

Requirement to provide NTS wholesale call origination until the introduction of the unbundled tariff

- 5.272 Two respondents – BT and EE –commented on the proposal that BT provide NTS wholesale call origination until an unbundled tariff is introduced.
- 5.273 BT agreed that there was a need to provide certainty to industry regarding the price of NTS wholesale call origination, but believed that the proposed extension of the current condition could lead to disputes.³⁰⁷
- 5.274 EE agreed that the NTS call origination condition should continue to apply in the interim period until the unbundled tariffs are implemented.³⁰⁸ However, EE further argued that the proposed RPI cap provides too much allowance for cost inefficiencies and considered it inappropriate. EE instead argued for a stricter price control on NTS wholesale call origination to be set that makes the assumption that improving network efficiencies and falling equipment prices are at least offsetting RPI increases in order to incentivise BT to make efficiency savings equal to inflation. EE also argued that it does not believe that an unbundled tariff will sufficiently constrain BT prices as a wholesale originator of NTS traffic and that the NTS wholesale call origination condition should not be removed until the competitive pressure on BT have been evidenced. We provide more detail on NTS regulation in the 2013 NGCS Review.³⁰⁹ We provide our analysis and conclusions in relation to this remedy in paragraph 5.428 onwards.

Charge control – removal of requirement for cost orientation

- 5.275 Three respondents to the consultation (BT, Vodafone and Virgin Media) explicitly commented on the removal of the requirement for cost orientation. BT agreed with the proposal.³¹⁰ Vodafone agreed, stating that “where charge controls or baskets are placed on single services, as in the case of call origination and termination, the cost orientation obligation is less important”.³¹¹ Virgin Media³¹² also stated that it understood the decision not to impose cost orientation in relation to wholesale call origination given a charge control will be applied (addressing any excessive pricing concerns), and the fact that the control will regulate rates in a very specific manner³¹³ which means the traditional “basis of charges” conditions (as currently imposed) would not be appropriate.³¹⁴

³⁰⁶ Sky response to February 2013 consultation

³⁰⁷ BT response to Q5.5 of February 2013 consultation

³⁰⁸ Section 3 of EE response to February 2013 consultation

³⁰⁹ We expect to publish a statement on this in Autumn 2013.

³¹⁰ BT response to Q5.5 of February 2013 consultation

³¹¹ Section 7.1 of Vodafone response to February 2013 consultation

³¹² Response to Q5.5 of Virgin Media response to February 2013 consultation

³¹³ I.e. allowing for recovery of an amount in excess of the costs of provision of the service, by allowing the recovery of common costs associated with the provision of call termination as discussed in Section 8.

³¹⁴ Virgin Media also raised some concerns around the removal of cost orientation obligations more generally, but these are outside of the scope of this review of wholesale call origination. EE also noted concerns around our approach to cost orientation across our market reviews, considering it had been approached in a piecemeal way, however it did not provide an opinion as to whether it agreed or disagreed with the specific proposal for this review.

5.276 Our analysis and conclusion in relation to cost orientation (as a remedy alongside the charge control) are in paragraph 5.327 below.

KCOM obligations

5.277 Of the 35 respondents to the consultation, four commented on our proposals in relation to obligations on KCOM in the market for wholesale call origination in the fixed narrowband network in the Hull area. Three of these respondents – Lanonyx, [X] and the FCS – agreed with the proposed remedies.

5.278 KCOM agreed with our proposal to remove the indirect access obligation with a 12 month sunset clause. We provide our conclusions in relation to indirect access for KCOM in paragraph 5.314 below.

5.279 KCOM³¹⁵ also considered that imposing a fair and reasonable obligation with respect to call origination rates is a pragmatic and proportionate solution (although it did not agree with our guidance on how we would interpret this for its call origination rates, which we address in more detail in Section 8).

5.280 KCOM also agreed with our proposed 56 day notice period.³¹⁶ We provide our conclusions on the obligation to notify charges in paragraph 5.460 to 5.461.

Our analysis and conclusions

5.281 BT has suggested that to reflect the diversity it considers exists (and will continue to exist) in the degree and type of competition across consumers and areas, we could either:

- a) define separate geographic and customer markets (e.g. according to customer type and geography) and consider specific remedies in each; or
- b) define a single geographic and product market and adopt differentiated remedies.

5.282 We have addressed issues of market definition above and do not therefore address this again in this section. With respect to differentiated remedies, we recognise that competitive conditions within the relevant market vary to some extent, however, we do not consider that the conditions of competition vary to such an extent as to justify a differentiated approach. In our view the conditions of competition in the relevant market are sufficiently homogenous that the same competition concerns arise in relation to a finding of market power in that market. Those concerns do not vary in degree as between the segments of the market to a sufficient extent to justify the adoption of a different approach.

5.283 Firstly, as discussed above, wholesale call origination is a necessary input for the provision of retail voice services for those customers taking broadband using SMPF (i.e. it is needed alongside WLR). As we have set out above, WLR is an important driver of competition at the retail level, both in areas where MPF is present and in those areas in which it is not. If we were to follow an approach in which lighter remedies were applied in those exchange areas in which MPF is used, this risks undermining competition based on WLR for voice services and SMPF for broadband

³¹⁵ KCOM response to Q8.4 of the February 2013 consultation

³¹⁶ It raised concerns with the proposal to waive the notice requirement for call origination charges for the period 1st October 2013 to 26th November 2013, but this is no longer relevant as discussed in Section 11.

services. Whilst over time the use of MPF in certain exchange areas may displace retail competition based on WLR and SMPF, we have not seen any evidence that this is likely to occur during the period of this review given the existing constraints on the degree of substitution. WLR based competition is therefore likely to remain significant in all exchange areas for the period covered by this review and we do not therefore consider that differentiated remedies on this basis would be appropriate at this stage

- 5.284 Secondly, there are significant uncertainties around how the market will develop within this review period. In particular, the impact of fibre (discussed at paragraphs 5.179), the incentives of LLU operators and how they might change during this review period (discussed at paragraph 5.177 onwards), the substitutability of mobile and/or VoIP (discussed at paragraph 5.201 onwards), and the gradual decline of the proportion of voice-only customers and the transition to dual bundle packages (discussed at paragraph 5.189) will affect competitive conditions and, depending on the impact of each, the market could tend towards greater competitive constraints or weaker competitive constraints. Because of this uncertainty, we consider there to be a risk that differentiated remedies may be premature and could lead to negative consumer outcomes if the market developed in such a way that competitive constraints became weaker (particularly in the light of the interactions with the unbundled remedies).
- 5.285 Thirdly, it has been argued by BT that existing regulation (and in particular the charge control, combined with a no-undue discrimination obligation) may mean it is more difficult for BT to compete in the supply of wholesale calls³¹⁷, and also ultimately in the retail market. This is due to the regulated rate of wholesale call origination compared to its competitors (e.g. LLU operators who supply resellers and retail customers using a combination of LLU and wholesale call origination) who do not face this same (regulated rates) constraint. However, it is not clear to us that this is the case.
- 5.286 Where BT wishes to reduce the price of wholesale end to end calls in order to compete more effectively in that market, it is free to do so, subject to the provision of competition law. To the extent that this may require a reduction in charges for wholesale call origination, it is also free to do so. The charge control imposes an upper bound on BT's charges but does not prevent it from charging at a lower rate. Any reduction would need to comply with the non-discrimination obligation and may therefore lead to lower charges for wholesale call origination to all customers and not just to BT itself for the purposes of supplying wholesale end-to-end calls. This ensures that BT is not able to favour wholesale end-to-end calls customers by effectively providing wholesale call origination to them at a lower level than those purchasing wholesale call origination separately (in the absence of underlying cost differences between such customers). This prevents a distortion in competition for wholesale end to end calls, and consequently, competition at the retail level between CPs using wholesale end-to-end calls and those providing services comprising wholesale call origination is not distorted. Further, in a recent Competition Act case³¹⁸ we have found that BT has been increasing its market share in Wholesale Calls, which suggests existing wholesale call origination regulation has not been preventing BT from competing in the provision of these services

³¹⁷ An end-to-end call product which is downstream from wholesale call origination.

³¹⁸ See Complaint from Thus Plc and Gamma Telecom Limited against BT about alleged margin squeeze in wholesale call pricing (Case Reference: CW/00988/06/08), Final Decision published 20 June 2013. http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_988/

5.287 Finally, we note that the implementation (and ultimately enforcement) of differentiated remedies would present complexities associated with the identification of exchanges and/or customers according to the retail offerings available. While we have not explored in detail the implementation issues (given we do not consider such a differentiated approach is warranted on the basis of market definition or market power), we consider that such detailed segmentation by retail customer type and geography would be likely to raise significant complexities for the imposition and monitoring of remedies (and may raise transparency issues for CPs around which remedies apply on which line). Given the disadvantages of implementing one remedy for the whole of the call origination market are low (as discussed above), we do not believe this would be proportionate.

5.288 Therefore we consider that national remedies for wholesale call origination in the United Kingdom are appropriate.

5.289 In this section we set out our final decision for remedies to address our concerns. We start by discussing what we see as the main options for remedies:

- Option 1: network access, non discrimination and transparency remedies; and
- Option 2: charge controls in addition to network access, non-discrimination and transparency remedies.

5.290 Having concluded on what we consider to be most appropriate approach, we then discuss each specific condition in relation to the relevant legal tests for imposing such conditions.

Option 1 (network access, non-discrimination and transparency obligations)

5.291 As described in paragraphs 5.221 onwards, there is a risk that BT and KCOM might refuse to supply wholesale call origination in the respective markets in which they possess SMP. To address this concern, we typically impose a general network access remedy on both BT and KCOM. Such a condition requires requests made for network access to be 'reasonable' requests³¹⁹, and also requires BT and KCOM to provide network access in response to such a reasonable request and that access should be provided on fair and reasonable terms and conditions. As such, it restricts the ability of BT and KCOM to distort competition at the retail level.

5.292 We believe that an obligation to provide network access on its own would not be sufficient to protect competition in downstream markets. Where dominant providers like BT and KCOM are vertically integrated, they might have an incentive to provide wholesale services on terms and conditions that favour their own retail activities in a way that would have a material adverse effect on competition. In particular, they might charge competing providers more than the amount charged to their own retail activities for wholesale services, thereby increasing the costs of competing providers and giving themselves an unfair competitive advantage.

5.293 There is a risk that BT and KCOM might also discriminate between competing providers other than their own retail activities by setting different prices to each provider, depending on the degree of available substitutes. Although BT has argued against the no undue discrimination remedy, we consider this to be a particular concern, as discussed in paragraph 5.228 onwards. As discussed in paragraph

³¹⁹ For example, we consider that CPS on non-BT retail lines would be considered a reasonable request for BT under this condition, as discussed further in paragraph 5.311.

5.285, to the extent that BT is constrained by the downstream market and wants to reduce the charge for wholesale call origination as a result, we would want this competitive constraint to also apply to customers without alternatives. In the absence of the no undue discrimination obligation, BT could keep prices high to serve consumers with less choice and focus price cuts on consumers where there are more constraints. We want to protect against this, and therefore to the extent that there are no underlying cost differences between such customers, a no undue discrimination obligation would be effective in protecting consumers. This kind of discrimination could also extend to terms and conditions of services, such as different delivery timescales, which would disadvantage their retail competitors, and in turn consumers, even further. Therefore, we are imposing a requirement on BT and KCOM not to unduly discriminate.

- 5.294 To ensure that this requirement is effective, we also typically impose a series of obligations designed to deliver transparency of information. Under these requirements, BT and KCOM must publish a reference offer, charges and technical information to assist with the monitoring of their pricing strategies.
- 5.295 They must also notify CPs of changes to charges 56 days in advance of implementation. This constitutes a departure from previous conditions which required a 90 day notification period in advance of changes to such information. However, use of email and online publication mean that price notifications can now be almost instantaneous, and so we consider that a 56 day notification period would allow sufficient time for BT's notified price changes to be reflected in retail prices. We have not received evidence to suggest this is not the case (EE was the only respondent who argued the notice period should remain at 90 days – as noted above – but did not provide any evidence to support this). We also consider that this recognises, on the one hand, that notifications can be provided instantaneously between BT and purchasers of services and, on the other hand, that there may be a number of CPs in the supply chain between BT and the retail level, each of which requires a period of notice such that 28 days (as proposed by BT) would not be sufficient notice of changes in the charges for SMP services.
- 5.296 Some stakeholders said that their agreement on reducing the notice period to 56 days was subject to commercial agreement from BT to increase notice periods from 28 to 56 days for unregulated services. We do not consider that it would be appropriate to make regulation contingent on commercial agreements in competitive services. Rather, the regulation we impose should be the minimum level of intervention required to address the competition concerns we have identified. Based on responses to the February 2013 consultation, CPs consider that 56 days notice periods would be sufficient (whether based on agreements for other services or on a standalone basis). We base this view on the fact that if 56 days notice is not sufficient for the regulated services, this would be the case irrespective of any changes to notice periods for other services. We therefore consider 56 days to be an appropriate notification period to communicate changes in charges. Without this, BT could change products or pricing with insufficient (or ultimately without) notice, in such a way as to discriminate in favour of its retail divisions.
- 5.297 Finally, BT and KCOM are both currently subject to an obligation to provide CPS and Indirect Access (IA) to their retail subscribers on request. This obligation was imposed in the context of a requirement in the Universal Service Directive for national regulatory authorities to impose such an obligation on providers with SMP in markets relating to the provision of fixed services.

- 5.298 Since the 2009 market review, the Universal Service Directive has been amended along with the related directives. Under the amended Universal Service Directive, Ofcom is no longer required to impose CPS and IA remedies but Article 12(1)(a) of the amended Access Directive³²⁰ leaves open the possibility for Ofcom to impose such obligations on CPs with SMP, if this is deemed suitable. We have therefore considered the extent to which it is appropriate to retain the existing CPS and IA obligations for BT and KCOM.
- 5.299 Our view is that the conditions in the United Kingdom are different to those in the Hull Area and we therefore adopt different approaches.

CPS and IA – United Kingdom excluding the Hull Area

CPS and IA on BT retail lines

- 5.300 In the 2009 Wholesale Review, we (in the light of the Universal Service Directive) imposed obligations on BT to:
- a) provide carrier pre selection (CPS) to its subscribers; and
 - b) provide carrier selection (Indirect Access) to its subscribers.
- 5.301 CPS, as imposed by the existing condition, enables consumers who purchase retail line rental from BT to choose a competing calls provider for all calls over their BT line. In this form, therefore, this obligation requires BT to provide wholesale call origination for CPs offering a calls-only voice service over BT retail lines. The CPS condition does not impose the requirement for BT to provide CPS on non-BT retail lines (i.e. over external WLR lines). We discuss this further below. Similarly, the IA obligation allows BT's retail consumers to access the services of any interconnected CP, but on a call-by-call basis by dialling a carrier selection code.
- 5.302 As explained in Section 3, retail competition in the United Kingdom is largely focused on bundles of access and calls, and this is underpinned by the WLR obligation in the exchange lines markets and the provision of wholesale call origination under the general access condition in this market to date. In the light of this, we believe we should not require BT to provide CPS on its retail lines (i.e. to its retail line subscribers) because the focus of competition appears to have moved away from calls-only services. Since the last review, the number of calls-only CPS subscribers on BT retail lines has declined significantly, such that as of March 2013 a very small proportion – [X] – of BT Retail's current customers purchase calls through an alternative provider. We believe it is likely that this decline is due to CPs migrating their customers to bundled offerings (e.g. LLU, WLR or cable services) where calls and lines are provided together, and that it is likely that this trend will continue during the period of the current review. We do not therefore consider that it is proportionate to maintain the existing CPS obligation on BT which requires it to supply CPS to its retail (line) subscribers, because this is no longer a driver of competition at the downstream level.
- 5.303 In relation to CPS, Vodafone raised concerns that this would place BT at a competitive advantage in providing wholesale end-to-end calls products as it would

³²⁰ Paragraph 20, Directive 2009/136/EC amending Directive 2002/22/EC on universal service and users' rights, Directive 2002/58/EC concerning the processing of personal data and the protection of privacy and Regulation (EC) No 2006/2004 on cooperation between national authorities responsible for the enforcement of consumer protection laws ("Citizens' Rights Directive") – 25 November 2009 <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:337:0011:0036:en:PDF>

be the only provider able to provide Wholesale Calls over all lines. We do not consider this to be the case. This is because the only lines which BT would not have to provide wholesale call origination for would be where BT provides the retail line, which puts it in the same (rather than a better) competitive position to other CPs. In particular, BT would not have to allow calls-only competition to its own retail subscribers (i.e. on its retail lines), just as other CPs do not have to allow calls only competition where they provide the retail line (e.g. via WLR). However, on non-BT retail lines (i.e. where a different (external) CP has the retail line by purchasing WLR from BT), any CP can provide wholesale calls products to a CP for the provision of a retail access and calls bundle on that line, including BT. Therefore, given that we do not consider calls-only competition to be an important driver of competition, it is not clear that the inability of other CPs to provide wholesale calls on BT retail lines raises competitive concerns (particularly in the light of the small number of customers affected).

- 5.304 We have also considered whether it would be appropriate to remove the current obligation on BT to provide indirect access (IA) on BT's retail lines. Because IA is a call-by-call product, the customer maintains a retail relationship with BT for its line and for calls not made via IA. Again, as with CPS, the majority of CPs now supply the retail market with a bundle of access and calls, which allows them much greater ownership of the customer relationship. As such, IA (which allows for calls-only competition) does not appear to be an important driver of competition at the retail level. As for the existing CPS obligation on BT retail lines, we have therefore decided to remove the obligation on BT to provide IA as it is not proportionate.
- 5.305 None of the issues raised by stakeholders in response to the February 2013 consultation change our view that CPS and IA over BT retail lines are not important drivers of competition at the retail level. If BT were to choose to discontinue the supply of CPS over its retail lines, those receiving such services could continue to be served by the range of competing providers at the retail level (either by their existing CPS provider offering a bundle of both calls and access to the customer by purchasing WLR for that customer, or by switching to an alternative provider offering bundled calls and access). As a result, we consider that the removal of CPS on BT Retail lines will have a limited effect on consumers or competition. Where certain services are taken, with the result that WLR is not currently available for those particular lines, CPS could still be provided (i.e. if it can be shown to be fair and reasonable (as per the access obligation) and consistent with our rationale for this obligation).³²¹
- 5.306 We also do not agree that CPS over BT retail lines and IA are important forms of competition for voice-only customers, as we have seen no evidence that consumers' preference for purchasing bundles of calls and access would be less pronounced for these customers. Therefore we do not believe it is proportionate to impose this SMP remedy on BT once all the other remedies are in place. We would note that, contrary to the position assumed by certain respondents (and as set out below), the removal of the condition does not prevent BT from providing either CPS on its retail lines or IA should it choose to do so (for example, following commercial negotiations).
- 5.307 We recognise that CPS and IA are used by some CPs in novel ways or to create different products and billing solutions that some businesses value (as discussed in paragraph 5.260 to 5.270). However, we do not believe that the use of CPS and/or IA on BT retail lines to provide niche services (for example, business packages for

³²¹ For example, where the line is attached to a value added downstream service (such as Redcare, Featurenet and Featureline), the fair and reasonableness of CPS over such lines would need to be considered.

home-workers) constitutes an adequate justification for the continuation of these remedies. For example, in the absence of these remedies, home-workers may need to purchase an alternative solution or find a different way to manage their work-related telecommunication expenses. We note that this would result in the business paying the rates applicable to the consumer's package. However, the removal of this offering would not – in itself – be detrimental to competition in the markets for business or residential fixed-line services. Similarly, we do not see that the use of IA as a diagnostic tool for routing specialist calls - [X] - is a significant driver of competition at the retail level (such that it would be considered proportionate to impose regulation). However, where the technical provision of CPS and IA are valued by CPs and their customers, they may enter discussions with BT on the continued provision of these services on a commercial basis.

- 5.308 We therefore consider that the obligation on BT to provide CPS on BT retail lines or IA is no longer proportionate. However, we recognise that there may be a need for a transition period as BT discontinuing the supply of CPS over its retail lines, or increasing the price of supply, as a result of the removal of the existing CPS obligation might result in additional costs borne by CPs, particularly where they have entered into contracts with end customers that are longer than 12 months (as raised by respondents). That said, we also note that the number of customers affected by this change is small and has been declining over time (as set out above). In the light of this, we proposed a 12 month sunset clause. While some respondents stated that 12 months was not sufficient transition time, we have not received evidence in response to the February 2013 consultation that would justify a longer transition. Additionally, as set out above, CPs are free to negotiate continued access with BT, should this be desirable for them, and the CP with the direct retail customer relationship will know if they are affected by this change (i.e. whether they are providing calls-only) and therefore that they need to make adjustments.
- 5.309 We therefore include a 12 month sunset clause for the existing CPS obligation to ensure CPS-only access on BT retail lines remains available for 12 months. This will allow the necessary transition to occur (e.g. by allowing sufficient time for CPs to make appropriate changes to their contracts or find alternative means of providing calls services), limiting the potentially negative impact for CPs who currently use calls-only CPS on BT retail lines and also ensuring that any resulting impact of the removal of this regulatory obligation on consumers is small. During this period, BT will be under an obligation to continue to provide CPS on BT retail lines for existing end-customers but will not be required to provide new consumers. We describe this as a “stop-sell” approach³²².
- 5.310 In relation to IA, no stakeholder raised any specific implementation concerns for residential consumers. However, we note that a number of stakeholders use IA as part of providing bundles of services to end-users, and others rely on IA to perform technical functions. While we recognise the fact that some consumers (albeit a minority) still use IA alongside these more niche technical uses, we do not consider that we have received sufficient evidence to justify a longer transition period. We therefore believe that it is appropriate to maintain the current regulatory obligation in relation to IA for a period of 12 months to allow CPs to find alternative solutions and/or contact customers regarding changes.

³²² In the consultation we proposed a 12 month sunset clause, but in the light of responses to the consultation, we consider that it would not be appropriate for new customers to enter a retail contract underpinned by CPS on a BT retail line during this transition period in the light of the regulatory change. As a result, we consider that a stop-sell sunset clause would be more appropriate.

CPS on non-BT retail lines

5.311 Distinct from the specific existing CPS obligation which relates to BT retail lines (discussed above), we have also considered the role of CPS on other (non-BT retail) lines. As discussed above, we consider this remains important as it (alongside the WLR obligation) underpins competition in the provision of bundles of access and calls. To date, BT has provided CPS on non-BT retail lines as part of the general access obligations, as no specific CPS obligation has been in place for supply on non-BT retail lines. Although we proposed a specific form of network access obligation for BT to provide CPS on non-BT retail lines in the February 2013 consultation, in the light of the fact that BT has previously provided this without a specific obligation (although it has been subject to the general access obligation), we now consider that a specific form of access obligation is unnecessary. Instead, we consider that it remains appropriate to rely on the general network access obligation (particularly given the lack of clarity in the specific CPS condition proposed in the consultation, as revealed by the responses set out above). However, for the avoidance of doubt, we consider that for the period of this review, the provision of the current CPS product on non-BT retail lines (i.e. on external WLR lines³²³) would constitute a reasonable access request for wholesale call origination.³²⁴

CPS and IA – the Hull Area

5.312 In the Hull Area, KCOM is currently subject to an obligation to provide CPS and IA to its subscribers.

5.313 In practice, as far as we are aware, there have been no requests for CPS to date and we do not expect conditions will change such that there may be demand in the future. We therefore do not believe that it is proportionate to impose a specific CPS remedy in this review in addition to the network access obligation. In light of the fact there have been no reasonable requests to date, we do not consider a transition period for the existing CPS obligation to be necessary.

5.314 In relation to IA, there has been take-up of IA services but these still represent a relatively limited proportion of retail narrowband call volumes in the Hull Area.³²⁵ Due to the small volumes of IA purchased, we do not believe that it is proportionate to impose a specific IA remedy in the Hull Area over the period of this review beyond

³²³ Note, the purchaser of WLR from BT and the purchaser of CPS from BT would not necessarily need to be the same CP.

³²⁴ In 2004, we published a statement addressing the local call disadvantage related to same/adjacent-DLEs (see Ofcom, Addressing the local call disadvantage: Final statement on CPS same/adjacent-DLE calls, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/cps_option/statement/cps_stmnt.pdf for more details). As a result of the inefficiency this causes, we required BT to provide an option within the CPS product to allow CPs to choose to have same/adjacent DLE calls routed end-to-end on the BT network, and we would expect this option to continue where CPS is provided in accordance with the general network access obligation. Similarly, BT currently provides two options for wholesale call origination services (i.e. with or without Operator Assistance (OA)), which allows CPs to select the option without OA and make their own arrangements for operator services. We have previously considered this to be important to allow the CP to take over the relationship with the retail customer, and as such, the continuation of both of these wholesale call origination products is also likely to be considered fair and reasonable.

³²⁵ [X] million minutes were originated via IA in 2011/2012. This equates to [X] of total call origination minutes as a whole and [X] for the business market. (KCOM). In terms of revenues, it can be seen from KCOMs Regulatory Financial Statements that external sales of wholesale call origination were only 4% of total wholesale call origination by KCOM in 2012/13. <http://www.kcomplc.com/docs/regulatory-pdf/final-statements-2013.pdf>

the general access obligation. However, in recognition of the fact that there are some (albeit limited) users of IA, we include a sunset clause for the removal of the existing IA obligation of 12 months. This will allow any necessary negotiations over fair and reasonable access (as per the general network access obligation) between KCOM and CPs to occur before the specific regulatory obligation is removed.

Option 2 (Option 1 plus charge controls)

- 5.315 While we believe the general remedies set out above to be important and necessary, we do not expect them to be sufficient. This is because we consider it likely that, if BT and KCOM are only obliged to provide network access with no undue discrimination, they would retain significant scope to universally increase wholesale call origination prices for the reasons discussed in paragraphs 5.228 to 5.234.

BT

- 5.316 In relation to BT, while the no undue discrimination obligation would protect consumers with less choice from selective price increases (see discussion in paragraph 5.293), we consider that there is also a risk that prices could universally increase across all customer segments quite significantly before the presence of direct and indirect constraints for particular customer groups would constrain further increases. That is, the absolute level of constraint on all wholesale call origination (even reflecting the most competitive consumers) is uncertain and therefore charges may be increased above the competitive level in the absence of price regulation (see paragraph 5.228 onwards). This would be to the detriment of all consumers that purchase services from a CP using BT's wholesale call origination, but also particularly for those unable to switch to a CP that self-supplies wholesale call origination.
- 5.317 In the light of the above, we consider that general access remedies on their own would not adequately address the consumer harm we have identified as they would not constrain BT's price setting behaviour.
- 5.318 To address these concerns, we conclude it is necessary to impose an additional pricing remedy on BT. This would eliminate any risk of excessive pricing by requiring BT to charge a call origination rate which reflects the underlying costs of an efficient network associated with supplying wholesale call origination. In relation to BT, we consider there to be three broad options: a fair and reasonable charges condition, a cost orientation obligation, or a charge control.

Fair and reasonable charges

- 5.319 In addition to requiring network access to be provided on fair and reasonable terms and conditions, we could require BT to provide wholesale call origination at fair and reasonable charges. However, on its own, we do not consider this would provide sufficient constraint on BT's pricing so as to mitigate the risks of consumer harm arising from BT's SMP in wholesale call origination (discussed above). While we could provide detailed guidance on what would constitute fair and reasonable charges to limit the flexibility afforded to BT, it is not clear what exactly this could be based on that did not involve an assessment of costs (either BT's – actual or forecast – or those of a hypothetical network, see discussion of cost orientation below), as alternative relevant benchmarks appear limited. Therefore we consider that it would be very difficult to set such guidance for this market review period in a way that was less onerous than a charge control, yet would still provide a sufficient constraint on

BT's price setting behaviour and balance regulatory certainty, cost recovery, and efficiency incentives within the market conditions described above.³²⁶

Cost orientation

- 5.320 A cost orientation obligation³²⁷ (typically accompanied by guidance on the interpretation of this) would limit price increases for wholesale call origination by providing a cost-based benchmark while avoiding the need for a charge control. This obligation could therefore be considered appropriate and proportionate in the context of BT's declining market share. In combination with a no undue discrimination requirement this obligation could provide protection for consumers without being as restrictive as a full charge control. A cost orientation obligation could also allow prices to reflect market conditions, including changes in costs and the increasing availability of substitutes for wholesale and retail customers.
- 5.321 However, we consider such an approach may not be appropriate in this review period. Firstly, where cost orientation has previously been imposed, it has tended to mean that prices should be between distributed long run incremental cost (DLRIC) and distributed stand alone costs (DSAC), which is a significant range. As a result, relying solely on such a cost orientation obligation could mean BT would be able to increase the prices of wholesale call origination services to levels well above costs (and, by implication, the competitive level).³²⁸ Therefore we consider this approach would not provide a sufficient constraint on BT in this review period, given the significant pricing flexibility we consider it would have for wholesale call origination absent regulation (discussed above).
- 5.322 While we could provide alternative guidance on cost orientation (e.g. based on fully allocated costs (FAC) or a variant of this), the interactions with wholesale call termination regulation in this review period are also relevant for wholesale call origination. In this statement we are imposing a charge control on BT's fixed termination rate (FTR), setting it at LRIC (based on a cost model of a hypothetical NGN operator), with common costs no longer recovered from call termination to be recovered from wholesale call origination (see discussion in Section 8). Given this, we would effectively need to develop a cost model in order to provide sufficient guidance so as not to undermine regulatory certainty over common cost recovery. As a result, it is not clear that we could impose an effective cost orientation obligation in this case for this review period in a way that was significantly less onerous than a charge control. This is particularly true given the FTR charge control is based on a hypothetical NGN operator's costs, which would therefore be a different cost base from a cost orientation obligation for wholesale call origination based on BT's own costs. Further, a cost orientation obligation would not possess the efficiency incentives inherent in charge control regulation.

³²⁶ This is particularly true in relation to wholesale call origination for this review period given our conclusion that it should include an additional contribution to common costs following the move to LRIC FTRs (as discussed further in relation to cost orientation).

³²⁷ We note that we have recently published a Review of Cost Orientation consultation which sets out at a general level the factors we are likely to consider in deciding whether and which price remedy is appropriate, and if we consider a cost orientation obligation is necessary, the form this obligation should take. We consider in particular how the use of a cost orientation obligation may relate to our use of charge controls. Ofcom, *Cost orientation review*, 5 June 2013.

<http://stakeholders.ofcom.org.uk/consultations/cost-orientation/>

³²⁸ For example, even if no individual charges were in excess of DSAC, without further restriction on BT's pricing, and given its market power, it could set a combination of charges at or close to DSAC in such a way that it recovered more than the incremental and common costs incurred.

Charge control

- 5.323 In the United Kingdom, we consider that a charge control on BT would remove the risk of excessive pricing by setting a price ceiling that was reflective of costs, while still providing a reasonable opportunity to recover costs.
- 5.324 While we recognise the downward trend in BT's market share of wholesale call origination, we consider that a charge control would provide regulatory certainty over common cost recovery for BT while still addressing the identified consumer harm. This is because our method of charge control regulation via price caps creates incentives on BT to increase its efficiency, thereby imitating the effect of a competitive market. If BT can reduce its costs below the level expected when the cap was set, then BT retains any increase in profits accrued during the period the charge control is in place.
- 5.325 We also acknowledge that a charge control might, in theory, stifle the potential for wholesale call origination to become effectively competitive. It could also reduce incentives to invest in infrastructure by other CPs (as it ensures wholesale call origination is available from BT at a regulated price). However, we do not see the potential for efficient LLU deployment to be materially impacted by setting a cost based charge control on BT (indeed, LLU roll-out to date has occurred in the presence of a cost-based charge control on wholesale call origination), and therefore consider these risks to be low.
- 5.326 The appropriate cost standard for a charge control is an important consideration. This is considered further in Section 8, where we also consider the implications of the change in cost standard for wholesale call termination. The specific charge control details are discussed in Section 11.
- 5.327 We have considered whether, in addition to the charge control on wholesale call origination, additional pricing remedies are required. In particular, we have considered whether we should require charges to be fair and reasonable (as part of the network access condition) and/or subject to a cost orientation obligation, but have concluded these additional remedies are not necessary or proportionate:
- a) Fair and reasonable – For those services within the charge control, we consider the overall control is sufficient to address our competition concerns and provide regulatory certainty. If there were services not covered by the charge control, or there was reasonable potential for new services to be provided outside the scope of the charge control, a fair and reasonable charges condition may be relevant. However, we do not consider this to be the case for wholesale call origination. In particular, despite Virgin Media's arguments of the need for regulatory reassurance for all services (including new services), we consider that wholesale call origination is a mature market where the charge controlled service is well established and applies to all calls. Further, we would not necessarily expect to see any new or replacement services arising during the period of this review, and so the imposition of such a condition on this basis would not seem proportionate.³²⁹ In addition, the requirement for charges to be both "fair and reasonable" and compliant with the charge control could lead to regulatory

³²⁹ More specifically in relation to NTS, as raised by Virgin Media, we note that the call conveyance elements are subject to a charge control, while other aspects are subject to the NTS retail uplift and PRS Bad Debt surcharge until the new NGCS regime is implemented (see further discussion below). As a result, it is not clear why an additional fair and reasonable charges remedy would be necessary for NTS.

uncertainty for both BT and purchasers of wholesale call origination. Therefore we exclude the requirement to provide services at fair and reasonable charges from the network access condition.

- b) Cost orientation - the charge control uses a cost model based on hypothetical NGN operator, and so requiring BT to simultaneously comply with this and a cost orientation obligation based on its own costs could be incompatible and lead to regulatory uncertainty. This is particularly true given our decision to regulate wholesale call origination on the basis of LRIC+, which will include an additional mark-up for common costs no longer recovered from termination (as discussed in Section 8). Further, as noted by respondents to the consultation, in wholesale call origination where a charge control is placed on a single service, it is not clear why additional cost orientation obligations – typically used alongside a charge control to bound flexibility on individual prices within that charge control – would be required.

5.328 Together with the general access remedies described under Option 1, we believe a charge control pricing remedy constitutes the most appropriate and proportionate response to BT's SMP in wholesale call origination.

5.329 In addition to the charge control, we are imposing on BT cost accounting and accounting separation remedies. The specific obligations we are imposing and the reasons for doing so are set out in detail below (see paragraph 5.402 onwards).

KCOM

5.330 Although we have also concluded that KCOM has SMP in the provision of wholesale call origination in the Hull area (and therefore there is a risk of excessive charging), we do not believe that a charge control or a cost orientation obligation would be appropriate or proportionate due to the small size of this market and the fact that KCOM's sales of wholesale call origination are very limited. We are therefore imposing an obligation on KCOM to provide wholesale call origination on fair and reasonable terms (the guidance for which is set out in Section 8). Such an obligation would therefore address the concerns identified while ensuring that any remedy is proportionate.

5.331 Table 5.4 provides a summary of our final remedies. We discuss the rationale and the legal test for each remedy in more detail in the remainder of this section.

Table 5.4: Summary of remedies for wholesale call origination

Obligations	BT ³³⁰	KCOM ³³¹
Requirement to provide network access on reasonable request	Y	Y
Requests for new forms network access	Y	N
Requirement not to unduly discriminate	Y	Y
Requirement to publish a reference offer	Y	Y
Requirement to notify charges	Y	Y
Requirement to notify technical information	Y	Y
Transparency as to quality of service	Y	N
Cost accounting	Y	N
Accounting separation	Y	Y
Requirement to provide NTS wholesale call origination until unbundled tariff introduced	Y	N
Charge control	Y	N

Conditions imposed on BT

Requirement to provide network access on reasonable request

5.332 Ofcom has decided to retain the condition requiring BT to meet reasonable requests for network access in the call origination market. Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as it 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 that conditions are complied with within the periods and at the times required.

5.333 When considering the imposition of such conditions, Ofcom must have regard to the six factors set out in section 87(4) of the Act, including, *inter alia*, the technical and economic viability of installing other competing facilities and the feasibility of the proposed network access.

Aim of regulation

5.334 This remedy is designed to promote competition in downstream markets by requiring CPs with SMP to provide wholesale access to their network facilities. The level of investment required by a third party to replicate BT's network in order to compete at this level is a significant barrier to entry. As set out at paragraph 5.291 above, Ofcom considers that in the absence of such a requirement, the dominant provider may have both the ability and incentive not to provide access.

³³⁰ We have decided to remove the existing obligations on BT to provide CPS and IA to its retail subscribers, but are imposing a stop-sell sunset clause of 12 months for the former and a 12 month sunset clause for the latter.

³³¹ We have decided to remove the existing obligations on KCOM to provide CPS and IA to its retail subscribers, but are imposing a sunset clause of 12 months for the existing IA obligation.

Condition

- 5.335 The condition requires requests made to BT for network access to be 'reasonable' requests. As set out above, a request for the current CPS product provided on non-BT retail lines would be presumed to be a reasonable request. The condition also requires BT to provide network access in response to such a reasonable request and that access should be provided on fair and reasonable terms and conditions (excluding charges).
- 5.336 We exclude the requirement to provide services at fair and reasonable charges from the network access condition, for the reasons discussed above in paragraph 5.327.

Legal tests

- 5.337 We consider that the condition meets the criteria set out in section 47(2) of the Act. The condition is:
- objectively justifiable; as its intention is to promote retail competition by ensuring third parties are able to acquire wholesale access on fair and reasonable terms where they are unable to replicate BT's network;
 - not unduly discriminatory; as it is imposed only on BT which we have concluded has SMP in wholesale call origination in the UK excluding Hull. KCOM is subject to a similar obligation, as it is the other CP we have concluded has SMP in wholesale call origination (in the Hull area). The difference between the obligations imposed on BT and KCOM is due to the difference in scale of the two CPs; this means that BT will, in addition, be subject to a charge control and, as a result, this condition does not need, in BT's case, to address charges;
 - proportionate; since without such an obligation BT could refuse to provide access and this would mean other CPs would not be able to effectively compete at the retail level, but does not require BT to provide access where it is not technically feasible or reasonable; and
 - transparent; as it is clear that the intention is to ensure that BT provides access to its network in order to facilitate competition.
- 5.338 We have also considered our duties under section 3 of the Act. We consider that, in ensuring Network Access is provided at the reasonable request of third parties, the condition will in particular further the interests of consumers in relevant markets by the promotion of competition.
- 5.339 We have also considered the Community requirements as set out in section 4 of the Act. We consider that the obligation will promote competition in relation to the provision of electronic communications networks and encourage the provision of network access for the purpose of securing efficient and sustainable competition in markets for electronic communications networks and services.
- 5.340 For the reasons set out above, we conclude that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requests for new forms of network access

- 5.341 We have decided to impose an obligation on BT regarding the process by which it will address requests for new forms of network access (its statement of requirements (SOR) process).
- 5.342 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as it 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 new forms of network access are made and responded to, and that conditions are complied with within the periods and at the times required.
- 5.343 When considering the imposition of such conditions, Ofcom must have regard to the six factors set out in section 87(4) of the Act, including, inter alia, the technical and economic viability of installing other competing facilities and the feasibility of the proposed form of network access.

Aim of regulation

- 5.344 The aim of this regulation is to support access seekers in understanding the process they should follow in order to make reasonable requests for new forms of network access from BT. To make such a request, the CP should provide BT with a Statement of Requirements (SOR) against which the reasonableness of the request can be assessed.
- 5.345 There are certain key principles that BT's process for handling SORs should meet in order for it to be effective. Therefore, the condition we are imposing requires BT to have in place, and follow for each SOR, a SOR process which must meet the following principles:
- a) the process for consideration of requests shall be documented end-to-end;
 - b) the timescales for each stage of the process shall be reasonable;
 - c) the criteria by which requests will be assessed shall be clearly identified; and
 - d) any changes to the guidelines shall be agreed between BT and other communications providers in an appropriate manner.
- 5.346 We consider that the SOR process as currently documented (based on the process previously set out by Ofcom in specific SMP conditions in the 2003 market review) meets these criteria. In 2009 we removed the specific process as set out in the condition to allow for changes to the existing process that better meet the requirements of industry, if agreed by industry and BT. We continue to consider this to be appropriate, and so again impose a condition that sets out the main principles but allows industry to agree the specifics of any changes to the process.

Legal tests

- 5.347 Section 87(3) of the Act authorises the setting of SMP services conditions in relation to the provision of network services. We consider that under section 87(5)(a), the condition will assist in securing fairness and reasonableness in the way in which requests for new forms of network access are made and responded to.

5.348 Ofcom deems that the condition meets the criteria set out in section 47(2) of the Act. The condition is:

- objectively justifiable; as it recognises that a process for handling new requests is needed but that the condition should be flexible to allow for process improvements;
- not unduly discriminatory; as it only applies to providers with SMP. Ofcom does not impose this obligation on KCOM as the different market conditions in the Hull Area mean that there is not the same level of demand for network access;
- proportionate; as it facilitates the process for requests for new forms of network access, and thus encourages competition at the retail level, while allowing scope for BT to contribute to the shaping of this process; and
- transparent; as it is clear the intention is to support the provision of access to BT's networks in order to facilitate competition.

5.349 We have considered our duties under section 3 of the Act. We consider that, in ensuring that access seekers are able to make requests for new forms of network access based on an agreed SOR process, the condition would in particular further the interests of consumers in relevant markets by the promotion of competition.

5.350 We have considered the Community requirements as set out in section 4 of the Act. We consider that the obligation will promote competition in relation to the provision of electronic communications networks and encourage the provision of network access for the purpose of securing efficient and sustainable competition in markets for electronic communications networks and services.

5.351 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

5.352 For the reasons set out at paragraph 5.292 to 5.293, Ofcom has decided to impose a condition on BT not to unduly discriminate in relation to the provision of network access.

5.353 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.

Aim of regulation

5.354 We consider that, in order to meet our objective to promote efficient and sustainable competition at the wholesale level, a non-discrimination SMP condition is necessary.

5.355 Where dominant providers are vertically integrated, like BT, they may have an incentive to provide wholesale services on terms and conditions that favour their own retail activities, in a way that would have a material adverse effect on competition. They might also discriminate between competing providers by setting different terms and conditions (including prices) depending on the degree of available substitutes.

- 5.356 An obligation to provide network access on its own is not adequate to promote downstream competition. In the absence of a requirement not to unduly discriminate, BT could favour its own downstream businesses and/or favour particular CPs over others who lack any available substitutes, which would have the effect of restricting or distorting competition in the retail market.

Legal tests

- 5.357 We consider that the condition meets the criteria set out in section 47(2) of the Act. We believe the condition is:
- objectively justifiable; as it provides a safeguard to prevent BT from favouring its own retail business, to the disadvantage of its competitors, and to prevent BT from favouring particular CPs over others who lack any available substitutes;
 - not unduly discriminatory; as it is only imposed on those providers who are found to have SMP and all such CPs are subject to the same obligation;
 - proportionate; in that it is the least restrictive means of ensuring that BT does not discriminate in favour of its own downstream operations in providing access to wholesale call origination services in a manner which would distort competition at the downstream level; and
 - transparent; as it is clear that its intention is to prevent undue discrimination.
- 5.358 We have also considered our statutory obligations and the Community objectives set out in sections 3 and 4 of the Act.
- 5.359 On the basis that BT has SMP in the provision of wholesale call origination, the obligation encourages the provision of network access and service interoperability for the purpose of securing efficient and sustainable competition in the retail markets for calls, by ensuring BT does not unfairly favour its own retail businesses (or some CPs on the basis of available substitutes) and therefore distort competition.
- 5.360 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.
- 5.361 Ofcom has considered the Community requirements as set out in section 4 of the Act. The condition encourages the provision of network access and service interoperability for the purpose of securing efficient and sustainable competition in the retail markets for access and calls by ensuring BT does not unfairly favour its own retail business, and therefore distort competition, or favour particular CPs over others (for example, who lack available substitutes).
- 5.362 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Transparency

- 5.363 Ofcom considers that it is appropriate to ensure that there is transparency of charges, terms and conditions in a market in which one operator is dominant. In the absence of requirements obliging BT to publish this information, BT might offer differential charges, terms and conditions to both its downstream division and also between other CPs. These CPs would not be able to check that they were being

charged an equivalent rate, or that the terms and conditions that they were offered were also equivalent.

5.364 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish all such information, and in such manner as Ofcom may direct, for the purpose of securing transparency. Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(d) also permits the setting of SMP services conditions requiring the dominant provider to include specified terms and conditions in the reference offer. Finally, section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed from time to time.

5.365 We have decided to impose the following obligations to provide transparency:

- a) Requirement to publish a reference offer;
- b) Requirement to notify charges;
- c) Requirement to notify technical information; and
- d) Transparency as to quality of service.

Requirement to publish a reference offer

5.366 Ofcom has decided to impose a condition on BT to publish a reference offer (RO) for wholesale call origination services and products.

Aim of regulation

5.367 The main reasons for requiring the publication of a RO are to assist with transparency in monitoring potential anti-competitive behaviour and to give visibility to the terms and conditions on which other CPs would be able to purchase wholesale access services. The publication of a RO therefore helps to ensure stability in markets and ensures that incentives to invest would not be undermined.

5.368 Additionally, the publication of a RO allows for speedier negotiations and can help to avoid possible disputes. Together with a non-discrimination requirement, the publication of a RO gives confidence to those purchasing wholesale services that they are being provided on non-discriminatory terms.

Changes to the existing condition

5.369 In the 2009 market review, we required BT to include information relating to network components in the RO. In this review we have decided to remove this specific obligation, on the basis that we no longer consider that this information is required in order to assist CPs in monitoring for potential anti-competitive behaviour by BT, or to provide transparency that would allow CPs to make better informed decisions about purchasing wholesale call origination.

Condition

5.370 We believe that it is appropriate for the published RO to include:

- a clear description of the services on offer;
- terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The RO will also provide sufficient information to enable providers to make technical and commercial judgements; and
- conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the RO, that provides for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion.

Legal tests

5.371 We believe that the condition meets the criteria set out in section 47(2) of the Act. The obligation is:

- objectively justifiable; in that it requires that terms and conditions are published allowing competing CPs the ability to ensure they are receiving offers that do not unduly discriminate in favour of BT's own retail operations, therefore encouraging competition to the benefit of consumers;
- not unduly discriminatory; as it is applied only to those operators who have SMP and all such CPs are subject to the same obligation;
- proportionate; in that it is only required to provide the information necessary to ensure there is no material adverse effect on competition (such as those concerns discussed in paragraphs 5.363 and 5.367 above); and
- transparent; as it is clear the obligation is designed to ensure that potential competitors have sufficient information to make investment decisions about entry into this market.

5.372 We have also considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

5.373 The requirement to publish a RO would, in combination with a requirement not to discriminate unduly (as well as other remedies), facilitate service interoperability, secure freedom of choice for wholesale customers of BT and allow CPs to make informed decisions about future entry into the relevant market. Further, the obligation enables purchasers to adjust their downstream offerings in competition with BT, in response to changes in BT's terms and conditions. Finally, the obligation makes it easier for Ofcom and other CPs in the relevant market to monitor any instances of discrimination. Therefore, we conclude 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.

5.374 Ofcom considers 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 efficient and sustainable competition for the maximum benefit for consumers. The publication of a RO would mean that other CPs would have the necessary information readily available to allow them to make informed decisions about entry into the market.

Requirement to notify charges

5.375 Ofcom has decided to impose a condition on BT to publish any planned changes to charges in advance of those changes taking place.

Aim of regulation

5.376 Notification of changes to charges for services at the wholesale level can further assist competition, as it means other CPs would have the opportunity to consider whether these changes require amendments to their own retail offerings.

5.377 The notification of charges at the wholesale level has the joint purpose to assist transparency for the monitoring of potential anti-competitive behaviour and to give advance warning of charge changes to competing CPs who purchase wholesale access services. The latter purpose ensures that competing CPs have sufficient time to plan for such changes. Notification of charges therefore helps to ensure stability in markets, without which incentives to invest might be undermined and market entry made less likely.

Condition

5.378 The notice of charge changes should include:

- A description of the access service;
- The location of terms and conditions in the RO;
- The effective date or period from which the changes will have effect;
- The current and proposed charge;
- Other charges for services that will be directly affected by the change; and
- The network tariff gradient.

Change to notification periods

5.379 The condition imposed in the 2009 Wholesale Review required the notification of charges 90 days in advance of changes taking effect.

5.380 However, use of email and online publication mean that price notifications can now be almost instantaneous. We did not receive any information in response to the February 2013 consultation that suggests that 56 days is not a sufficient period of time to notify of changes in charges (as discussed above). We consider that a 56 day notification period would allow sufficient time for BT's notified price changes to be reflected in retail prices, and, in this way, promote competition by ensuring that CPs could all meet their regulatory obligations without incurring any commercial risk.

5.381 We have therefore decided to reduce the notification period for wholesale call origination charges from 90 days to 56 days.

Legal tests

5.382 We consider that the condition meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable; because general and reliable visibility of a dominant operator's prices is needed to enable competitors to set prices for their services that are based on purchasing the regulated inputs. It also allows Ofcom and other CPs to monitor BT's prices for possible anti-competitive behaviour;
- not unduly discriminatory; as it is only imposed on those CPs who have SMP and all such CPs are subject to the same obligation;
- proportionate; in that only information that other CPs would need to know in order to adjust for any changes would have to be notified. Periods are proposed to be the minimum required to allow changes to be reflected in retail offers; and
- transparent; as it is clear the intention is to ensure that BT notifies those who purchase wholesale access of changes to charges.

5.383 We have also considered our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

5.384 In particular, the obligation encourages compliance with transparency, for the purpose of facilitating service interoperability and securing freedom of choice for the customers of CPs. The obligation also promotes competition in downstream markets by allowing BT's competitors to make appropriate changes to their products. Finally, the obligation makes it easier for Ofcom and BT's competitors to monitor any instances of discrimination.

5.385 For the above reasons, we have decided 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.

5.386 Ofcom considers that the condition meets the Community requirements set out in section 4 of the Act. In particular, the condition promotes competition and secures efficient and sustainable competition for the maximum benefit of consumers by ensuring that CPs have the necessary information to allow them to make informed decisions about competing in the relevant market.

Requirement to notify technical information

5.387 Ofcom has decided to impose a condition on BT to notify technical information in advance of providing new wholesale services or amending existing technical terms and conditions.

Aim of regulation

5.388 The aim of the obligation to provide advance notification of technical characteristics is to ensure that competing CPs have sufficient time to respond to changes that may affect them. For example, a competing CP may need to introduce new equipment or modify existing equipment or systems to support a new or changed technical interface.

5.389 Technical information 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). Relevant information about network configuration is likely to include information about the function and connectivity of points of access, for example, the connectivity of exchanges to end-users and other exchanges.

Condition

5.390 The condition imposed in the 2009 Wholesale Review required the notification of new technical information 90 days in advance of providing new wholesale services or amending existing technical terms and conditions. We continue to believe that 90 days is the minimum time that competing CPs would need to make modifications to their network to support changes.

Legal tests

5.391 We consider that the condition meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable; as it enables competing operators to make full and effective use of network access. The period allows CPs time to react to proposed changes without imposing an unnecessarily long notification period on BT that may restrict its ability to develop and deploy new features or products;
- not unduly discriminatory; as it is only imposed on those CPs who have SMP and all such CPs are subject to the same obligation;
- proportionate; in that 90 days is considered the minimum period necessary to allow competing CPs to modify their networks; and
- transparent; in that it is clear in its intention that BT notifies technical information.

5.392 We have also considered our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

5.393 We consider that, by ensuring that other CPs are given sufficient time to make any changes to technical specifications that might affect their businesses, 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.

5.394 Further, we consider that, in line with section 4 of the Act, the condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of Network Access and service interoperability 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.

Transparency as to quality of service

5.395 We have decided to impose an obligation on BT to provide transparency as to quality of service. This obligation will require BT to publish such quality of service information in the manner and form as Ofcom may from time to time direct.

Aim of regulation

5.396 The intention of the transparency of quality of service remedy is to monitor whether any undue discrimination is occurring by requiring the publication of data regarding the delivery of wholesale services by BT to downstream BT businesses as compared with other CPs.

5.397 We note that in previous market reviews we have imposed this general obligation on BT for wholesale call origination but have not imposed specific data publication obligations as we have not identified a specific need. We have also not currently identified specific data publication requirements for this review period. Therefore we are not imposing specific publication obligations at this time. But given the risk of undue discrimination, this regulation allows us to respond quickly in the event that a concern arose, and thus require BT to publish quality of service information should such a need occur in the future.

Regulation

5.398 We have decided to impose an obligation which requires BT to publish such quality of service information in the manner and form as Ofcom may from time to time direct, but we do not impose any specific data publication obligations for wholesale call origination at this time.

Legal Tests

5.399 We consider that the condition meets the requirements in section 47(2). The condition is:

- objectively justifiable; because where concerns arise about quality of service provided by BT, it allows Ofcom to react quickly to impose additional transparency requirements;
- not unduly discriminatory; as we impose it on BT, which has SMP in wholesale call origination. While we have also concluded that KCOM has SMP in wholesale call origination, we do not consider a similar condition appropriate because the different market conditions in the Hull Area mean that there is a much lower demand for wholesale call origination from KCOM compared to BT (and we consider that this is unlikely to substantially change in this review period);
- proportionate; as BT will only be required to publish data if required by Ofcom in line with the aim of this obligation; and
- transparent; as it is clear that its intention is to monitor the quality of service provided by BT.

5.400 We consider that, in ensuring the network access that third party CPs receive from BT allows CPs to provide products that compete with those provided by BT in downstream markets, 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.

5.401 We have considered the Community requirements in section 4 of the Act and consider that the condition promotes competition and secures efficient and sustainable competition by enabling comparison of the service levels BT provides to itself as against other CPs.

Cost accounting

5.402 We consider that it is appropriate that BT is required to comply with obligations governing cost accounting systems and processes as set out in *The regulatory financial reporting obligations on BT and Kingston Communications Final Statement*

and notification, published in July 2004 (the “July 2004 Statement”),³³² for the following reasons:

- a) Cost accounting ensures that we have the necessary information to monitor the effectiveness of remedies we are implementing, and ensure they continue to address the competition problems identified, and to enable our timely intervention should such intervention ultimately be needed;
- b) Cost accounting also ensures that we have the necessary 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;
- c) Cost accounting obligations further ensure that BT records all information necessary for the purposes listed above, at the time that relevant transactions occur, on an ongoing basis. Without 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; and
- d) The imposition of cost accounting obligations ensures that wholesale costs are attributed across the wholesale markets (and the individual services within them) in a consistent manner. This mitigates the risk of over-recovery of costs or that costs might be loaded onto particular products or markets.

5.403 As part of this review we have concluded that BT will not be subject to a cost orientation obligation for wholesale call origination services. We therefore conclude that BT will no longer be required to publish DLRIC and DSAC information, as CPs will no longer need this to monitor compliance with a cost orientation obligation. This is consistent with our approach and reasoning in other recent decisions where we have removed cost orientation obligations.³³³

5.404 However, we will continue to require BT to provide DLRIC and DSAC information to Ofcom on an annual basis. Contrary to the arguments made by BT, we consider that this is proportionate as, irrespective of the removal of the cost orientation obligation, such cost data informs our market reviews, in particular our assessment of SMP and our analysis of appropriate remedies where such SMP is present.

5.405 As set out above, Virgin Media and EE argued that, even in the absence of a cost orientation obligation, LRIC data should still be published for reasons of transparency and to act as useful cost benchmarks (particularly for use by CPs in negotiations). However, we do not agree with these arguments because the new price regulation for wholesale call origination is based upon LRIC+ (including an additional contribution to common costs in light of LRIC FTRs) using a hypothetical NGN cost model. LRIC cost measures based on BT's actual incurred costs are therefore less useful as a reference point.

³³² Ofcom, The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf . See also Ofcom, Changes to BT's regulatory financial reporting and audit requirements, May 2007, <http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf> and Ofcom, Changes to BT and KCOM's regulatory and financial reporting 2012/13 update, January 2013, <http://stakeholders.ofcom.org.uk/binaries/consultations/bt-kcom-2012-13/summary/condoc.pdf>

³³³ See Business connectivity market review, 28 March 2013, <http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/>

- 5.406 We will also continue to require BT to publish FAC information for wholesale call origination services at the market level, but not at the service level. We consider that publication of FAC at a service level is not proportionate in the context of price regulation which will now be based on hypothetical NGN cost modelling (as argued by BT). As explained above regarding LRIC data, we do not agree with the arguments of Virgin Media and EE regarding publication of service level FAC for the same reason (i.e. given the price regulation basis set out above). However, we do see value in the reporting of FAC information at a market level. Trends in market level profitability are informative in the context of considering the effectiveness of remedies as a whole. Market level FAC information also provides transparency regarding how BT has allocated costs across regulated markets (and between regulated and unregulated markets). We see this as facilitating stakeholder confidence that such costs have been allocated consistently. It also mitigates against the risk of double recovery of costs or that costs might be unreasonably loaded onto particular services or markets. Finally, we also note that FAC reporting at market level also arises from BT's accounting separation obligation (discussed below).
- 5.407 Nevertheless, we will also continue to require BT confidentially to provide FAC information at a service level to Ofcom on an annual basis. Contrary to the arguments made by BT, we consider that this is proportionate as, irrespective of the charge control model basis, such data informs our market reviews, in particular our assessment of BT's performance, our assessment of SMP, and our assessment of the extent to which BT has been able to recover costs under the charge control.
- 5.408 We note that while we impose a cost accounting obligation on BT as part of this market review, the specific changes to BT's regulatory reporting requirements (in this case in particular around DSAC/DLRIC and FAC reporting) will be implemented as part of Ofcom's annual update to the regulatory reporting obligations (as has been our practice in the past).

Aim of regulation

- 5.409 Ofcom believes it is appropriate to retain cost accounting obligations for the reasons set out at paragraphs 5.402 to 5.408 above.

Conditions

- 5.410 BT is required to comply with obligations governing cost accounting systems and processes as set out in an Ofcom statement published in 2004.³³⁴ The outputs, relevant to this review, include:
- a) preparation of a variety of financial statements;
 - b) preparation of extensive supporting documentation explaining how the financial statements have been put together;
 - c) provision of an independent assurance statement;

³³⁴ Ofcom, The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf . See also Ofcom, Changes to BT's regulatory financial reporting and audit requirements, May 2007, <http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf> and Ofcom, Changes to BT and KCOM's regulatory and financial reporting 2012/13 update, January 2013, <http://stakeholders.ofcom.org.uk/binaries/consultations/bt-kcom-2012-13/summary/condoc.pdf>

- d) publication of information; and
- e) preparation of reconciliation statements.

Legal tests

- 5.411 Under sections 87(9) to 87(11) and 88 of the Act, appropriate cost accounting obligations may be imposed on dominant providers in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities.
- 5.412 We consider that the condition meets the criteria set out in section 47(2) of the Act. The obligation is:
- objectively justifiable; for the reasons set out above;
 - not unduly discriminatory; it is not imposed on KCOM since we do not feel that it would be proportionate to do so. While KCOM is subject to price regulation in the form of a fair and reasonable charges obligation, we do not believe that this constitutes, in this particular case, sufficient justification to impose the regulatory burden of a cost accounting obligation. This is particularly the case given that KCOM is not subject to a charge control and due to the low volume of call origination provided by KCOM compared to BT;
 - proportionate; since only the information that is necessary to support transparency is required to be provided; and
 - transparent; as it is clear that the intention is to monitor the effectiveness of price control remedies and to support market reviews. The particular cost accounting requirements of BT are clearly documented in the July 2004 Statement.
- 5.413 In addition to the tests set out in Section 47(2) of the Act, Ofcom is also required to ensure that the condition satisfies the tests set out in section 88 of the Act.
- 5.414 Section 88(1)(b) of the Act states that Ofcom are not to 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 pricing effects arising from price distortion and it also appears that the setting of the condition is appropriate for the purposes of:
- i) promoting efficiency;
 - ii) promoting sustainable competition; and
 - iii) conferring the greatest possible benefits on the end users of public electronic communications services.
- 5.415 Section 88(2) also requires us to take account of the extent of the investment when setting this type of condition.
- 5.416 We have identified the risk of excessive pricing by BT in the wholesale call origination market and imposed charge control and other remedies which seek to promote efficiency and sustainable competition and seeks to confer the greatest possible benefits on the end users of public electronic communications services. The cost accounting remedy supports the effectiveness of our regulatory approach in this

market. We have also taken account of the extent of the investment of BT in the matters to which the cost accounting obligations relate.

5.417 We have also considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.

5.418 We consider that the imposition of a cost accounting obligation 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 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 allow the effective monitoring of other obligations designed to curb potentially damaging leverage of market power – in particular the setting of prices at excessive levels.

5.419 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.

Accounting separation

5.420 Ofcom has decided to impose an accounting separation obligation on BT in relation to the wholesale call origination market. Under section 87(7) and 87(8) of the Act, appropriate accounting separation obligations may be imposed on the dominant provider in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities.

Aim of regulation

5.421 The accounting separation obligation requires BT to report separately for each of the relevant markets and services, and account separately for internal and external revenue.³³⁵ This will provide a higher level of detail of information (and therefore transparency) than that derived from the statutory financial statements of the notified operator, and allow Ofcom, and third parties, to monitor the activities of BT to ensure that it does not discriminate in favour of its own downstream business.

5.422 In the light of this, we are retaining the existing obligation and the associated reporting requirements. BT will therefore publish information including revenue, prices and volumes at a service level, separately identifying internal and external activities. BT will also publish FAC at a market level.

5.423 As noted above, EE argued for the publication of cost accounting information in relation to undue discrimination. Under the accounting separation obligation, FAC information will be published at a market level. This will allow margins to be measured at a wholesale market level. We do not consider it necessary or proportionate for BT to provide service level data. We do not consider the risk of

³³⁵ Article 11 of EC Directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), as amended by Directive 2009/140/EC; See also Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC).

inappropriate margins between wholesale and retail prices to be such as to warrant the imposition of an additional obligation to this effect. Ofcom will be in possession of relevant information to enable an assessment to be carried out in the event of concerns being raised and it is not necessary for CPs to be provided with this information.

Legal tests

5.424 It is our view that the condition meets the criteria set out in section 47(2) of the Act. The obligation 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 those CPs who have SMP and all such CPs are subject to the same obligation;
- proportionate; as it is necessary as a mechanism to allow us and third parties to monitor potentially discriminatory behaviour by BT; and
- transparent; as it is clear the intention is to monitor compliance with specific remedies and the particular accounting separation requirements of BT are clearly documented.³³⁶

5.425 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.

5.426 We consider that the imposition of an accounting separation obligation is justifiable and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of Network Access 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 the potentially damaging leverage of market power – in particular the requirement not to unduly discriminate – can be effectively monitored and enforced.

5.427 We have considered the Community requirements set out in Section 4 of the Act and believe that the proposed 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 ensuring that dominant providers comply with no undue discrimination requirements imposed to promote competition.

NTS transitional arrangements

5.428 The NTS market provides access to a wide range of telephone-based services provided by service providers (SPs). As it would be impractical and costly for the SPs to establish a billing relationship with customers, NTS calls are retailed by the

³³⁶ Ofcom, *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf
Ofcom, *Changes to BT's regulatory financial reporting and audit requirements*, May 2007, <http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf>

originating CP (OCP) on behalf of the terminating CP (TCP) and SP. The OCP then passes some of the retail revenue through to the TCP as a termination payment.

- 5.429 In an unregulated environment³³⁷, BT would be likely to have a strong position in negotiating termination rates for NTS calls due to its SMP in wholesale call origination, and neither the caller nor the SP would be able to competitively constrain the price that BT sets (and thus retains) to retail NTS calls. Even taking into account the End-to-End Connectivity obligation on BT³³⁸, which required BT to negotiate termination rates on fair and reasonable terms, BT is likely to be in a strong negotiating position as there is no clear *ex ante* guidance on what is fair and reasonable regarding revenue sharing. Switching by callers is not a viable constraint because callers are unlikely to feel the direct effect of an increase in retention by BT. It would instead be TCPs and thus SPs that would face a revenue squeeze following this increase, and because of BT's position in wholesale call origination, would not have sufficient countervailing bargaining power to address this. Therefore, there is a concern that BT could exploit its SMP in the wholesale call origination market by unduly raising the charge for NTS wholesale call origination (including retail costs), and thereby squeeze the revenue received by the SP and TCP (through reduced termination rates), which could in turn undermine competition in the provision of services using NTS.
- 5.430 As a result of this NTS-specific concern, BT is currently subject to an NTS Call Origination Condition. In its present form, this condition requires BT to originate and retail NTS calls on behalf of the TCP, and it is remunerated for this service (in addition to wholesale call origination rates) through two specific channels:
- a) The Retail Uplift: This charge control allows BT to recover reasonable retailing costs that relate to the provision of NTS calls. The existing control, which was set in 2011³³⁹, currently allows for an annual increase equal to RPI + 1.25%. The above RPI value of this control is driven by the need to account for under-recovery of costs in the previous Retail Uplift control; and
 - b) The PRS Bad Debt Surcharge: This allows BT an additional retention to reflect the high incidence of bad debt that is incurred in the retailing of PRS calls. The level of this surcharge is currently set at 5.2% of BT's PRS retail revenues.
- 5.431 The purpose of the NTS Call Origination Condition, therefore, is to prevent BT from exploiting its SMP while still allowing it to recover the costs it incurs on behalf of TCPs.³⁴⁰
- 5.432 In April 2013, Ofcom published a policy position and consultation in relation to non-geographic calls.³⁴¹ In this document, Ofcom proposed a new form of NTS regulation.

³³⁷ The concerns around commercial negotiations for NGC termination rates are discussed in the 2013 NGCS Review. See paragraphs A9.5-7 of Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges (consultation) 15 April 2013 <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

³³⁸ End-to-End Connectivity Statement 2006 http://stakeholders.ofcom.org.uk/binaries/consultations/end_to_end/statement/statement.pdf

³³⁹ Ofcom, Wholesale charges for Number Translation Services and Premium Rate Services, July 2011, http://stakeholders.ofcom.org.uk/binaries/consultations/nts-retail-uplift/statement/NTSRU_statement.pdf

³⁴⁰ This meant that the termination rate received by TCPs was determined by the difference between BT's retail price and the regulated retention of BT (i.e. the excess over and above the costs of originating and retailing the call).

Under this new form of NTS regulation, known as the ‘unbundled tariff’ remedy, a new call charge structure, which separates the retail price of a non-geographic call into two different components would be implemented as follows:

- a) Access Charge: This is set by, and paid to, OCPs to cover the costs of their wholesale call origination service (including retail costs). Under this regulatory framework, BT will be expected to recover its retailing and conveyance costs from its own retail customers through the Access Charge. As a result, BT cannot increase the price of NTS wholesale call origination to reduce the revenue stream to the SP (and TCP).
- b) Service Charge: This will be selected by SPs from a range of a minimum of 100 different Service Charge price points. It will be paid to the TCP and cover its costs of termination, as well as any outpayment to SPs (through the TCP). Because SPs will choose their own service charge from the range made available by TCPs, TCPs and SPs will be afforded certainty over the level of termination payment (and therefore revenue) they receive.

- 5.433 Separating the wholesale call origination charge (via the proposed Access Charge) from the revenue to the TCP and SP (via the proposed Service Charge) removes any concerns that BT could use its SMP in wholesale call origination to restrict the revenue received by TCPs and SPs for termination. Therefore, we do not consider it necessary to retain the specific additional NTS Call origination Condition after the implementation of this unbundled tariff.
- 5.434 Ofcom has not yet issued a statement in relation to the adoption of these measures, but we expect to do so shortly, and therefore this review leads us to consider how we should regulate NTS Call Origination, if at all, in the interim period³⁴². Such period covers when obligations imposed in this market review take effect, but prior to the implementation of the proposed changes in relation to non-geographic calls.
- 5.435 As the unbundled tariff remedy is not expected to be implemented until spring 2015, we have considered appropriate action to cover the ‘transitional’ period.
- 5.436 Any suitable interim remedy must continue to safeguard competition in the provision of NTS call origination. Given the relatively short period of time for which it may be required, though, it must also be proportionate. The development of a new charge control based on detailed cost forecasting would require significant information gathering, therefore we do not consider such a charge control to be proportionate in this case. Furthermore, we did not receive any evidence in response to the February 2013 consultation that led us to believe that such a charge control was necessary for this interim time period.
- 5.437 With this in mind, we have decided to set an RPI-based price ceiling on the retail uplift until the new NTS regime is implemented. We consider that this will limit the amount that BT can retain for the costs of retailing NTS calls (limiting any reduction in

³⁴¹ Ofcom, Simplifying non-geographic numbers– Policy Position on the introduction of the unbundled tariff and changes to 080 and 116 ranges, April 2013, <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

³⁴² We here assume therefore that we will proceed as set out in the April 2013 NGCS consultation document. However, if Ofcom proceeds to issue a statement which differs in a material respect from the position Ofcom consulted on in April, we may reconsider our position set out here if appropriate.

the revenue available to TCPs³⁴³) while still facilitating reasonable cost recovery by BT. In response to the issue raised by EE, we note that NTS retailing activities do not depend on wholesale network activities (which are covered by the separate wholesale call origination control). Therefore, network efficiencies and falling equipment prices as raised by EE are less relevant. Within this context, an RPI cap provides a limit to charge increases during this period and will provide an ongoing incentive to outperform the cap for as long as it is in place. As such, we consider that it achieves the objectives in a proportionate way.

5.438 The control set in 2011 allows a 1.25% real increase in the retail uplift. This was primarily because the previous charge control had led BT to under-recover relevant FAC retail costs by approximately £2m per year.³⁴⁴ We consider that the control set in 2011, with the RPI+1.25% cap, has rectified this shortfall. Therefore, for the period from 1 October 2013, we do not consider under-recovery of costs to be a concern, given that BT's prices will have been brought into line with forecast costs by the end of September 2013.

5.439 Under these circumstances, therefore, we do not consider it necessary to maintain the glide-path above inflation in the retail uplift. Instead, we conclude it is sufficient to set the price ceiling at current levels plus RPI, which will remain in place until the new NGCS regime is implemented.

5.440 We have also decided to maintain the current PRS Bad Debt surcharge for the duration of the interim period. We believe that no material changes have occurred since July 2011, when the surcharge was set at 5.2% of PRS retail revenues³⁴⁵, to warrant a review of the level of this control. As the previous surcharge was only implemented in 2011 it is based on relatively recent data from BT. Further, contrary to EE's suggestion about the risk of inefficiencies in our proposed approach, the previous review found that the available evidence did not support the application of an efficiency adjustment to the PRS Bad Debt surcharge (and it is not clear that the position has changed since then).³⁴⁶ This conclusion reflected the findings of an independent review that BT's bad debt management practices reflect good practice, and the fact that BT's overall incidence of bad debt was broadly comparable with that of its main retail competitors. We also considered that BT had an incentive to manage its retail bad debt efficiently (since retail markets are competitive and only a small percentage of its bad debt is recoverable via the PRS Bad Debt Surcharge).³⁴⁷ As a result, we conclude that it is appropriate to maintain the surcharge at the current level until the implementation of the unbundled tariff.

³⁴³ This is particularly undesirable at a time when geographic wholesale call origination rates are likely to increase significantly (due to the increase in common costs recovered as a result of the move of FTRs to LRIC), placing additional pressure on TCP margins.

³⁴⁴ Ofcom, Wholesale charges for Number Translation Services and Premium Rate Services, July 2009, p.24, paragraph 3.42,

<http://stakeholders.ofcom.org.uk/binaries/consultations/nts/summary/ntscondoc.pdf>

³⁴⁵ Ofcom, Wholesale charges for Number Translation Services and Premium Rate Services, July 2011, p.4, http://stakeholders.ofcom.org.uk/binaries/consultations/nts-retail-uplift/statement/NTSRU_statement.pdf

³⁴⁶ Respondents in 2011 questioned the efficiency of BT's bad debt management practices in respect of PRS calls, and urged us to reduce the surcharge because of inefficiencies in BT's bad debt management procedures.

³⁴⁷ Paragraph 1.14 et seq. Statement on Wholesale charges for Number Translation Services and Premium Rate Services – NTS Retail Uplift charge control and PRS Bad Debt Surcharge. Ofcom, 20 July 2011. http://stakeholders.ofcom.org.uk/binaries/consultations/nts-retail-uplift/statement/NTSRU_statement.pdf

Legal tests

5.441 We conclude that the condition meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable; because it is necessary to promote competition and innovation in downstream markets to the benefit of consumers;
- not unduly discriminatory; in that while it is not imposed on KCOM, our view remains that regulation would not be proportionate in respect of the Hull Area;
- proportionate; because it is necessary for BT to provide retailing services to third parties using NTS call origination, in order for this service to be effective to promote competition and innovation in the downstream markets until such time as the new regime is implemented; and
- transparent; as it is clear that the intention is to ensure that the charges paid by third parties are fair and reasonable, while at the same time, representative of BT's costs involved in providing the service.

5.442 In addition, we have considered the tests in section 88 of the Act, which only authorise Ofcom to implement price regulation where there is a risk, in situations where SMP is persistent, of adverse effects arising from price distortion and price regulation is necessary to promote efficiency and sustainable competition, and to confer the greatest possible benefits on the end-users of public electronic communications services. As discussed, we continue to believe that it is necessary to control the charges for services supporting NTS call origination as the absence of effective competition will mean there is no other pressure on pricing.

5.443 We have also considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.

5.444 In particular, we have sought to implement a set of NTS obligations that further the interests of consumers by the promotion of competition. We have sought through the obligations to deliver efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of the obligation ensures that BT's wholesale NTS call origination charges are not set excessively, but also allows BT to recover its efficiently incurred costs.

5.445 We have considered the Community requirements set out in section 4 of the Act and conclude that the 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 setting a price ceiling that seeks to promote competition.

Charge control

5.446 Section 87(9) of the Act authorises the setting of SMP services conditions imposing on the dominant provider price controls connected with the provision of network access.

Aim of regulation

5.447 In the absence of a charge control, BT has the ability and incentive to set prices above the competitive level. BT's wholesale competitors would then be forced to pay

these high prices in order to provide retail services to their customers, who would suffer accordingly from higher retail prices. In addition, as BT could recover its own costs through higher prices charged at the wholesale level, which would ultimately be passed on in higher retail charges, it would not be incentivised to reduce costs and improve efficiency.

5.448 In order to address this, we have decided to impose a charge control on BT to ensure it does not price excessively for wholesale call origination services.

Condition

5.449 As set out in paragraphs 5.323 to 5.325, we believe our method of charge control regulation via price caps creates incentives on the dominant provider to increase its efficiency, thereby imitating the effect of a competitive market. In Section 11, we set out and explain the charge control design for wholesale call origination that BT will be subject to.

Legal tests

5.450 We consider that a charge control obligation meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable. Without the charge controls, BT may price excessively. The benefits expected of a competitive market would not be available to consumers without the imposition of RPI+/-X price controls;
- not unduly discriminatory. While it does not apply to KCOM, we consider that it would not be proportionate to impose such a remedy on KCOM given current market conditions in the Hull Area, specifically the low number of CPs seeking access;
- proportionate. As it requires BT to meet a charge control which includes allocating common costs to the provision of relevant services, BT has the correct incentives to improve efficiency which leads to benefits that would be expected in a competitive market, but allows BT to benefit from any further improvements in its efficiency; and
- transparent. It is clear in its intention to control BT's charges while creating efficiency incentives.

5.451 In addition to the tests set out in Section 47(2) of the Act, we also consider that the proposed condition satisfies the tests set out in section 88 of the Act.

5.452 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears from the market analysis carried out for the purpose of setting that condition that there is a relevant risk of adverse effects arising from price distortion. We explained above that we consider that in the absence of charge controls BT may price excessively, and therefore that there is such a risk of adverse effects.

5.453 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of:

- i) promoting efficiency;

- ii) promoting sustainable competition; and
 - iii) conferring the greatest possible benefits on the end-users of public electronic communications services.
- 5.454 We believe that the structure of the charge control provides BT with incentives to improve efficiency, since it would retain any savings from improved efficiency that reduces its costs over the period of the control.
- 5.455 We also consider that the obligation will continue to promote sustainable competition by allowing CPs to purchase wholesale call origination services at prices which allow them to compete effectively at the retail level. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on end users of the services.
- 5.456 Section 88(2) requires us to take account of the extent of the investment when setting this type of condition. We consider that the design of the charge control allows common costs to be taken into account and also allows BT to retain any increased profits should it be able to reduce its costs (through increased efficiency) below the level expected when the cap was set.
- 5.457 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 5.458 In particular we have set a charge control that furthers the interests of consumers by promoting competition. We have sought, through the charge control, to secure efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of the obligation will ensure that the charges for call origination services by BT are not set excessively, while allowing BT to recover its efficiently incurred costs.
- 5.459 We have considered the Community requirements set out in section 4 of the Act and believe that the 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 setting a charge control that seeks to promote competition.

Conditions we propose for KCOM

- 5.460 Below, we present the obligations that we have decided to impose on KCOM. Where the conditions are similar to those imposed on BT and where we consider that the legal tests are met for the same reasons as in BT's case, we do not repeat the analysis.
- 5.461 KCOM argued that due to what it considers to be more complex customer relationships with its clients, it should not be subject to the obligation to notify any changes to charges 56 days in advance of those changes taking place. However, we did not receive any evidence to suggest this is the case and therefore we do not consider KCOM's argument to warrant a change in the condition.

Requirement to provide network access on reasonable request

- 5.462 As in the last review, Ofcom has decided to impose the condition requiring KCOM to meet reasonable requests for network access in the call origination market. Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the

dominant provider to provide network access as it 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 that conditions are complied with within the periods and at the times required.

- 5.463 When considering the imposition of such conditions, Ofcom must have regard to the six factors set out in section 87(4) of the Act, including, inter alia, the technical and economic viability of installing other competing facilities and the feasibility of the proposed network access.

Aim of regulation

- 5.464 This remedy is designed to promote competition in downstream markets by requiring KCOM, a CP with SMP, to provide wholesale access to its network facilities. The level of investment required by a third party to replicate KCOM's network in order to compete at this level is a significant barrier to entry. As set out at paragraph 5.222 above, Ofcom considers that in the absence of such a requirement, the dominant provider may have an incentive not to provide access.

Condition

- 5.465 The condition requires requests made to KCOM for network access to be 'reasonable' requests. The condition also requires KCOM to provide network access in response to such a reasonable request and that access should be provided on fair and reasonable terms, conditions, and charges.
- 5.466 Further guidance on what would amount to fair and reasonable charges is set out in Section 8.

Legal tests

- 5.467 We consider that the proposed condition meets the criteria set out in section 47(2) of the Act. The proposed condition is:
- objectively justifiable; as its intention is to promote retail competition by ensuring third parties are able to acquire wholesale access on fair and reasonable terms where they are unable to replicate the network of KCOM;
 - non-discriminatory; as it is imposed only on KCOM which we have concluded has SMP. BT is subject to a similar obligation, as it is the other CP we have concluded has SMP in wholesale call origination. The difference in the conditions, whereby only KCOM is subject to an obligation to provide network access on fair and reasonable charges, reflects the fact that, due to the scale of BT, we have decided BT should be subject to a charge control;
 - proportionate; since without such an obligation KCOM could refuse to provide access and this would mean other CPs would not be able to effectively compete at the retail level, but does not require KCOM to provide access where it is not technically feasible or reasonable; and
 - transparent; as it is clear the intention is to ensure that KCOM provides access to its network in order to facilitate competition.

- 5.468 In addition to the tests set out in Section 47(2) of the Act, Ofcom is 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.
- 5.469 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears from the market analysis carried out for the purpose of setting that condition that there is a relevant risk of adverse effects arising from price distortion. We have discussed above that we consider that in the absence of price regulation requiring prices to be “fair and reasonable”, KCOM may price excessively, and therefore consider that there is such a risk.
- 5.470 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of:
- i) promoting efficiency;
 - ii) promoting sustainable competition; and
 - iii) conferring the greatest possible benefits on the end users of public electronic communications services.
- 5.471 We consider that fair and reasonable charges will prevent KCOM from passing on any inefficiently incurred costs to other CPs through excessively high prices. This is especially important given that we have decided not to impose a charge control on KCOM. In this way, this condition supports the aim of improved efficiency.
- 5.472 We also consider that the provision of network access on fair and reasonable terms will promote sustainable competition by ensuring that other CPs can effectively compete at the retail level. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on end-users of the services.
- 5.473 We are also required, under Section 88(2) of the Act, to consider KCOM's investment. We believe that fair and reasonable charges will allow KCOM's costs to be taken into account and will also provide for common cost recovery. This condition is therefore an appropriate basis upon which to control KCOM's prices.
- 5.474 We have also considered our duties under section 3 of the Act. We consider that, in ensuring Network Access is provided at the reasonable request of third parties, the condition will in particular further the interests of consumers in relevant markets by the promotion of competition.
- 5.475 We have also considered the Community requirements as set out in section 4 of the Act. We consider that the obligation will promote competition in relation to the provision of electronic communications networks and encourage the provision of network access for the purpose of securing efficient and sustainable competition in markets for electronic communications networks and services.
- 5.476 For the reasons set out above, we conclude that the condition is appropriate to address the competition concerns identified, in line with section 87(1).

Requirement not to unduly discriminate

- 5.477 Ofcom has decided to impose a condition on KCOM not to unduly discriminate in relation to the provision of network access.

5.478 The condition, the rationale for this regulation and the legal tests are the same as discussed above for BT in paragraphs 5.352 onwards.

Transparency

5.479 Ofcom considers that it is appropriate to ensure that there is transparency of charges, terms and conditions in a market in which one operator is dominant. In the absence of requirements obliging KCOM to publish this information, it might offer differential charges, terms and conditions both to its downstream division and also between CPs. Third party CPs would not be able to check that they were being charged a reasonable rate, or that the terms and conditions that they were offered were also reasonable.

5.480 To provide transparency, we have decided to retain the following conditions on KCOM:

- a) Requirement to publish a reference offer for wholesale call origination services and products. The conditions, the rationale for the regulation and the legal tests are the same as discussed above for BT in paragraphs 5.366 onwards.
- b) Requirement to notify charges:
 - o The condition, the rationale for this condition and the legal tests are the same as discussed above for BT in paragraphs 5.375 onwards.
 - o Notification periods – The existing condition requires the notification of charges 90 days in advance. In this statement, however, we have concluded that BT is required to provide 56 days' notice of changes to prices (as discussed in paragraphs 5.379 to 5.381). On the basis that KCOM also holds SMP in wholesale call origination, we consider it is appropriate to also impose an obligation that KCOM must also provide 56 days' notice of changes to charges.
- c) Requirement to notify technical information. The conditions, the rationale for the regulation and the legal tests are the same as discussed above for BT in paragraphs 5.387 onwards.

Cost accounting

5.481 We have decided not to impose a cost accounting obligation on KCOM as we believe it is no longer necessary or proportionate (for the reasons set out in paragraph 5.412 above). KCOM is therefore no longer required to report Fully Allocated Costs (FAC) at service level (it will continue to report such information at market level as a result of its accounting separation obligations) and therefore it is not required to publish the 'Network Activity Statement'³⁴⁸ and 'Statement of Current Cost Mean Capital Employed'³⁴⁹.

³⁴⁸ KCOM Regulatory Financial Statements: http://www.kcomplc.com/docs/regulatory-pdf/final_statements_2012.pdf; Page 26.

³⁴⁹ KCOM Regulatory Financial Statements: http://www.kcomplc.com/docs/regulatory-pdf/final_statements_2012.pdf; Page 25.

Accounting separation

- 5.482 Ofcom has decided to impose an accounting separation obligation on KCOM in relation to the wholesale call origination market.
- 5.483 The conditions, the rationale for the regulation and the legal tests are the same as discussed above for BT in paragraphs 5.420 onwards.

Pricing remedies

- 5.484 In the United Kingdom, we are implementing a charge control on BT. As set out above, we consider it would not be justifiable or proportionate to increase the regulatory burden on KCOM in this review.
- 5.485 Instead, we consider that we can reasonably address the SMP held by KCOM in the Hull Area through a network access requirement, provided on fair and reasonable terms.
- 5.486 As described in Section 8, KCOM's wholesale call origination rate has been falling into line with BT's since 2009.³⁵⁰ In addition, KCOM's retail prices remain broadly in line with BT's retail prices for the United Kingdom. This suggests that KCOM's cost base for fixed geographic call origination is likely to be comparable with BT's.
- 5.487 As such, in considering any dispute in relation to KCOM's charges for wholesale call origination, we would start from a presumption that rates no higher than BT's charge controlled rate would be fair and reasonable. In the event that KCOM seeks to set a higher rate, we would expect it to demonstrate that the BT rate would prevent it from recovering its efficiently incurred costs.
- 5.488 We consider this approach to be effective. This is because it provides a framework for protecting consumers, by linking KCOM's wholesale call origination charges with the costs of an efficient operator and therefore addressing the risk of excessive pricing, while also providing regulatory certainty both to KCOM and to other CPs which may wish to purchase wholesale call origination from KCOM.
- 5.489 We conclude that this approach is the most proportionate response as it achieves these aims without adding the burden of a separate charge control.

³⁵⁰ KCOM Group plc, *Regulatory financial statements for the year ended 31 March 2012 – 27 July 2012*, http://www.kcomplc.com/docs/regulatory-pdf/final_statements_2012.pdf

Section 6

Wholesale fixed geographic call termination

Summary of our decision

- 6.1 In this section we consider market definition, market power and remedies for wholesale fixed geographic call termination services (“wholesale call termination”).
- 6.2 With regard to market definition, we have decided that the relevant service markets are:
- “termination services that are provided by [named fixed communications provider] (CP) to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP.”
- 6.3 For the purpose of this review, wholesale call termination services refer to the conveyance of all signals (including relevant control signals) required to terminate calls on a customer’s exchange line from the point in the network closest to the end customer’s point of connection to the network where those signals can be accessed by another CP.
- 6.4 With regard to market power, we have decided that each CP has SMP in wholesale call termination within the relevant market applicable to that CP.
- 6.5 The remedies we are imposing in relation to wholesale call termination are shown in Table 6.1 below:

Table 6.1: Summary of the remedies for wholesale call termination

BT obligations	Obligations for all other CPs with SMP in the provision of wholesale call termination services (including KCOM) ³⁵¹
<ul style="list-style-type: none"> • Requirement to provide network access on reasonable request • Requirement not to unduly discriminate • Charge control • Requirement to publish a reference offer • Requirement to notify charges • Requirement to notify technical information • Cost accounting • Accounting separation 	<ul style="list-style-type: none"> • Requirement to provide network access on reasonable request³⁵² • Requirement to notify charges

6.6 In this section we first briefly discuss the relevant regulatory background. We then set out our proposals in the February 2013 consultation, stakeholder responses to the February 2013 consultation and our conclusions on:

- the relevant market for wholesale call termination;
- market power;
- our competition concerns; and
- appropriate remedies.

Introduction

6.7 Wholesale call termination relates to the conveyance of all signals (including relevant control signals) required to terminate calls on a customer's exchange line from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another CP.

Regulatory framework

6.8 The 2007 EC Recommendation on relevant product and service markets establishes that wholesale call termination on a fixed network is a market that is susceptible to *ex ante* regulation and should be reviewed on a regular basis. In reviewing this market we must take into account the particular competitive circumstances in the United Kingdom.

³⁵¹ For a full list of relevant CPs, see Annex 6 (schedule 3).

³⁵² This includes fair and reasonable terms, conditions and charges with guidance, as discussed in paragraphs 6.125 to 6.135.

2009 Market review

- 6.9 In the 2009 wholesale review we defined the relevant market for wholesale call termination as:

“wholesale fixed geographic call termination on each individual network”

- 6.10 We also found that all fixed network CPs had SMP in relation to the provision of wholesale fixed geographic call termination services over their networks and imposed remedies accordingly.³⁵³

2011 Wholesale mobile call termination statement

- 6.11 In 2011, we published our wholesale mobile call termination statement (2011 MCT Statement)³⁵⁴ in which we considered that market power in termination services was related to the number ranges that have been allocated to CPs. We concluded that the relevant market for the termination of mobile calls is:

“termination services that are provided by [named mobile communications provider] (MCP) to another communications provider, for the termination of voice calls to United Kingdom mobile numbers which that MCP has been allocated by Ofcom in the area served by that MCP and for which that MCP is able to set the termination rate.”

- 6.12 A number of network elements are involved in terminating a mobile call, including switching elements, transmission networks and authentication servers. An MCP may wholly own (or lease) all the elements necessary for terminating a call or may make use of third-party elements to terminate calls. Of these different elements, control of the mobile number plays a pivotal role because the number acts as an identifier of the recipient (and hence, determines from whom the originator will purchase wholesale call termination). We said that the MCP which holds the number, controls the ability to authenticate users, enabling them to receive calls. This means that control of the number *“profoundly influences the competitive conditions under which wholesale call termination is purchased”*.³⁵⁵
- 6.13 We concluded that, for each of the individual proposed markets, the relevant undertaking (MCP) has SMP.

Market definition

Proposals in the February 2013 consultation

- 6.14 With regard to market definition, in the February 2013 consultation we proposed that the relevant service markets are:

³⁵³ Ofcom, *September 2009 Wholesale Market Statement and Consultation*, page 51, paragraphs 7.2-7.4

http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf

³⁵⁴ Ofcom, *“Wholesale Mobile Voice Call Termination - Statement”*, 15 March 2011, http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement.pdf

³⁵⁵ Ofcom, *“Wholesale mobile voice call termination market review, volume 2 – main consultation”*, 1 April 2010, page 20, paragraph 3.15 http://stakeholders.ofcom.org.uk/binaries/consultations/wmctr/summary/wmvct_consultation.pdf

“termination services that are provided by [named fixed communications provider] (CP) to another communications provider, for the termination of voice calls to United Kingdom geographic numbers which that CP has been allocated by Ofcom in the area served by that CP.”

- 6.15 In assessing the appropriate market definition, we took account of our decision in the 2011 MCT statement, in which we defined the market with reference to CPs' allocated number ranges rather than to individual networks alone. We considered that, as in mobile wholesale call termination, the control of the number range is necessary in identifying the fixed termination service, since it is a key element for defining the individual network.
- 6.16 We considered the current market context in the United Kingdom and provisionally concluded that call termination to non-geographic numbers is a distinct service subject to different competitive constraints. As a result, we did not consider it to be part of the same market as wholesale call termination. We also noted that a separate review of non-geographic services is currently being conducted.³⁵⁶

Stakeholder responses to the February 2013 consultation

- 6.17 Of the 35 respondents to the February 2013 consultation, ten commented on the market definition for wholesale call termination.³⁵⁷ Of these, six explicitly agreed, three agreed but had some concerns and one respondent (EE) disagreed with our proposed market definition.
- 6.18 Although Vodafone agreed with our market definition, it was concerned about the application of the definition to ported numbers.³⁵⁸ In particular, it questioned whether recipient CPs would also be deemed as dominant in relation to ported numbers. It argued that this hinges on whether the individual ported number is *de facto* deemed to be allocated by Ofcom to the recipient CP. We consider this issue in paragraph 6.31 below.
- 6.19 [X] agreed with our analysis of the relevant market, in particular with our view that the relevant market is applied to the switch which serves the customer. However, it requested clarity on our proposed market definition. This is addressed in our definition as discussed in paragraphs 6.32 and 6.33 below.

Non-geographic call termination

- 6.20 Two respondents, EE³⁵⁹ and Virgin Media³⁶⁰, were concerned about the treatment of non-geographic number ranges. EE considered that it was premature for Ofcom to explicitly exclude non-geographic calls from the wholesale call termination market, given the ongoing non-geographic call services (NGCS) review.

³⁵⁶ Ofcom, “Simplifying non-geographic numbers”, 15th April 2013

<http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

³⁵⁷ Virgin Media, EE, Lanonyx Telecom Ltd, BT, [X], H3G, Lexgreen Services Ltd, [X], 4D Interactive Ltd and Vodafone.

³⁵⁸ Vodafone response to February 2013 consultation, March 2013, page 14.

<http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/Vodafone.pdf>

³⁵⁹ EE response to February 2013 consultation, April 2013, pages 5 to 7.

<http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/EE.pdf>

³⁶⁰ Virgin Media response to February 2013 consultation, April 2013, page 21.

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/Virgin_Media.pdf

- 6.21 EE further argued that an increase in the price of wholesale call termination might encourage entry from terminating CPs (TCPs) which terminate non-geographic calls. We consider this issue in paragraph 6.40 below. EE also maintained that service providers (SPs) do not provide additional competitive constraints in the non-geographic market. We discuss this in paragraphs 6.43 to 6.46 below.
- 6.22 Although Virgin Media generally agreed with our proposed market definition, it was also concerned that the non-geographic termination market has not been reviewed. It argued that the proposed regulation in the “NGCS review is not competition based, but based upon the consumer failings perceived within the market”. We discuss the NGCS review and the implications for this review of wholesale call termination in paragraph 6.47 below.

Our analysis and conclusions

- 6.23 As set out in Section 5, market definition requires a definition of the relevant product and geographic markets. We first discuss the relevant product market(s) and then we consider the relevant geographic market(s).

Candidate product market

- 6.24 To define the relevant product market, we have taken as our starting point the market identified in the 2007 EC Recommendation, namely call termination on individual public telephone networks provided at a fixed location.
- 6.25 As set out in paragraph 6.9 above, in the 2009 review, we defined the relevant market by reference to individual networks. However, in our 2011 MCT Statement we reconsidered the definition of the market by reference to individual networks alone and recognised the role of the allocated number range as a critical element in the individual network used to provide MCT.³⁶¹ We have therefore considered whether a similar approach would be appropriate for wholesale call termination.
- 6.26 The characteristics of termination markets are well-established and widely recognised in the 2009 EC Recommendation:

“call termination can only be supplied by the network provider to which the called party is connected. There are currently no demand- or supply-side substitutes for [wholesale] call termination on an individual network. Therefore, each network constitutes a separate relevant market and each network operator has a monopolistic position on the market for terminating calls on its own network.”³⁶²

- 6.27 The determination of when a call is terminated on a CP’s “own network” is, generally speaking, defined by reference to an allocated number range because calls are initiated using a telephone number identifying the network on which the call will be terminated. A CP which is allocated numbers is uniquely positioned to control (i.e. terminate) calls to those numbers and hence, those users. In this respect, fixed and

³⁶¹ Ofcom, “Wholesale mobile voice call termination - statement”, 15 March 2011, paragraph 3.164, page 55, <http://stakeholders.ofcom.org.uk/consultations/mtr/statement>

³⁶² Explanatory Note to the 2009 EC Recommendation, Section 2.1, page 6, http://ec.europa.eu/information_society/policy/ecomm/doc/implementation_enforcement/eu_consultation_procedures/explanatory_note.pdf

mobile call termination are identical and this would suggest a comparable approach.³⁶³

- 6.28 In both fixed and mobile calls, a number range holder may not control its own access network and may choose to purchase some or all of the network elements required to physically terminate the call. In fixed markets, the relationship between a number range holder and the CP providing the underlying network elements (the “hosting CP”) may extend to enabling the hosting CP to conclude termination agreements for all of the numbers of the number range holder on its behalf. In this case, an originating CP would have no direct commercial relationship with the number range holder.
- 6.29 Nevertheless, underlying control of wholesale call termination ultimately rests on control of the number allocation; hosted numbers may be moved between different hosting networks or, ultimately, a number range holder may move the numbers onto its own network. The intervention of a hosting CP can only occur with the authorisation of the number range holder and consequently wholesale call termination cannot occur without, directly or indirectly, the involvement of the number range holder.
- 6.30 This indicates that the control of the number range plays an important role in the provision of wholesale call termination. Therefore, we consider that, as in MCT, the control of the number range is necessary in identifying the wholesale call termination service since it is a key element defining the individual network.
- 6.31 Vodafone raised the concern that our proposed market definition could lead to uncertainty for ported calls. Under our consultation proposal, the wholesale call termination market is associated with the number ‘allocated by Ofcom’ (see paragraph 6.14 above). This definition was therefore unclear that the wholesale call termination services provided by the recipient CPs are also within the market. We have changed the product market definition to address this ambiguity, referring now to geographic numbers in the United Kingdom, and this is also reflected in our conclusion (see paragraph 6.51 below).
- 6.32 We therefore conclude that the product market for our consideration of wholesale call termination is:
- “termination services that are provided by [named fixed communications provider] (CP) to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP.”
- 6.33 Where ‘termination services’, as mentioned above, are considered to be:
- “the conveyance of all signals (including relevant control signals) required to terminate calls on a customer’s exchange line from the point in the network closest to the end customer’s point of connection to the network where those signals can be accessed by another CP.”

³⁶³ Fixed call termination differs from mobile call termination in some respects, because the former is provided at a fixed location. Nevertheless, the identification of the terminating operator in both fixed and mobile calls results from the number called and this is not affected by the differences between call routing for fixed calls and mobile calls.

Direct and indirect constraints

- 6.34 Having established a candidate product market, we now consider whether the market definition should be widened to take into account possible substitute services. This analysis relies on the SSNIP approach, which we discussed in detail in Section 5 (see paragraphs 5.39 to 5.41).
- 6.35 We consider both direct and indirect constraints. A direct constraint is a wholesale substitute that limits wholesale price-setting – e.g. following a SSNIP, CPs may switch to potential wholesale alternatives.
- 6.36 Indirect constraints are those that operate indirectly through the retail markets (from which wholesale demand is derived), whereby retail consumers may switch in response to a SSNIP and constrain wholesale prices (as described in paragraph 5.54 above). The following services may act as indirect constraints:
- Calls to mobile –the calling party could call the recipient’s mobile instead of his/her fixed geographic number.
 - Calls to VoIP – the calling party could call the recipient’s VoIP number.
 - Text-based forms of communication, such as short messaging services (SMS), email, etc.

Direct constraints

- 6.37 We consider that there are no material direct competitive constraints on a CP’s ability to set fixed termination rates (FTRs) above the competitive level. Once the originating CP’s subscriber has chosen to call a particular geographic number, the originating CP has no alternative to purchasing wholesale call termination from the CP controlling that geographic number. Likewise, there is no possibility for supply-side substitution, for example, by using alternative services or number ranges, such as mobile or non-geographic number ranges. Competitors are physically unable to offer an equivalent wholesale call termination service as by definition the called party customer is connected to a single terminating network that provides termination to their number.

Indirect constraints

- 6.38 With respect to indirect competitive constraints, we do not believe that a SSNIP applied to wholesale call termination would be effectively constrained by retail demand-side substitution to any of the alternative services set out in paragraph 6.36 above. We do not consider that at the retail level these are sufficiently close substitutes to be included in the relevant market for this review.
- 6.39 Even in cases where consumers face an increase in the price of their fixed end-to-end call following an increase in wholesale call termination, their decision to make a call to a fixed geographic number is unlikely to be affected.³⁶⁴ In particular, we

³⁶⁴ The majority of consumers (66%) rarely or never considered the price when making a call. Research undertaken for consultation on business and residential consumers (Jigsaw, on behalf of Ofcom, December 2012, page 28)

consider it is unlikely to lead to any significant proportion of consumers switching to calling the recipients' mobile or VoIP number³⁶⁵.

- 6.40 We have also considered whether non-geographic numbers could be an indirect constraint. EE raised the possibility of an alternative CP supplying a non-geographic number to a customer in response to a SSNIP. However, both the receiving party and the calling party would face different prices associated with making the call, and switching in this way would not provide the geographic significance that geographic numbers are designed to provide.³⁶⁶ Therefore the substitutability between these services would be limited for both parties.

Wholesale call termination to non-geographic numbers

- 6.41 Our candidate market is based on termination of voice calls to geographic numbers and we have expanded the market definition to include all geographic numbers held by a given CP. We note above that some CPs in response to our consultation suggested it may be appropriate to expand the market definition to include call termination to non-geographic numbers held by the same CP which we now consider.
- 6.42 As with geographic calls, once the originating CP's subscriber has chosen to call a particular non-geographic number, the originating CP has no alternative to purchasing wholesale call termination from the TCP hosting that non-geographic number.
- 6.43 However, CPs face different competitive constraints when setting termination rates for calls to non-geographic numbers within their number ranges than they do for calls to geographic numbers. In contrast to calls to geographic numbers, calls to non-geographic numbers are made to a service platform, where a number of features can be applied before the call is routed to the physical connection of the customer. This connection may be a fixed geographic number but may also be a mobile, international or another type of number, and multiple points of termination may be attached to a single non-geographic number.
- 6.44 Typically, in the case of higher-priced calls (including calls to premium rate services), the TCP will pass some of the termination revenue to the service provider (SP) and this pays for the service being provided by the SP. In the case of lower-priced calls to non-geographic numbers, the TCP may not share the termination revenues with the SP but instead may reduce or waive the charges for hosting services that the SP would otherwise pay.
- 6.45 SPs are sensitive to the termination rate that TCPs charge as this ultimately influences their ability to compete with other SPs. In fact, SPs can and do switch between TCP hosts on the basis of their competitive offerings, including their termination rates (we discuss the migration costs for SPs in Annex 10 of the 2013 NGCS review³⁶⁷). In contrast to wholesale call termination to geographic numbers,

³⁶⁵ The Jigsaw report suggests an additional issue with VoIP (that would limit the benefit from not making the call to the geographic number) is that consumers see VoIP services as lower quality, or that they are more susceptible to variations in quality, than the fixed equivalents.

³⁶⁶ Furthermore, in many cases, such as 03 numbers, issuing non-geographic numbers in this way would not be permitted under the telephone numbering plan.

See Ofcom, *The National Telephone Numbering Plan*, December 2011

<http://stakeholders.ofcom.org.uk/binaries/telecoms/numbering/numplan201210.pdf>

³⁶⁷ Ofcom, "Simplifying non-geographic numbers", paragraphs A10.66 to A10.153.

TCPs will therefore be influenced by the preferences of their SP customers when setting termination rates to non-geographic numbers.

- 6.46 In the light of the above, we consider that the conditions of competition for the provision of call termination to non-geographic numbers are not sufficiently homogenous with those present in call termination to geographic numbers. Consequently, we do not consider that the relevant market encompasses call termination to non-geographic numbers.
- 6.47 We are considering the provision of services using non-geographic numbers in a separate review. As part of the review of non-geographic numbers, we consulted on proposals that would imply very significant changes to the way the non-geographic market operates. The 2013 NGCS review proposes to introduce a new tariff structure for the majority of non-geographic calls (in particular those that involve revenue-sharing). We anticipate these changes will affect the market for non-geographic calls within the period of this narrowband market review. Therefore we do not consider this is an appropriate time to undertake a review of non-geographic call termination. We will consider whether any further review of the market for call termination to non-geographic numbers is necessary once the NGCS review has been completed and any resulting proposals implemented.

Geographic market definition

- 6.48 As discussed in Section 5 (see paragraph 5.135 above), the purpose of geographic market definition in the context of a market review, is to identify areas where competitive conditions are similar. If competitive conditions vary significantly between different areas, it may be appropriate to assess and address market power separately in these different areas.
- 6.49 We conclude that the geographic extent of each market is defined as the area served by that CP within the United Kingdom. The competitive conditions a CP faces in providing termination services are not affected by the number of other operators in a particular geographic area since, as set out above, voice termination provided by one CP is not a substitute for termination provided by another.
- 6.50 Consequently, the relevant geographic market is determined by reference to the area in which the CP provides termination services.

Conclusion on market definition

- 6.51 In the light of the above, we consider that the relevant product market is termination services that are provided by a CP to another CP, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP. Where 'termination services' are considered to be the conveyance of all signals (including relevant control signals) required to terminate calls on a customer's exchange line from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another CP.

Market power assessment

Proposals in the February 2013 consultation

- 6.52 In the February 2013 consultation we proposed that each CP has SMP in wholesale call termination within the relevant market applicable to that CP. In reaching this proposal, we noted that each CP had 100% market share in its respective market

and that barriers to entry were high in these markets. We also rejected 'countervailing buyer power' (CBP) as an effective constraint on the market power of CPs in their relevant fixed termination markets.

Stakeholder responses to the February 2013 consultation

- 6.53 Of the 35 responses to the February 2013 consultation, seven respondents explicitly agreed with our market power assessment for wholesale call termination. Three respondents (BT, Lanonyx Telecom Ltd and Virgin Media) did not elaborate further, while the other four respondents provided specific comments that we have summarised below.
- 6.54 EE stated that it is appropriate for the market power assessment to follow the same approach for both fixed and mobile wholesale call termination. Vodafone agreed with the shift of the regulatory burden onto the range holder rather than the terminating network. [X]. H3G agreed with our market power assessment and highlighted the existence of absolute barriers to entry and that neither BT nor other CPs have sufficient power to counter an attempt by a terminating operator to raise FTRs above the competitive level.
- 6.55 However, six respondents³⁶⁸ disagreed with our market power assessment. They argued that they do not have SMP in wholesale call termination. 4D Interactive Ltd³⁶⁹, [X], Simwood eSMS Ltd³⁷⁰, [X] and Lexgreen Services Ltd³⁷¹ argued that their termination rate is effectively set by BT, and that, therefore, they do not have SMP in wholesale call termination on their number ranges. They argued that BT chooses the termination rate it has to pay to small CPs and the market prevents CPs from charging a termination rate significantly different to what BT charges other CPs, due to the availability of BT's transit services.
- 6.56 In relation to the finding of SMP for all wholesale call termination providers, [X]³⁷², [X] and [X] added that they were small companies. We consider whether the size of companies could effectively constrain their market power in relation to termination on their number ranges in our discussion of CBP in paragraphs 6.75 to 6.80 below.

Our analysis and conclusions

- 6.57 In Section 5 (see paragraphs 5.158 to 5.164), we set out the process for assessing market power. In this review of wholesale call termination, we regard the following criteria as particularly relevant:

- market shares (current and future);

³⁶⁸ 4D interactive Ltd, Lexgreen Services Ltd, [X], Simwood eSMS Ltd, [X] and [X].

³⁶⁹ 4D Interactive Ltd response to February 2013 consultation, March 2013.

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/4D_Interactive_Ltd.doc.pdf

³⁷⁰ Simwood eSMS Ltd response to February 2013 consultation, page 1.

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/Simwood_eSMS_Limited.doc.pdf

³⁷¹ Lexgreen Service Ltd response to February 2013 consultation, April 2013, page 2.

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/Lexgreen_Services_Ltd.pdf

³⁷² [X] response to February 2013 consultation, pages 1-2.

http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/Name_Withheld_1.doc.pdf

- barriers to entry; and
- countervailing Buyer Power ('CBP').

6.58 As discussed in Section 5, market share is an indicator of market power in the relevant market. Although a high market share alone is not sufficient to establish SMP, it is unlikely that a firm without a substantial share of the relevant market would be in a dominant position. Very large market share is therefore generally taken as an indicator of SMP in a relevant market. However, it is also appropriate to consider whether there is the potential for entry into the market and whether CPs have sufficient countervailing buyer power to constrain any market power which may be identified.

Importance of the 'calling party pays' arrangement

- 6.59 For fixed geographic telephone calls, the United Kingdom telecommunications industry has a system whereby the calling party (and not the called party) pays the total price of the retail call.³⁷³ This is the calling party pays (CPP) principle and it has important implications.
- 6.60 The implication is that the terminating CP has an incentive to raise the price of termination services that it charges other network operators, for at least two reasons. First, as the cost is not paid by their own customers, terminating CPs could raise the price that they charge for termination services to maximise the profitability of wholesale call termination. Second, a higher price of termination imposes a cost on rival networks.
- 6.61 The calling party does not choose the CP for termination services so they are less able to constrain the price of the termination services offered by that CP. This results in terminating CPs being able to exert significant market power over originating CPs.

Market share

- 6.62 As discussed in Section 5 (see paragraphs 5.160 and 5.163 above), the SMP Guidelines state that, in practice, single dominance concerns normally arise where market share is over 40%, and that in established case law, market share of over 50% is taken as evidence for the presumption of a dominant position. This presumption of dominance is rebuttable and a thorough and overall analysis is required before coming to a conclusion on the existence of SMP.
- 6.63 Each number range holder has, by definition, 100% of the market for calls terminating to its numbers, thereby raising a presumption that it has SMP. However, we need to consider other aspects which may negate number range holders' ability to exercise market power.

Barriers to entry

- 6.64 If there is scope for a third-party CP to enter the market for termination of calls to another CP's number range, it is likely to undermine the SMP of the terminating CP. However, in relation to wholesale call termination, market entry could only occur if a terminating CP were to grant entry to another CP to terminate calls to its number ranges. We consider that CPs are unlikely to have an incentive to give up their

³⁷³ Unless the called party accepts responsibility for payment, e.g. reverse charge calls.

monopoly on wholesale call termination to allow other CPs to terminate calls to their number ranges. This is an absolute barrier to entry.

Countervailing buyer power (CBP)

6.65 CBP is the degree of restraint that a purchaser is able to place on a seller by imposing an effective counter to any attempt by the seller to set prices appreciably above the competitive level. If the buyer is sufficiently important to the seller, the threat of the purchaser reducing its demand or purchasing from alternative suppliers may be sufficient to constrain any potential market power. We consider BT separately from other CPs given its unique position (i.e. the large volumes of call termination it purchases and, conversely, its own position as the largest provider of wholesale call termination).

6.66 The EC discussed CBP in call termination, noting that a market definition of call termination on individual networks:

*"... does not automatically mean that every network operator has significant market power; this depends on the degree of any countervailing buyer power and other factors potentially limiting that market power."*³⁷⁴

6.67 In order to rebut any presumption of SMP arising from very high market share, the buyer must be able to exert sufficient CBP that a seller is unable to act independently of its competitors, customers and consumers.

Regulation that is relevant to our assessment of CBP

6.68 Negotiations between market participants take place against a background of regulation (or threat of regulation). In undertaking an assessment of CBP, we must take into account regulation that will continue to exist throughout the period of the market review but which is independent of an SMP finding in the relevant market.³⁷⁵ We consider that the following regulatory obligations are relevant:

- Wholesale call origination obligations: the purpose of BT's obligation to provide call origination services to other CPs is to stimulate competition in a range of markets downstream from wholesale call origination. This obligation weakens BT's ability to threaten to cease purchasing wholesale call termination services from other CPs as consumers have the ability to switch to alternative providers of fixed calls if BT were to refuse to do so.³⁷⁶ A threat by BT to cease purchasing wholesale call termination is therefore unlikely to prove effective.

³⁷⁴ EC staff working document, explanatory note: Accompanying document to the EC 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 and services, SEC(2007) 1483/2, 13 November 2007, p.25,

http://ec.europa.eu/information_society/policy/ecomm/doc/library/proposals/sec2007_1483_final.pdf

³⁷⁵ This is the modified Greenfield test which was endorsed by the Court of Appeal in its Judgement in the case of Hutchinson 3G v Office of Communications on Mobile Call Termination of 16 July 2009. Available at: <http://www.catribunal.org.uk/237-645/1083-3-3-07-Hutchison-3G-UK-Limited.html>

³⁷⁶ In this review we are removing the existing CPS obligation on BT so that BT would no longer be required to provide CPS over lines provided by BT Retail. This is unlikely to have any impact on BT's CBP as BT will still be required, under the general access condition (see paragraph 5.311 above), to provide wholesale call origination to other CPs for lines which it does not have the retail customer

- BT's end-to-end connectivity obligation: BT's requirement to provide end-to-end connectivity reduces its CBP as it cannot refuse to purchase wholesale call termination when requested by a Public Electronic Communication Network (PECN)³⁷⁷ "where the terms and conditions offered by that PECN [provider] are reasonable".³⁷⁸
- Ofcom's dispute resolution powers: as set out above, both the wholesale call origination obligations and the end-to-end connectivity obligations act as a constraint on BT's ability to exercise CBP. Ofcom's dispute resolution powers provide a further constraint in this regard by allowing timely intervention in the event that BT did not comply with those obligations.

6.69 These regulatory obligations affect the CBP of BT when negotiating FTRs with other CPs. The impact and details of these individual obligations are described in further detail in the 2009 wholesale narrowband review.³⁷⁹

Assessment of CBP

6.70 The CBP that each CP has when negotiating with every other provider will vary to some extent. A detailed analysis of every bilateral negotiation would be extremely difficult to carry out in practice.³⁸⁰ In the following paragraphs, we discuss why purchasers of wholesale call termination services are unlikely to have sufficient CBP to negate the market power of individual CPs, each of which are monopoly providers of wholesale call termination. Our analysis takes into account a relevant Court of Appeal judgement³⁸¹ which sets the evidential threshold required for any finding of CBP to be sufficient to constrain any SMP that a terminating operator may have.

BT

6.71 As the largest holder of geographic numbers³⁸² and the CP whose network terminates the majority of geographic retail calls³⁸³, it is appropriate to consider initially whether BT's monopoly in wholesale call termination is offset by the countervailing buyer power of the purchasers of its wholesale call termination services.

relationship for. Therefore consumers will still be able to switch to alternative providers of fixed calls if BT were to refuse to purchase wholesale call termination from some CPs (particularly given that most consumers now purchase calls with access from the same CP anyway).

³⁷⁷ A PECN is a network used to provide electronic communications services to the public.

³⁷⁸ Ofcom, *End-to-end connectivity* (statement), 13 September 2006, see paragraphs 1.5 and 3.53 for a summary of the access-related condition.

http://stakeholders.ofcom.org.uk/binaries/consultations/end_to_end/statement/statement.pdf

³⁷⁹ Ofcom, "Review of the fixed narrowband services wholesale markets", 19 March 2009, paragraph 7.50-7.58, page 92-93,

http://stakeholders.ofcom.org.uk/binaries/consultations/review_wholesale/summary/fnwm.pdf

³⁸⁰ We discuss the difficulty of doing this in the 2011 MCT Statement, paragraph 4.71, page 77-78.

³⁸¹ *Hutchinson 3G UK Limited v Office of Communications (Mobile Call Termination)*, Court of Appeal, Case no. C1 2008/1932, EWCA Civ 683, 16 July 2009,

http://catribunal.org/files/CofA_Judgment_1083_H36_16.07.09.pdf

³⁸² Data from our quarterly telecommunications update indicates that BT held a 46.3% market share of retail fixed lines (a proxy for the amount of number ranges in use) in Q1 2012, down from 50.1% a year earlier. The CP with the next largest retail share in Q1 2012 was Virgin Media with 14.1%.

³⁸³ In the financial year 2011/2012, approximately 70% of calls to UK fixed geographic numbers were terminated on the BT network. This was calculated by summing BT's (fixed) call termination and comparing to total retail call volumes to fixed numbers (we have assumed that the number of minutes of international calls received by FCPs is equal to those dialled by United Kingdom fixed line consumers).

- 6.72 Given BT's importance in the market, we consider that other CPs have very little CBP when negotiating to purchase wholesale call termination from BT as they require BT's termination service in order to offer a credible service to their customers who expect to be able to contact any other consumer irrespective of which CP they are contracted with. This implies that, in the absence of regulation, we would not expect other CPs to have sufficient CBP to negate BT's SMP.
- 6.73 As with fixed CPs (FCPs), mobile CPs (MCPs) require termination on the BT network to offer a credible service to customers. Given that the four largest MCPs are of a large scale relative to non-BT FCPs, MCPs may be able to exert CBP against BT by threatening not to interconnect or to raise wholesale mobile call termination rates to BT if they believed BT rates to be too high. However, MCPs are subject to network access obligations and cost-based regulation and therefore the scope for MCPs to engage in such activity is negligible.
- 6.74 Therefore, we consider that other fixed and mobile CPs do not have sufficient CBP to negate BT's SMP in the market for wholesale call termination.

Other CPs (i.e. non-BT CPs)

- 6.75 Despite being of a smaller scale, we consider that there are commercial and regulatory reasons why CPs have SMP when negotiating FTRs with BT. BT, as the largest holder of geographic numbers, is an essential trading partner for CPs wishing to offer a retail service. However, BT's ability to refuse purchase of wholesale call termination from other CPs is limited by regulation. BT's end-to-end connectivity obligation (see paragraph 6.68 above) requires BT to purchase wholesale call termination from CPs at reasonable rates. BT is therefore limited in its ability to force lower FTRs from smaller CPs (for example by refusing to open the number ranges of that CP).
- 6.76 We also consider that in the absence of SMP regulation it is unlikely that non-BT CPs have strong CBP in relation to each other. This is because CPs have the option of either directly interconnecting with the terminating CP and so negotiating the FTR bilaterally, or transiting their traffic via BT for a fee and effectively allowing BT to negotiate the FTR on their behalf. This is consistent with our analysis in the 2011 MCT Statement where we concluded that the overwhelming majority of CPs are unlikely to have sufficient CBP to negate the market power of others.³⁸⁴
- 6.77 In the absence of regulation restricting FTRs, larger CPs are unlikely to refuse to purchase termination from smaller CPs, even if those CPs increase their termination rates. This is because they have an incentive to be able to provide termination to all UK number ranges to their own customers. Furthermore, some large CPs also enter wholesale call termination contracts with other CPs that have as part of the agreement a commitment to be able to terminate to all UK geographic number ranges. Such contracts would restrict the ability of relevant CPs to refuse to purchase wholesale call termination to any UK number ranges.
- 6.78 Furthermore, larger CPs might not have a sufficient incentive to enter negotiations with smaller CPs due to the materiality of individual contracts with the aim of securing lower termination rates. Indeed, some larger CPs have raised concerns regarding enforcement of the current regulatory regime (see paragraph 6.97 below).

³⁸⁴ Ofcom, "Wholesale mobile voice call termination - statement", 15 March 2011, paragraph 4.82-4.92, page 80-81, <http://stakeholders.ofcom.org.uk/consultations/mtr/statement>

- 6.79 A few small CPs have indicated to us in response to the February 2013 consultation that BT sets their FTRs and argue that this indicates they do not have SMP in wholesale call termination. This is likely to reflect the fact that in the current market, the FTRs that CPs pay are subject to regulation; specifically, the condition that their FTRs are fair and reasonable. We have also published guidance that rates that are symmetric to BT's are likely to be fair and reasonable.³⁸⁵ As a major purchaser of termination, BT is likely to reflect this regulatory position in agreements with small CPs.
- 6.80 Finally, even under the circumstances that a small number of very large CPs were able to negotiate lower FTRs from smaller CPs, there is no mechanism to transmit such lower termination rates to separate bilateral agreements with other non-BT CPs which do not possess CBP. This means that all CPs would be able to charge excessive FTRs in at least some of their contracts.
- 6.81 In the light of the above conclusions, we do not consider that considerations of CBP are sufficient to counter a finding of SMP with respect to the supply of wholesale call termination services by non-BT providers. We therefore conclude that each CP has SMP in the market for wholesale call termination to its number range.

Competition concerns

- 6.82 We have identified three main competition concerns in relation to CPs having SMP in the market for wholesale call termination in the absence of *ex ante* regulation:
- CPs would have the ability to refuse access to termination services. This could reduce the ability of other CPs to offer their customers end-to-end calls to all geographic numbers in the United Kingdom and, in turn, restrict competition in the provision of retail offers;
 - CPs would be able to effectively price discriminate between other CPs by setting higher charges for some CPs than others, in particular where a wholesale provider of termination services favours its own downstream retail operation. This could lead to a situation where the market is distorted and some otherwise efficient operators may be forced to set retail prices higher than if FTRs were set at cost, or face a competitive disadvantage vis-a-vis the CP setting the FTR; and
 - CPs would be able to set excessive prices for wholesale call termination. Even if the excess profits that CPs might earn from charging excessive FTRs are passed on to their consumers via the "waterbed effect"³⁸⁶, CPs with a greater volume of inbound calls per customer and/or a higher termination rate would be able to compete more aggressively for retail subscribers.
- 6.83 These competition concerns would be likely to lead to consumer choice being limited or distorted by higher retail prices for some services resulting from increased termination rates. Furthermore, these concerns could lead to monopoly pricing and therefore result in an under-consumption of calls compared to if termination was

³⁸⁵ Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011 <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

³⁸⁶ In more technical terms, the 'waterbed effect' (which refers to the situation where a change in one set of prices leads to changes in prices in a different part of the market) is unlikely to be 100% complete. Paragraphs 7.44 to 7.54 of the 2011 MCT Statement discuss the waterbed effect (including the empirical evidence) in the mobile sector.

priced at cost. To address these concerns, we have decided to impose a number of remedies on CPs that offer wholesale call termination services.

Remedies

Proposals in the February 2013 consultation

6.84 In the February 2013 consultation, we proposed the remedies shown in Table 6.2 below.

Table 6.2: Summary of the remedies for wholesale call termination

BT obligations	Obligations for all other CPs with SMP in the provision of wholesale call termination services (including KCOM) ³⁸⁷
<ul style="list-style-type: none"> Requirement to provide network access on reasonable request Requirement not to unduly discriminate Charge control Requirement to publish a reference offer Requirement to notify charges Requirement to notify technical information Cost accounting Accounting separation 	<ul style="list-style-type: none"> Requirement to provide network access on reasonable request³⁸⁸ Requirement to notify charges

Stakeholder responses to the February 2013 consultation

BT obligations

- 6.85 Of the 35 respondents, eight provided comments relating to our proposed remedies for BT in wholesale call termination.
- 6.86 Five respondents agreed with our proposals. However, three respondents – BT, Virgin Media and EE – suggested changes to some of the proposed remedies.
- 6.87 In commenting on the proposed requirement not to unduly discriminate for wholesale call termination, BT referred to the arguments it made in relation to this requirement for wholesale call origination. In particular, BT referred to its ability to discriminate on the basis of different retail bundles. It is not clear how these arguments would apply to wholesale call termination, and BT did not elaborate on this point. We are therefore unable to respond to BT's point in this document.
- 6.88 We now summarise the main issues raised in these responses concerning the remaining specific remedies proposed for BT in wholesale call termination.

³⁸⁷ For a full list of relevant CPs, see Annex 6 (schedule 3).

³⁸⁸ This includes fair and reasonable terms, conditions and charges with guidance, as discussed in paragraphs 6.125 to 6.135.

Requirement to provide network access on reasonable request

- 6.89 Two respondents – BT and Virgin Media – commented on the requirement to provide network access on reasonable request. BT agreed with this requirement, but Virgin Media raised concerns about the exclusion of BT's charges from the fair and reasonable obligation. In particular, Virgin Media argued that an access condition that requires charges to be set on a fair and reasonable basis can provide additional and important protection above and beyond that offered by a charge control. In particular, where a control covers a specified service, a generic condition applying across a market will ensure regulatory reassurance for all services, including new services introduced to the market. We have discussed the benefit of maintaining a fair and reasonable condition on charges alongside a charge control in Section 5 (see paragraphs 5.327 above). The same analysis applies in relation to wholesale call termination.

Requirement to notify charges

- 6.90 Three respondents – BT, Vodafone and EE – commented on the requirement to notify charges. Vodafone agreed that a 56 day notice period allows sufficient time for any changes to be cascaded through the supply chain but raised concerns over BT's Standard Interconnect Agreement (SIA) as set out in paragraph 5.248 above. EE argued that the notification period should not be reduced from 90 days to 56 days. It argued that with a notice period of 56 days it would incur some commercial risk due to limited resources.³⁸⁹
- 6.91 As for wholesale call origination (see paragraph 5.247) BT was in favour of the move from a 90 to a 56 day notification period and considered it a step in the right direction towards its aim of 28 days.
- 6.92 We provide our conclusions in relation to the requirement to notify charges in paragraph 6.182 below: where relevant, referring to where we consider these issues in Section 5.

Cost accounting and accounting separation

- 6.93 Three respondents – BT, EE and Virgin Media – commented on the cost accounting and accounting separation obligations. BT set out concerns regarding these obligations in relation to wholesale call origination (see paragraph 5.252 onwards), and referred to those concerns as being relevant for wholesale call termination. It argued that the proposal to use pure long run incremental costs (LRIC) in the cost model for wholesale call termination had implications for cost reporting in the published Regulatory Financial Statements (RFS). It argued that the publication of fully allocated cost (FAC) information based on a top down model is misleading to users of the RFS, due to the use of a bottom up model in setting the network charge control (NCC). We consider that our view of these arguments set out in relation to wholesale call origination (see paragraph 5.410 onwards for both cost accounting and accounting separation) are also relevant for wholesale call termination.
- 6.94 EE argued that purchasing CPs should still be able to understand the extent to which individual prices are related to costs and that removal of cost information will tend to lead to more disputes being referred to Ofcom over time. Virgin Media noted that the reported LRIC figures remain an "important metric" and that the incremental effort

³⁸⁹ EE stated that it is faced with limited human, financial and IT resources to monitor and implement wholesale and retail price changes.

required by BT to publish these figures is not significant.³⁹⁰ We note that, in responding to this requirement, EE and Virgin Media referred to the same arguments that they had provided in relation to this obligation for wholesale call origination, and consider our views of these arguments in relation to wholesale call origination (as set out in paragraph 5.405 onwards for cost accounting and paragraph 5.421 onwards for accounting separation) are also relevant for wholesale call termination (i.e. particularly that the relevance of such cost accounting data is limited due to the price regulation basis).

- 6.95 We provide our conclusions in relation to cost accounting and accounting separation in paragraphs 6.195 to 6.197 and 6.209; where relevant, referring to where we consider these issues in Section 5 (wholesale call origination).

Charge control – removal of cost orientation

- 6.96 BT, Vodafone and Virgin Media commented on the proposal to remove cost orientation. BT agreed with the removal of the cost orientation obligation. Vodafone agreed, stating that “where charge controls or baskets are placed on single services, as in the case of call origination and termination, the cost orientation obligation is less important”. Virgin Media stated that it understood the decision in relation to wholesale call termination given that Ofcom is proposing that charges should be aligned with LRIC. We discuss the removal of the cost orientation requirement in paragraphs 6.110 - 6.114 below.

Non-BT obligations

- 6.97 Nine respondents agreed with our proposed remedies for non-BT CPs. However, Vodafone raised some concerns about our willingness to enforce compliance for small CPs. It noted that small CPs may claim not to have SMP (despite being designated as such by Ofcom) and that CPs would be unlikely to bring a dispute against them, given the limited commercial value of doing so. Vodafone considered that this might lead to a case where smaller CPs could raise termination rates in the knowledge that a dispute is unlikely to be brought against them.³⁹¹ We consider the effectiveness of our Fair and Reasonable (F&R) Guidance and our enforcement approach in paragraph 6.128 below.

Our analysis and conclusions

- 6.98 Before setting out the specific remedies, we first discuss the regulatory context and our approach to setting these remedies.
- 6.99 Consistent with the regulatory framework for electronic communications, and United Kingdom domestic legislation, our regulation in this review aims to address relevant risks of adverse effects arising from price distortion as a result of SMP in wholesale call termination. In particular, our aim is to set conditions that promote efficiency and sustainable competition and confer the greatest possible benefits on end-users of the relevant services.
- 6.100 Our regulation must also be consistent with our general duties. In particular, the obligations that we impose must be transparent, proportionate, consistent and targeted only at cases where action is needed. Our remedies take utmost account of

³⁹⁰ Virgin Media response to the February 2013 consultation, April 2013.

³⁹¹ Vodafone response to the February 2013 consultation, March 2013, page 13.

<http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/Vodafone.pdf>

the 2009 EC Recommendation, and we explain how we have done this in Section 8 (regarding our choice of cost base) and Section 9 (regarding our model) as well as in Annex 5 and Annex 6.

- 6.101 As a result of its large access network and holding of number ranges, we consider it necessary to treat BT differently to other CPs when considering which remedies to impose. This is because the distortions of competition resulting from BT engaging in the activities set out above are likely to be greater than the distortions which might result from such actions taken by other CPs.

Our approach to the regulation of BT's provision of wholesale call termination

- 6.102 In this section we set out the remedies imposed on BT in order to address our competition concerns. We have decided that Option 2 is the appropriate choice from the following options for remedies:

- Option 1: network access, non-discrimination and transparency remedies; and
- Option 2: price controls in addition to network access, non-discrimination and transparency remedies.

Option 1 (network access and non-discrimination obligations)

- 6.103 As discussed above (see paragraph 6.82 above), BT could restrict access to other CPs, either by offering wholesale call termination on unfair terms or by refusing to supply it. To address this concern, we are imposing a general network access condition on BT, which requires requests made for network access to be 'reasonable', and BT must provide such network access on fair and reasonable terms and conditions.
- 6.104 We do not believe that an obligation to provide network access is sufficient on its own. Absent regulation, BT would also have a strong incentive to discriminate in favour of its own retail businesses, by offering more favourable terms which would give them a competitive advantage over third-party CPs. Therefore we are also imposing regulation on BT to ensure that it does not unduly discriminate between its own internal use of wholesale call termination and rival CPs.
- 6.105 To ensure that this requirement is effective, we are also imposing a series of obligations designed to deliver transparency of information: a requirement to publish a reference offer and a requirement to notify charges. Without these obligations, BT could change products or pricing with insufficient notice to its wholesale customers and thus discriminate in favour of its retail divisions.
- 6.106 We also consider it necessary to retain an accounting separation requirement on BT in order to allow Ofcom, and third-parties, to monitor its activities to ensure that it does not discriminate in favour of its own downstream business.

Option 2 (i.e. Option 1 plus price controls)

- 6.107 While we believe these general remedies under Option 1 to be important and necessary, we do not expect them to be sufficient. This is because BT would still have the ability to increase the price of this service. If BT increased the price of wholesale call termination, CPs would have no option but to purchase this service at the price quoted by BT. Such a price rise would therefore be detrimental to the ability of other CPs to compete at the retail level.

- 6.108 Therefore while the remedies proposed under Option 1 may provide some constraint on BT, we do not consider that this would be sufficient to constrain BT's ability to set prices for wholesale call termination above the competitive level. Therefore, to address this concern, we have decided to augment the general remedies described in Option 1 by also imposing a pricing remedy.
- 6.109 In our view a cost-based price remedy would be appropriate to ensure charges reflect the costs of an efficient operator, as a proxy for the level of charges which could be expected in a competitive market. There are a number of price remedies available to achieve this objective, including charge controls and cost orientation. We have considered in Section 8 what cost standard is appropriate to determine the efficient level of costs for the United Kingdom market when setting cost-based regulation. We conclude to use LRIC which is consistent with the 2009 EC Recommendation.
- 6.110 In the light of this, we do not believe that cost orientation (or another form of price control such as a safeguard cap or fair and reasonable charges condition) would be an appropriate form of price control in wholesale call termination markets.³⁹² This is because cost orientation, as previously used, sets DLRIC as a floor and allows prices up to DSAC, and a safeguard cap would typically be based on an RPI-RPI or RPI-0 cap from current prices, which are based on LRIC+. A fair and reasonable charges condition would also require guidance. Therefore all three require guidance and/or setting based on appropriate benchmarks or relevant cost data, and while we could try to provide such guidance in line with our LRIC cost-base decision, it would be difficult to do this with sufficient regulatory certainty absent a cost model. We therefore believe that a charge control is the most appropriate remedy for BT's call termination.
- 6.111 A charge control would address the risk of BT setting excessive prices for wholesale call termination. It would also provide certainty for purchasers of BT's wholesale call termination services in that the maximum price which they could be charged would be transparent for the period of the review. Furthermore, a charge control would provide BT with an incentive to improve its efficiency as any cost reductions resulting from efficiency improvements beyond those included in the charge control would be retained by BT.³⁹³ A charge control with transparent, easy to monitor compliance conditions can help ensure that BT does not abuse its dominant position to the detriment of other CPs and, ultimately, consumers.
- 6.112 The appropriate cost-base to use for the charge control is considered further in Section 8 where we have concluded to set FTRs on the basis of LRIC.
- 6.113 We have also considered whether, in addition to the charge control on wholesale call termination, additional pricing remedies are required. In particular, we have considered whether we should require charges to be fair and reasonable (as part of

³⁹² We have recently published a consultation reviewing cost orientation which sets out at a general level the factors we are likely to consider in deciding whether and which price remedy is appropriate, and if we consider a cost orientation obligation is necessary, the form this obligation should take. We consider in particular how the use of a cost orientation obligation may relate to our use of charge controls. Ofcom, cost orientation review, 5 June 2013

<http://stakeholders.ofcom.org.uk/consultations/cost-orientation/>

³⁹³ Under our preferred method of charge control regulation (RPI +/- X), the dominant CP is incentivised to increase its efficiency, thereby imitating the effect of a competitive market. If the firm can reduce its costs below the level expected when the cap was set, then the firm retains the increased profits, at least for the period the control is in place.

the network access condition) and/or subject to a cost orientation obligation, but have concluded these additional remedies are not necessary or proportionate:

- a) Fair and reasonable – as with wholesale call origination, for those services within the charge control, we consider the overall control is sufficient to address our competition concerns and provide regulatory certainty. If there were services not covered by the charge control, or there was reasonable potential for new services to be provided outside the scope of the charge control, a fair and reasonable charges condition may be relevant. However, we do not consider this to be the case for wholesale call termination for similar reasons to those in relation to wholesale call origination, discussed in paragraph 5.327. In addition, the requirement for charges to be both “fair and reasonable” and compliant with the charge control could lead to regulatory uncertainty for both BT and purchasers of wholesale call origination. Therefore we exclude the requirement to provide services at fair and reasonable charges from the network access condition.
- b) Cost orientation - the charge control uses a cost model based on hypothetical NGN operator, and so requiring BT to simultaneously comply with this and a cost orientation obligation based on its own costs could be incompatible and lead to regulatory uncertainty.

6.114 In addition to the charge control, we are imposing on BT cost accounting and accounting separation remedies. The specific obligations we are imposing and the reasons for doing so are set out in detail below (see paragraphs 6.195 onwards).

Our approach to the regulation of non-BT CPs' (including KCOM) provision of wholesale call termination

6.115 Before we consider the appropriate approach to regulating non-BT CPs, we first consider KCOM. While we have previously treated KCOM in a different manner to BT and other CPs, we have now decided that it is appropriate to treat KCOM in the same manner as all other CPs (other than BT) in the market for wholesale call termination in this review. We do not consider that KCOM's network in the Hull area gives it any more (or less) market power than other non-BT CPs in the provision of wholesale call termination services. Therefore we consider that the distortions of competition resulting from KCOM engaging in the activities set out in paragraph 6.82 above to be similar to that which might result from such actions taken by other non-BT CPs. As with other non-BT CPs, we consider it appropriate to treat BT differently to KCOM for the reasons set out in paragraph 6.101 above.

6.116 In the light of this, we now set out the potential options for remedies as discussed in the consultation, before concluding on the remedies to be imposed on non-BT CPs (including KCOM) in order to address our competition concerns (as set out above in paragraphs 6.75 to 6.82).

6.117 We consider the following options for remedies:

- Option 1: general access remedies on fair and reasonable terms and conditions;
- Option 2: other price controls in addition to the general access remedies; and
- Option 3: general access remedy on fair and reasonable terms, conditions and charges, with guidance

Option 1 (access obligation: fair and reasonable terms and conditions)

- 6.118 As discussed above (see paragraph 6.82), in the absence of regulation, some CPs would have both the incentive and ability to restrict access to their wholesale call termination services to other CPs. This could in turn distort or restrict competition in the provision of retail offers. An access obligation would require non-BT CPs to provide network access on reasonable request on fair and reasonable terms and conditions.
- 6.119 However, non-BT CPs would still have the ability to increase the price of this service, or engage in price discrimination, which would impact the ability of other CPs to compete at the retail level. If a given CP increased the price of the wholesale call termination service that it offers, other CPs have no choice but to purchase this service at the increased price. We therefore do not believe that access on fair and reasonable terms and conditions would be sufficient to address our competition concerns in relation to these markets.

Option 2 (i.e. Option 1 plus other price controls)

- 6.120 In addition to Option 1, we could also introduce specific price control remedies. There are a number of price remedies available to address the identified competition concerns in relation to these markets, including charge controls and cost orientation. As set out in relation to BT, a charge control would have the advantage of ensuring that non-BT CPs could not price excessively for wholesale call termination, and could also be designed to allow the additional benefits, in relation to non-BT CPs, as outlined in paragraph 6.111.
- 6.121 However, a cost-based charge control could require an assessment of the costs of a number of operators or different classes of operators to ascertain whether, if at all, there were relevant costs that might objectively justify deviations from symmetry. Such an exercise is likely to be administratively costly, both for us and the smaller CPs in question. For example, the implementation of the control could require significant information gathering from smaller CPs. This could represent a significant resource cost in relation to the size of most of the affected CPs. These regulatory costs on non-BT CPs are therefore likely to be disproportionate since they would be high relative to termination revenues for a large number of CPs and, ultimately, this cost would be borne by consumers.
- 6.122 We could also impose a charge control with rates resulting from one cost model for all CPs based on a hypothetical efficient operator. However, in order to ensure effective compliance with such a charge control obligation, CPs would need to bear the additional costs of financial reporting to Ofcom for monitoring purposes. This is in contrast to the approach outlined in Option 3 for which there is no compliance reporting. The vast majority of these operators are small, and the cost of regulatory compliance associated with the imposition of a formal charge control may be significant relative to termination revenues for such CPs, and would ultimately be borne by consumers. We therefore consider that the approach outlined in Option 3 would be less onerous whilst achieving our regulatory objectives and is therefore to be preferred. Additionally, in the light of the historical success of the alternative approach described below in Option 3 (see paragraphs 6.125 to 6.136) we believe that Option 3 would meet our policy objectives and competition concerns with lower compliance costs.
- 6.123 We have also considered whether a cost orientation obligation could be an appropriate form of price control for regulating the FTRs of non-BT CPs. However,

cost orientation as generally applied within the United Kingdom would not be consistent with our proposal to calculate BT's charge control on the basis of LRIC (nor with the 2009 EC Recommendation). This is because cost orientation as applied in the United Kingdom has allowed flexibility in pricing in the range between (adjusted) incremental and stand alone costs – which would not ensure symmetry of FTRs at LRIC. Cost orientation for non-BT CPs, as generally applied in the United Kingdom, might also be considered discriminatory against BT. This is because it might allow non-BT CPs to charge rates that were higher than BT's without there being a difference in their cost base.

6.124 We also consider that a price control or cost orientation obligation would not be proportionate in these markets, where we have identified an alternative means of achieving our regulatory objectives that would be less onerous for those subject to the obligation (see Option 3 below).

Option 3 (i.e. Option 1 with fair and reasonable charges plus guidance)

6.125 This access obligation would require non-BT CPs to provide network access on reasonable request on fair and reasonable terms, conditions and charges. We would also provide guidance on our likely interpretation of fair and reasonable charges in the event of a dispute.

6.126 Since 2003,³⁹⁴ the United Kingdom has regulated non-BT fixed termination services by:

- a) setting a charge control on the incumbent operator, i.e. BT;
- b) setting an SMP condition on each other operator to ensure that wholesale call termination rates are fair and reasonable – today, there are 171 smaller providers of wholesale call termination in the United Kingdom; and
- c) industry guidance on interpreting “fair and reasonable”: in April 2011, Ofcom published guidance that FTRs that are no higher than the BT controlled rates (symmetric) will be presumed to be reasonable ('F&R Guidance'). Previously, CPs relied upon industry based agreements ('Reciprocity Agreements').³⁹⁵

6.127 Under the F&R Guidance, higher FTRs are not exhaustively excluded but, in resolving disputes concerning FTRs, Ofcom would set higher rates only in limited circumstances. Since the publication of the F&R Guidance in April 2011, no disputes concerning FTRs have been referred to Ofcom.

6.128 This approach reflects the EC's Explanatory Note for the 2009 EC Recommendation. The 2009 EC Recommendation recognises that there may be objective cost differences outside the control of the operators which would justify a deviation from a single efficient cost level. The EC indicates that, in fixed networks, no such objective differences have been identified, although the 2009 EC Recommendation does not exclude this possibility. Ofcom has also not, at this stage, identified any objective differences in fixed networks. However, in line with the 2009 EC Recommendation, the F&R Guidance left open the possibility that operators may have objective cost differences outside their control which would justify a different approach by indicating

³⁹⁴ Ofcom, *Review of fixed geographic call termination markets*, 28 Nov 2003

<http://stakeholders.ofcom.org.uk/binaries/consultations/750148/Eureviewfinala1.pdf>

³⁹⁵ The Reciprocity Agreement was renewed periodically, and the last one expired in September 2009 https://www.btwholesale.com/pages/static/Library/Pricing_and_Contractual_Information/Reciprocity_index.htm

this in our guidance. Under this guidance, individual operators must justify any deviation from the charge controlled rates in line with the 2009 EC Recommendation and the guidance.

- 6.129 We believe that it is appropriate to continue to regulate CPs in this manner. This will involve imposing an access condition with fair and reasonable charges plus guidance. We will also impose a requirement for CPs to notify charges. This should enable us, and third parties, to check compliance with our guidance.
- 6.130 In a case where a CP, which we have designated to have SMP, subsequently sets its FTR above the benchmark rate³⁹⁶ we would expect other CPs to notify us of this situation. Each CP will be aware of what it is being charged for wholesale call termination, therefore CPs can inform us of rates that are higher than the benchmark rate and will have a commercial incentive to do so.
- 6.131 We are also able to monitor the termination market due to the transparency obligations that we have imposed on CPs, and will intervene in line with our guidance should disputes over FTRs arise. With respect to monitoring a large number of small CPs, there is a deterrent effect from raising a dispute against a small CP, i.e. raising a dispute will deter other small CPs from also charging a rate above the benchmark. Therefore, even if there was limited direct value (to a CP) from raising a dispute against one small CP, there is a significant indirect value from deterring many small CPs.
- 6.132 Our approach should ensure that, if CPs do not comply with the obligation to set rates based on symmetry, we will be able to intervene in a timely manner to address the competition concerns which arise. In practice, we have only had a small number of disputes raised with us regarding the level of termination rates, and these have been confined to small CPs (and all occurred prior to our introduction of the F&R Guidance). We therefore believe a dispute regarding FTRs over this market review period is unlikely and furthermore that, if such a dispute were to occur, it is most likely to be regarding the level of FTR charged by a small CP. We have a statutory duty to resolve disputes within four months, except in exceptional circumstances. Given these factors, and the regulatory history of the UK market, we believe that the potential for consumer harm to occur during any dispute resolution process under this regime is limited.
- 6.133 We also believe that our proposed approach is transparent. We have consulted on our F&R Guidance which clearly sets out how we would be likely to resolve a dispute in relation to the level of termination rates should we be asked to do so – and this guidance closely follows our earlier guidance on the regulation of FTRs for CPs other than BT.
- 6.134 However, if in future we had evidence that non-compliance was imposing a cost on consumers (as a result of FTRs above the benchmark rate) that might outweigh the regulatory burden of industry-wide compliance procedures with a charge control, or if a number of disputes arose in relation to larger CPs, this might cause us to reconsider the design of our remedy for these markets.
- 6.135 Finally, we do not consider that the ability of non-BT CPs to favour their own vertically integrated retail businesses is significant such that it might lead to

³⁹⁶ As discussed by Vodafone in its response to the February 2013 consultation, page 13.

competitive distortions.³⁹⁷ We consider that, currently, this also holds true in relation to KCOM. While in the absence of regulation, CPs other than BT (including KCOM) could offer call termination at high prices, we consider that this concern is appropriately addressed by the imposition of a fair and reasonable obligation. We consider that, given the above, such an obligation appropriately addresses our competition concerns in relation to CPs other than BT, including KCOM. Therefore we do not consider it necessary to impose a no undue discrimination obligation on non-BT CPs.

6.136 For these reasons we consider Option 3 to be appropriate. A summary of the remedies we have decided to impose can be found in Table 6.1 above. We now discuss each specific condition in relation to the relevant legal tests for imposing such conditions.

Conditions which will be imposed on BT

6.137 We now set out the specific remedies we have decided to impose on BT and the relevant legal tests associated with them.

Requirement to provide network access on reasonable request

6.138 Ofcom has decided to retain the condition requiring BT to meet reasonable requests for network access in the wholesale call termination market. Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as it 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 that conditions are complied with within the periods and at the times required.

6.139 When deciding upon the conditions to impose, we had regard to the six factors set out in section 87(4) of the Act, including, inter alia, the technical and economic viability of installing other competing facilities and the feasibility of the proposed network access.

Aim of regulation

6.140 This remedy is designed to promote competition in downstream markets by requiring providers with SMP to provide wholesale access to their network facilities. In the absence of such a requirement, BT could refuse to provide access to its network or could do so on unreasonable terms. As a result of this, customers with services from a CP other than BT may not be able to connect with customers on the BT network. As BT terminates the largest number of calls on its network, this would likely have a material effect on competitors and consumer choice.

The condition

6.141 The condition requires requests made to BT for access to be 'reasonable' requests. The condition also requires BT to provide network access in response to such a

³⁹⁷ This is the same position as in the 2009 Market Review. See Paragraph 6.31, Ofcom, *Review of the fixed narrowband services wholesale markets: Further statement on wholesale transit markets and remedies in the wholesale call termination market*, February 2010, http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/statement/statement.pdf

reasonable request and that access should be provided on fair and reasonable terms and conditions (excluding charges).

- 6.142 We exclude the requirement to provide services at fair and reasonable charges from the condition for the reasons discussed above in paragraph 6.113.

Legal tests

- 6.143 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition.
- 6.144 Ofcom also considers that the condition meets the Community requirements as set out in section 4 of the Act. The condition would promote competition in relation to the provision of electronic communications networks and encourage the provision of network access for the purpose of securing efficient and sustainable competition in markets for electronic communication services.
- 6.145 We consider that the condition meets the criteria set out in section 47(2) of the Act because it is:
- objectively justifiable; in that it relates to the need to ensure that competition develops to the benefit of consumers. Without this obligation, BT would be able to restrict consumers on other CPs' networks from calling consumers on its network, and this is likely to mean that the services provided by these other CPs are not viable;
 - not unduly discriminatory; as it is imposed on BT who has SMP in wholesale call termination. As discussed later in this section, all other CPs who have SMP in wholesale call termination have a similar condition to that imposed on BT, the only difference relates to charges. This is due to the scale of BT which means we also include a charge control for BT, but not for other CPs, meaning this condition does not need (in BT's case) to address charges;
 - proportionate; in that it is the least restrictive means of ensuring that BT is unable to refuse to provide access to wholesale call termination services to other CPs which would distort competition at the downstream level; and
 - transparent; as it is clear in its intention to ensure that BT provides access to its network to facilitate competition.

Requirement not to unduly discriminate

- 6.146 Ofcom has decided to retain the condition on BT not to unduly discriminate in relation to the provision of network access.
- 6.147 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.

Aim of regulation

- 6.148 Ofcom considers that in order to meet our objective to promote efficient and sustainable competition at the wholesale level, a non-discrimination SMP condition is necessary.
- 6.149 BT is a vertically integrated firm which offers fixed call services at both the retail and wholesale levels. We consider that, in the absence of an obligation not to unduly discriminate, BT would have an incentive to discriminate in favour of its own retail businesses by offering more favourable terms which would give them a competitive advantage over other CPs, and have a material adverse effect on competition.³⁹⁸
- 6.150 Therefore, we have decided to impose a condition on BT which would prevent it from favouring its own businesses and/or some CPs, to the disadvantage of other CPs.

Legal tests

- 6.151 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition at the retail level.
- 6.152 We consider that the condition meets the Community requirements as set out in section 4 of the Act. The condition encourages the provision of network access and service interoperability for the purpose of securing efficient and sustainable competition in the retail markets for access and calls by ensuring that BT does not unfairly favour its own retail businesses and/or some CPs and therefore distort competition.
- 6.153 We consider that the condition meets the criteria set out in section 47(2) of the Act because it is:
- objectively justifiable; as it ensures that competitors, and hence consumers, are not disadvantaged by BT discriminating in favour of its own retail business or between its own different activities;
 - not unduly discriminatory; in that it reflects the circumstances of BT (in particular, its vertical integration and scale relative to other CPs), and its potential for using market power in wholesale call termination to distort competition in other related markets;
 - proportionate; in that it is the least restrictive means of ensuring that BT does not discriminate in favour of its own downstream operations in providing access to wholesale call termination services in a manner which would distort competition at the downstream level; and
 - transparent; as it is clear that the intention is to prevent undue discrimination.

Charge control

- 6.154 In the absence of regulation, BT would have an incentive to charge excessive prices for wholesale call termination. We therefore decided that a charge control on

³⁹⁸ BT might also have an incentive to discriminate between competing CPs depending on the competitive strength of the providers at the retail level.

wholesale call termination is required and proportionate. Details of the charge control can be found in Section 11.

The condition

6.155 In Section 11, we explain the charge control design. As set out in paragraph 6.111 above, our preferred method of charge control regulation (RPI+/-X) would create incentives on BT to increase its efficiency, thereby imitating the effect of a competitive market.

Legal tests

6.156 We consider that the condition meets the criteria set out in section 47(2) of the Act because it is:

- objectively justifiable; in that it requires BT to provide wholesale call termination services at an efficient price. Without these price controls, BT might price excessively. The benefits expected of a competitive market would not be available to consumers without the imposition of price cap regulation;
- not unduly discriminatory; as it reflects the scale of BT's access network and thus its role as a provider of wholesale call termination services to other CPs. While we have not directly imposed a price control on other providers of termination services in the United Kingdom, we consider that the prices they set are adequately constrained by the obligation that they provide access on fair and reasonable terms, conditions and charges and our F&R Guidance (discussed in paragraphs 6.215 to 6.228 below);
- proportionate; in that it is the least restrictive means of ensuring that BT is not able to charge for wholesale call termination services at prices above the competitive level. The obligation ensures BT has the correct incentives to improve efficiency which leads to benefits that would be expected in a competitive market, but allows BT to benefit from any further improvements in its efficiency; and
- transparent; in that it is clear in its intention to control BT's charges while creating efficiency incentives.

6.157 In addition to the tests set out in Section 47(2) of the Act, we also consider that the condition satisfies the tests set out in section 88 of the Act.

6.158 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears to them 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 explained above that we consider that in the absence of charge controls BT may price excessively and therefore that there is such a risk of adverse effects.

6.159 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of:

- i) promoting efficiency;
- ii) promoting sustainable competition; and

- iii) conferring the greatest possible benefits on the end users of public electronic communications services.
- 6.160 We believe that the structure of the charge control provides BT with incentives to improve efficiency, since it retains any savings from improved efficiency that reduces its costs below this level over the period of the control.
- 6.161 We also consider that the obligation will continue to promote sustainable competition by allowing CPs to purchase wholesale call termination services at prices which allow them to compete effectively at the retail level. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on end-users of the services.
- 6.162 Section 88(2) requires us to take account of the extent of investment when setting this type of condition. While we are setting wholesale call termination rates for BT on the basis of LRIC, termination is part of a two-sided market which provides the opportunity to recover costs from the non-terminating side (i.e. BT's own subscribers). Because we require BT to provide regulated wholesale call origination services (and control the prices it can set for this) we are also allowing BT to recover those common costs that would no longer be recovered from wholesale call termination, from wholesale call origination prices. We believe (for the reasons set out in Section 8) that BT will continue to have the ability and incentive to invest, following the imposition of the charge control.
- 6.163 We have considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 6.164 In particular we have decided to set a charge control that furthers the interests of consumers by the promotion of competition. Through the charge control, we aim to secure efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs. This is because the imposition of the obligation, with charges set at LRIC, will ensure that the charges for wholesale call termination by BT are set at the level we would expect in a competitive market.
- 6.165 We have considered the Community requirements set out in section 4 of the Act and believe that the condition meets the requirements. Specifically, we believe that 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 setting a charge control that seeks to ensure that prices will be in line with those that we would expect to prevail in a competitive market.

Transparency

- 6.166 Ofcom considers that it is appropriate to ensure that there is transparency of charges, terms and conditions in a market in which an undertaking is found to hold SMP. In the absence of requirements obliging BT to publish this information, it might offer differential charges, terms and conditions both to its downstream division and also between CPs. These CPs would not be able to check that they were being charged an equitable rate, or that the terms and conditions that they were offered were also equitable.
- 6.167 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish all such information, and in such manner as Ofcom may direct, for the purpose of securing transparency. Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider

to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(d) also permits the setting of SMP services conditions requiring the dominant provider to include specified terms and conditions in the reference offer. Finally, section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed from time to time.

6.168 We have decided to impose the following obligations to provide transparency:

- Requirement to publish a reference offer;
- Requirement to notify charges; and
- Requirement to notify technical information.

Requirement to publish a reference offer (RO)

6.169 We have decided to impose a condition on BT to publish a RO for wholesale call termination services and products.

Aim of regulation

6.170 We consider that requiring BT to publish a RO assists with transparency in monitoring for potential anti-competitive behaviour and provides visibility to the terms and conditions on which other CPs would be able to purchase wholesale call termination services. The publication of a RO is particularly important in the case of BT as all CPs, either directly or indirectly, must buy wholesale call termination services from it. It will help to ensure stability in markets and ensure that incentives to invest would not be undermined.

6.171 Additionally, the publication of a RO allows for speedier negotiations and can help to avoid possible disputes. Together with a non-discrimination requirement, the publication of a RO gives confidence to those purchasing wholesale call termination services that they are being provided on non-discriminatory terms.

Changes to existing condition

6.172 In the 2009 market review, we required BT to include information relating to network components in the RO. In this review we remove this specific obligation, on the basis that we no longer consider that this information is required in order to assist CPs in monitoring for potential anti-competitive behaviour by BT, or to provide transparency that would allow CPs to make better informed decisions regarding purchasing wholesale call termination.

The condition

6.173 We have decided that it is appropriate for the published RO to include:

- a clear description of the services on offer;
- terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The RO will also provide sufficient information to enable providers to make technical and commercial judgements; and

- conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the RO, that provides for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion.

Legal tests

6.174 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition.

6.175 We 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 efficient and sustainable competition for the maximum benefit of consumers.

6.176 We consider that the condition meets the criteria set out in section 47(2) of the Act because it is:

- objectively justifiable; in that it requires that terms and conditions are published allowing competing providers the ability to ensure they are receiving offers that do not unduly discriminate in favour of BT's own retail operations, therefore encouraging competition to the benefit of consumers;
- not unduly discriminatory; as it reflects the scale of BT's access network and thus its important role as a provider of wholesale call termination services to other providers;
- proportionate; in that BT is only required to provide the information necessary to ensure there is no material adverse effect on competition; and
- transparent; as it is clear that the obligation is designed to ensure that potential competitors have sufficient information to make investment decisions.

Requirement to notify charges

6.177 We have decided to impose a condition on BT to publish any planned changes to charges in advance of those changes taking place.

Aim of regulation

6.178 Notification of changes to charges at the wholesale level can further assist competition, as it means other CPs have the opportunity to consider whether these changes require amendments to their own retail offerings and are able to respond in a timely manner.

6.179 We consider that in the absence of an obligation to provide advance notification of changes to charges, providers of retail services would have insufficient time to restructure their retail prices as a result of a change in the costs they face at the wholesale level. This could result in either prices being too high if the wholesale charges decreased, or too low, if the wholesale charges increased.

The condition

6.180 We have decided that it is appropriate for the notice to include:

- a description of the access service;
- the location of terms and conditions in the RO;
- the effective date or period from which the changes will have effect;
- the current and proposed charge;
- other charges for services that would be directly affected by the proposed change; and
- the network tariff gradient.

Change to notification periods

6.181 This remedy was imposed on BT in the 2009 market review, with a 90 day notice period before any proposed changes would be effective.

6.182 However, use of electronic communication means that price notifications can now be almost instantaneous. Stakeholder responses reflect a general consensus that price notification periods for wholesale call termination services could be shortened to reflect this. Specifically, most CPs agree that a 56 day notification period would allow sufficient time for them to adjust their own prices accordingly, without incurring any commercial risk. Further, we have not received any evidence which supports the view that 56 days is not sufficient.

6.183 Therefore, in line with wholesale call origination (see paragraph 5.380 and 5.381), we have decided to reduce the notification period for changes to wholesale call termination charges from 90 days to 56 days.

Legal tests

6.184 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition.

6.185 We consider that the condition meets the Community requirements set out in section 4 of the Act. In particular, the condition promotes competition and secures efficient and sustainable competition for the maximum benefit of consumers by ensuring that providers have the necessary information to allow them to make informed pricing decisions for their retail offers.

6.186 We consider that the condition meets the criteria set out in section 47(2) of the Act because it is:

- objectively justifiable; in that it gives sufficient notice of wholesale pricing changes to competing providers, which is necessary to ensure CPs can adjust their own offerings in a timely manner;
- not unduly discriminatory; as it reflects the scale of BT's access network and thus its important role as a provider of wholesale call termination services to other CPs;
- proportionate; in that only the information that other CPs would need to know in order to adjust for any changes would have to be notified; and

- transparent; as it is clear that the intention is to ensure that BT notifies those who purchase wholesale call termination of changes to charges, which helps to ensure stability in the market.

Requirement to notify technical information

6.187 We have decided to impose a condition on BT to notify technical information in advance of providing new wholesale services or amending existing technical terms and conditions.

Aim of regulation

6.188 The aim of the obligation to provide advance notification of technical characteristics is to ensure that competing providers have sufficient time to respond to changes that may affect them. For example, a competing provider may need to introduce new equipment or modify existing equipment or systems to support a new or changed technical interface.

6.189 Technical information 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). Relevant information about network configuration is likely to include information about the function and connectivity of points of access, for example, the connectivity of exchanges to end users and other exchanges.

The condition

6.190 The existing condition requires the notification of new technical information 90 days in advance of providing new wholesale services or amending existing technical terms and conditions. We continue to believe that 90 days is the minimum time that competing providers would need to make modifications to their network to support changes.

Legal tests

6.191 We consider that the condition meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable; as it enables competing operators to make full and effective use of network access. The period allows CPs time to react to proposed changes without imposing an unnecessarily long notification period on BT that may restrict its ability to develop and deploy new features or products;
- not unduly discriminatory; as it reflects the scale of BT's access network and thus its important role as a provider of wholesale call termination services to other providers;
- proportionate; in that 90 days is considered the minimum period necessary to allow competing providers to modify their networks; and
- transparent; in that it is clear in its intention that BT notifies technical information.

6.192 We have also considered our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

- 6.193 We consider that, by ensuring that other CPs are given sufficient time to make any changes to technical specifications that might affect their businesses, 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.
- 6.194 Further, we consider that, in line with section 4 of the Act, the condition in particular promotes competition in relation to the provision of electronic communications networks and encourages the provision of network access and service interoperability for the purpose of securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in benefits for retail consumers.

Cost accounting

- 6.195 We consider that it is appropriate that BT is required to comply with obligations governing cost accounting systems and processes as set out in *The regulatory financial reporting obligations on BT and Kingston Communications Final Statement and notification*, published in July 2004 (the “July 2004 Statement”)³⁹⁹.
- 6.196 We also conclude that BT will no longer be required to publish DLRIC and DSAC information but that it will be required to provide this information to Ofcom on an annual basis. We will also continue to require BT to publish FAC information for wholesale call termination services at the market level and to provide FAC information at the service level to Ofcom on an annual basis.

Aim of regulation

- 6.197 The same reasons for applying cost accounting conditions for wholesale call origination are relevant for wholesale call termination. These reasons (reflecting responses to the consultation) are described in Section 5 paragraphs 5.402 to 5.408.

Conditions

- 6.198 BT is required to comply with obligations governing cost accounting systems and processes as set out in an Ofcom statement published in 2004.⁴⁰⁰ The outputs relevant to this review include:
- Preparation of a variety of financial statements;
 - Preparation of extensive supporting documentation explaining how the financial statements have been put together;

³⁹⁹ Ofcom, The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf. See also Ofcom, Changes to BT’s regulatory financial reporting and audit requirements, May 2007, <http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf> and Ofcom, Changes to BT and KCOM’s regulatory and financial reporting 2012/13 update, January 2013, <http://stakeholders.ofcom.org.uk/binaries/consultations/bt-kcom-2012-13/summary/condoc.pdf>

⁴⁰⁰ Ofcom, The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf. See also Ofcom, Changes to BT’s regulatory financial reporting and audit requirements, May 2007, <http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf> and Ofcom, Changes to BT and KCOM’s regulatory and financial reporting 2012/13 update, January 2013, <http://stakeholders.ofcom.org.uk/binaries/consultations/bt-kcom-2012-13/summary/condoc.pdf>

- Provision of an independent assurance statement;
- Publication of information; and
- Preparation of reconciliation statements.

Legal tests

- 6.199 Under sections 87(9) to 87(11) and 88 of the Act, appropriate cost accounting obligations may be imposed on dominant providers in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities.
- 6.200 We consider that the condition meets the criteria set out in section 47(2) of the Act. The obligation is:
- objectively justifiable; for the reasons set out above in relation to wholesale call origination at paragraphs 5.402 to 5.408 and 6.202 to 6.206 below;
 - not unduly discriminatory; as BT holds a unique position where it has large market shares in the provision of both retail and wholesale voice services;
 - proportionate; since only the information that is necessary to support transparency is required to be provided; and
 - transparent; as it is clear that the intention is to monitor the effectiveness of remedies and to support market reviews, and the particular cost accounting requirements of BT are clearly documented in the July 2004 Statement.
- 6.201 In addition to the tests set out in Section 47(2) of the Act, Ofcom is also required to ensure that the condition satisfies the tests set out in section 88 of the Act.
- 6.202 Section 88(1)(b) of the Act states that Ofcom are not to 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 pricing effects arising from price distortion and it also appears that the setting of the condition is appropriate for the purposes of:
- i) promoting efficiency;
 - ii) promoting sustainable competition; and
 - iii) conferring the greatest possible benefits on the end-users of public electronic communications services.
- 6.203 Section 88(2) also requires us to take account of the extent of the investment when setting this type of condition.
- 6.204 We have identified the risk of excessive pricing by BT in the wholesale call termination market and imposed charge control and other remedies which seek to promote efficiency and sustainable competition and confer the greatest possible benefits on the end users of public electronic communications services. The cost accounting remedy supports the effectiveness of our regulatory approach in this market. We have also taken account of the extent of the investment of BT in the matters to which the cost accounting obligations relate.

- 6.205 We have also considered our statutory obligations and the Community requirements set out in Sections 3 and 4 of the Act.
- 6.206 We consider that the imposition of a cost accounting obligation 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 and service interoperability for the purpose of securing efficient and sustainable competition and the maximum benefit for the customers of CPs. This is because the imposition of this obligation will allow monitoring of the effectiveness of obligations designed to curb potentially damaging leverage of market power.
- 6.207 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. This will result in the maximum benefit for retail consumers.

Accounting separation

- 6.208 We have decided to impose an accounting separation obligation on BT in relation to the wholesale call termination market. Under section 87(7) and 87(8) of the Act, appropriate accounting separation obligations may be imposed on the dominant provider in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities.

Aim of regulation

- 6.209 The accounting separation obligation requires BT to report separately for each of the relevant markets and services, and account separately for internal and external revenue.⁴⁰¹ This will provide a higher level of detail information (and therefore transparency) than that derived from the statutory financial statements of the notified operator, and allow Ofcom, and third parties, to monitor the activities of BT to ensure that it does not discriminate in favour of its own downstream business.
- 6.210 In the light of this, we are retaining the existing obligation and the associated reporting requirements, requiring BT to publish revenue, prices and volumes at a service level, separately identifying internal and external activities.

Legal tests

- 6.211 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in the relevant markets by the promotion of competition.
- 6.212 We consider that the condition meets the Community requirements set out in section 4 of the Act. Specifically, section 4(8), where the obligation has the purpose of securing efficient and sustainable competition in the markets for electronic

⁴⁰¹ Article 11 of EC Directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), as amended by Directive 2009/140/EC; See also Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC).

communications networks and services, by ensuring dominant providers do not favour their own downstream businesses, thereby disadvantaging third-party CPs.

6.213 We consider that the condition meets the criteria set out in section 47(2) of the Act because it is:

- objectively justifiable; as it relates to the need to ensure competition develops fairly, to the benefit of consumers;
- not unduly discriminatory; as BT holds a unique position where it has large market shares in the provision of both retail and wholesale voice services;
- proportionate; as it is a necessary mechanism to allow us and third-parties to monitor potentially discriminatory behaviour by dominant providers; and
- transparent; as it is clear the intention is to monitor compliance with specific remedies and the particular accounting separation requirements of BT are clearly documented.⁴⁰²

Conditions which will be imposed on all other CPs (including KCOM)

6.214 We now set out the specific remedies we have decided to impose on non-BT CPs (including KCOM) and the relevant legal tests associated with them.

Requirement to provide network access on reasonable request

6.215 We have decided to impose a condition which requires CPs (other than BT) to provide network access and to do so on fair and reasonable terms, conditions, and charges. It also requires relevant CPs to provide such network access as we may from time to time direct, and allows us to make a direction under the condition.

6.216 Our 2011 statement on fair and reasonable charges⁴⁰³ provides guidance on what we would do in the event of a dispute. It sets out our view that termination rates set at a higher level than BT's rates are unlikely to be fair and reasonable (regardless of technology). We concluded that termination rates set above BT's rates (which we called the Benchmark FTR) are likely to be reasonable only if they meet the three stage test outlined in the guidance (see also Section 8 of this statement).⁴⁰⁴ We have updated the guidance (which appears as Annex 10 of this document) to reflect that it now also applies to KCOM, following our decision to treat KCOM in the same manner as all other CPs (other than BT). However, the guidance remains substantively the same, for the reasons set out in the 2011 statement on fair and reasonable charges.

⁴⁰² Ofcom, The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf
Ofcom, Changes to BT's regulatory financial reporting and audit requirements, May 2007, <http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf>

⁴⁰³ Ofcom, "Fair and Reasonable Charges for Fixed Geographic Call Termination", 27 April 2011, <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁴⁰⁴ Therefore, if a firm (such as Resilient Networks) were to justifiably depart from the benchmark rate in the setting of their termination rate, they would need to satisfy the three stage test otherwise we would consider the excess charge to be unreasonable.

Aim of regulation

- 6.217 This remedy is designed to promote competition in downstream markets by requiring providers with SMP to provide wholesale access to their network facilities. Ofcom considers that, in the absence a requirement to provide services on fair and reasonable terms, the dominant provider may have an incentive not to provide wholesale call termination services.
- 6.218 Furthermore, this condition requires non-BT CPs to provide wholesale call termination at prices that are fair and reasonable. Absent a requirement for fair and reasonable charges, the CPs might have an incentive to price excessively for these services.

The condition

- 6.219 The condition will require CPs to provide wholesale call termination only where requests are 'reasonable'. The condition will also require CPs to provide network access in response to such a reasonable request and that access should be provided on fair and reasonable terms, conditions and charges.

Legal tests

- 6.220 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition.
- 6.221 We also consider that the condition meets the Community requirements as set out in section 4 of the Act. The condition is designed to promote competition in relation to the provision of electronic communications networks and to encourage the provision of network access for the purpose of securing efficient and sustainable competition in markets for electronic communication services.
- 6.222 We consider that the condition meets the criteria set out in section 47(2) of the Act because it is:
- objectively justifiable; in that it relates to the need to ensure that competition develops to the benefit of consumers. Without this obligation, CPs would be able to restrict consumers on other CPs' networks from calling consumers on their own network, and this is likely to mean that the services provided by these other CPs may not be viable;
 - not unduly discriminatory; as it is imposed on all CPs, except BT, which have SMP in wholesale call termination. A similar condition is imposed on BT, except that the condition on BT does not require its charges to be fair and reasonable. This difference reflects the fact that we also impose a charge control on BT. We have set out in paragraphs 6.101 and 6.121 above why we consider that a charge control is appropriate for BT but not for other CPs;
 - proportionate; in that it is the least restrictive means of ensuring that CPs do not refuse access to wholesale call termination services to other CPs and distort competition at the downstream level; and
 - transparent; as it is clear in its intention to ensure that CPs provide wholesale call termination services to facilitate competition.

- 6.223 In addition to the tests set out in Section 47(2) of the Act, Ofcom is 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.
- 6.224 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears to them 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 controls CPs may price excessively, and conclude that there is a risk of adverse effects from this.
- 6.225 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of:
- i) promoting efficiency;
 - ii) promoting sustainable competition; and
 - iii) conferring the greatest possible benefits on the end users of public electronic communications services.
- 6.226 We consider that fair and reasonable charges will prevent CPs from passing on any inefficiently incurred costs to other CPs through excessively high prices. In this way, the condition supports the aim of improved efficiency.
- 6.227 We also consider that the provision of network access on fair and reasonable terms will promote sustainable competition by ensuring that other CPs can effectively compete at the retail level. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on end-users of the services.
- 6.228 We are also required, under Section 88(2) of the Act, to consider the extent of CPs' investment in the matters to which the condition relates (in this case, the network assets associated with wholesale call termination). We explained at paragraph 6.160 above that, in BT's case, we believe that BT will continue to have the ability and incentive to invest, following the imposition of a charge control even though the charge is based on LRIC. We consider that, for the same reasons, fair and reasonable charges as interpreted by Ofcom, will also provide other CPs with the ability and incentive to invest.

Requirement to notify charges

- 6.229 We have decided to impose a condition on CPs that requires them to make their charges publicly available on or before the day the amendment comes into effect.

Aim of regulation

- 6.230 We consider the condition promotes transparency in the market because it allows us to determine whether CPs are setting their charges on a fair and reasonable basis. Notification of charges therefore helps to ensure stability in markets, without which incentives to invest might be undermined and market entry made less likely.

Legal tests

- 6.231 We have considered our duties under section 3 of the Act. We consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition.
- 6.232 We consider that the condition meets the Community requirements as set out in section 4 of the Act. We consider that the obligation promotes competition, secures efficient and sustainable competition and secures the maximum benefit for consumers.
- 6.233 We consider that the condition meets the criteria set out in section 47(2) of the Act. It is:
- objectively justifiable; because general and reliable visibility of a dominant operator's charges is needed to enable competitors to set prices for their services that are based on purchasing the regulated inputs. It also allows Ofcom and other CPs to monitor the setting of CPs' charges on fair and reasonable terms, and for possible anti-competitive behaviour;
 - not unduly discriminatory; in that it applies to all CPs that hold SMP in wholesale call termination. The difference in notice period between BT and non-BT CPs reflects the scale of BT's access network and thus its important role as a provider of wholesale call termination to other CPs;
 - proportionate; in that only information that other network providers would need to know in order to adjust for any changes would have to be notified; and
 - transparent; as it is clear that the intention is to ensure that CPs notify those who purchase wholesale call termination of changes to charges, which helps to ensure stability in the market.

Removal of additional regulation on KCOM

- 6.234 In the 2009 review, we imposed on KCOM a basis of charges obligation, a requirement not to unduly discriminate and to publish a reference offer, as well as cost accounting and accounting separation obligations.
- 6.235 Since we have now decided to treat KCOM in the same way as all other CPs (other than BT) in the market for wholesale call termination, as discussed in paragraph 6.115 above, we have decided not to retain these conditions in this review.

Section 7

Transit and conveyance services

Summary of our decision

- 7.1 We have decided that single transit (ST) services should not be subject to *ex ante* regulation. In particular, we have concluded that *ex post* competition law will address the competition concerns we have identified in relation to these services, and it is therefore not appropriate to maintain *ex ante* regulation in relation to these services. For the avoidance of doubt, this means that the existing remedies imposed on BT and listed below will be revoked in relation to the provision of ST in the United Kingdom:
- Requirement to provide network access on reasonable request;
 - Requirement not to unduly discriminate;
 - Requirement to publish a reference offer;
 - Requirement to notify technical information;
 - Requirement to notify charges;
 - Accounting separation.
- 7.2 We have also concluded that there have been no changes in the LTC/LTT product markets that would call into question our previous conclusion that the markets were effectively competitive.
- 7.3 The rest of the section is set out as follows:
- Introduction, including description of transit and conveyance services, regulatory background, the findings of the 2009 review, EU Framework and the 2007 EC Recommendation on relevant markets;
 - Single transit: the February 2013 consultation proposals, stakeholder responses and our analysis and conclusions in relation to ST services; and
 - LTC/LTT: our views in the February 2013 consultation, stakeholder responses and our analysis and conclusions in relation to LTC/LTT services.

Introduction

- 7.4 Transit and conveyance services are purchased by CPs to supplement wholesale call origination and wholesale call termination for the purpose of completing end-to-end telephone calls. In particular, this section covers the transit and conveyance services that are currently regulated (ST), and the local-tandem conveyance (LTC) and transit (LTT) services that were deregulated in the 2009 wholesale review.
- 7.5 Transit and conveyance services are wholesale services that constitute part of the end-to-end call path needed to enable originating CPs to offer retail calls. Typically, transit and conveyance services are purchased by CPs to complete calls in instances

where CPs do not have their own infrastructure to complete the call (i.e. where they do not have direct interconnection in place), or when they face capacity constraints on their own network.

- 7.6 Conveyance refers to services that transport a call from one physical location to another on the same network or between two directly connected networks. This includes conveyance between the local exchange and the tandem exchange (local-tandem conveyance or LTC) and between two tandem exchanges (inter-tandem conveyance or ITC).
- 7.7 Transit services provide termination to a different network where an intermediate (transit) network is involved. The BT ST product provides termination where both the originating network and terminating network are connected to the same tandem switch in BT's network. ST therefore provides a switching connection, allowing termination on a different network without a transmission component. BT also provides inter-tandem transit (ITT) – which contains a component of conveyance in addition to termination on a different network.
- 7.8 Other CPs that offer transit products may not offer direct equivalents of BT's ITC/ITT, LTC/LTT and ST products, because they define their transit services in other ways. For example, a single rate may be offered for calls to all United Kingdom fixed geographic numbers, whilst a single rate per number range per terminating provider may be used for non-geographic traffic.
- 7.9 Given that transit services provide termination on different networks, a provider of these services must have a direct connection with a range of different networks in order to provide a comprehensive transit service to a third party. Accordingly, if a CP has a limited number of direct connections in place, it would not be able to provide a comprehensive transit service to another CP (without potentially relying on the interconnection networks of a larger CP, which would therefore amount in some sense to 'reselling' transit).

Regulatory background

- 7.10 In previous reviews, we have identified three markets for transit and conveyance services, corresponding to the provision of ITC/ITT, LTC/LTT and ST.
- 7.11 In 2003 we reviewed these three markets, concluded that BT had SMP in all of them, and imposed remedies in relation to these services. In 2005, however, we re-reviewed the ITC/ITT market and found it to be effectively competitive, with all SMP conditions being revoked in accordance with Section 84 of the Act.
- 7.12 In 2009 we reviewed the market for LTC/LTT services and found that this market was effectively competitive and removed SMP remedies from LTC/LTT services.⁴⁰⁵
- 7.13 In 2009 we also reviewed the market for ST⁴⁰⁶ (although our final decisions were published in the '2010 ST Statement'⁴⁰⁷). In that review, we identified a single market for ST in the United Kingdom, observing that:

⁴⁰⁵ Ofcom, *Review of the fixed narrowband services wholesale markets: Statement on the markets, market power determinations and remedies including further consultation*, September 2009, http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf.

⁴⁰⁶ Ibid

- alternative routes to avoid purchasing BT's ST would require other CPs either to interconnect directly to the terminating CP or purchase conveyance (for example, by purchasing BT's ITT service). Neither of these options were found to be in the same relevant market since a 5-10% increase in the price of ST would not lead to switching away from ST; and
- in the case of some traffic types such as non-geographic traffic, even where a direct route may be in place, re-routing to make use of existing direct interconnection would also involve significant one-off costs, such as updating routing data.

7.14 Although we acknowledged that competitive conditions varied between different routes, we concluded that *ex ante* regulation on a 'route-by-route basis' would not be appropriate, as:

*'a SSNIP may be only unprofitable if applied to very large traffic streams where CPs either have interconnection in place already or can use a transit provider to which they are both already connected, or can easily deploy interconnection. On the other hand, where a SSNIP is applied to the transit price across a number of different routes each with a smaller volume of traffic, the price increase is more likely to be profitable.'*⁴⁰⁸

7.15 We also found that BT had SMP in the ST market, noting that, due to the nature of ST services, it had a market share of 100% as the sole supplier of ST in the United Kingdom. We imposed SMP remedies for BT's supply of ST, including requirements to provide network access on reasonable request and not to unduly discriminate. We did not, however, consider it appropriate to also maintain price controls or to impose a cost orientation obligation.⁴⁰⁹

Regulatory framework

7.16 Under the European Framework, and in particular Article 15 of the Framework Directive, in considering whether or not it is appropriate to impose regulation in electronic communications markets, Ofcom must begin by defining markets whose characteristics may be such as to justify the imposition of regulatory obligations. In doing so, Ofcom must apply competition law principles to the definition of the relevant market and take utmost account of the 2007 EC Recommendation.

7.17 The 2007 EC Recommendation identifies a set of product and service markets within the electronic communications sector in which *ex ante* regulation may be warranted. The markets for conveyance and transit services are not markets which are listed in the 2007 EC Recommendation as markets in which regulatory obligations may be appropriate. However, NRAs may impose regulation in markets different from those

⁴⁰⁷ Ofcom, *Review of the fixed narrowband services wholesale markets: Further statement on wholesale transit markets and remedies in the wholesale call termination market*, February 2010, http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/statement/statement.pdf

⁴⁰⁸ See the September 2009 consultation, paragraph 19.25, http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf.

⁴⁰⁹ We did not define ST or ITC/ITT markets in Hull due to the small scale of the KCOM network, and the lack of other CPs operating networks in the Hull area, and therefore the lack of provision of – and demand for – transit services in the Hull area.

identified in the 2007 EC Recommendation where this is justified by national circumstances.⁴¹⁰

- 7.18 As the 2010 ST statement concluded that it was appropriate to impose *ex ante* SMP regulation in the ST market, we have considered the extent to which the conditions of competition in the ST market remain such as to warrant the continued imposition of regulatory remedies. In doing so, we have had regard to the test set out in the 2007 EC Recommendation for the identification of markets in which regulatory obligations may be appropriate. In particular, we have considered the extent to which *ex post* competition law may be sufficient to deal with any competition concerns or whether regulatory obligations ought to be imposed in order to ensure intervention where those concerns become manifest.

Single transit (ST)

Introduction

- 7.19 The 2007 EC Recommendation seeks to “*identify those product and service markets within the electronic communications sector the characteristics of which may be such as to justify the imposition of regulatory obligations set out in the Specific Directives, without prejudice to markets that may be defined in specific cases under competition law*”.⁴¹¹ It therefore lists a number of markets in which the EC considers that regulatory obligations are appropriate, taking into account the particular features of those markets.
- 7.20 The 2007 EC Recommendation also recognises that there may be other markets, aside from those identified, in which it is appropriate to impose regulatory obligations. However, where NRAs seek to identify such markets, the 2007 EC Recommendation sets out the following three criteria which must be cumulatively met:
- the presence of high and non-transitory barriers to entry. These may be of a structural, legal or regulatory nature;
 - a market structure which does not tend towards effective competition within the relevant time horizon. The application of this criterion involves examining the state of competition behind the barriers to entry; and
 - the insufficiency of competition law alone to adequately address the market failure(s) concerned.⁴¹²
- 7.21 The market for ST services is not one identified by the EC in the 2007 EC Recommendation. We have therefore considered whether the criteria in the 2007 EC Recommendation are met in relation to ST services.

Proposals in the February 2013 consultation

- 7.22 In our February 2013 consultation, we proposed that it would no longer be appropriate to impose *ex ante* regulation in relation to ST services, as we considered that *ex post* competition law would be sufficient to address the competition concerns

⁴¹⁰ The 2003 EC Recommendation on relevant markets included ‘*transit services in the fixed public telephone network*’ in the list of markets in which regulatory obligations may be appropriate. This market was removed from the scope of the Recommendation when it was updated in 2007.

⁴¹¹ Article 15(1) Framework Directive.

⁴¹² Paragraph 2 of the 2007 EC Recommendation.

identified, taking into account market developments since 2009. We therefore proposed to revoke the existing remedies imposed on BT listed in paragraph 7.1 above.

- 7.23 We also considered whether developments in the regulatory regime for non-geographic calls could affect competition in the market for ST. In our April 2012 consultation *Simplifying non-geographic numbers*⁴¹³ we proposed a number of changes to the non-geographic calls regime. Our proposals would mean that, in all cases, the terminating party pays for transit to all non-geographic calls.

Stakeholder responses to the February 2013 consultation

- 7.24 Of the 35 respondents to the consultation, 11 respondents commented on our proposals regarding ST services.⁴¹⁴ Regarding our assessment that *ex post* competition law would address our competition concerns in relation to these services, three respondents – BT, [X], and Lanonyx Telecom Ltd – agreed with our proposals. A further two respondents – [X] and TalkTalk – broadly agreed with our proposals, but expressed some reservations, while the remaining six respondents – EE, Sky, UKCTA, Verizon, Virgin Media, and Vodafone disagreed.
- 7.25 The following summary describes the comments provided and concerns raised by stakeholders regarding our assessment of the competition concerns, the proposed deregulation of ST services and the effectiveness of competition law as set out in the February 2013 consultation. We note that stakeholders either did not comment or agreed with our view that the definition of the relevant product and geographic market identified in the 2009 review should remain unchanged in this review.

Competition concerns

- 7.26 UKCTA, Verizon, Virgin Media and Vodafone were concerned that the proposed changes in the non-geographic call services (NGCS) review will leave CPs vulnerable to abusive behaviour by BT in relation to ST. Vodafone argued that changes to the NGCS regulatory regime will have a material impact on the nature of competition in ST services. Vodafone described how these changes will increase the volume of calls for which the terminating CP pays for transit charges. Vodafone argued that it is most efficient for originating CPs to choose a ‘default transit’ provider – rather than route calls on the basis of each number range – and that the ‘default provider’ is likely to be BT due to BT’s existing interconnection arrangements. Vodafone also predicted that the volume of non-geographic calls is likely to increase as demand for some non-geographic numbers such as Freephone increases. We discuss the potential impact of the NGCS changes in paragraph 7.50 to 7.56 below.
- 7.27 Vodafone, UKCTA, Virgin Media and Verizon’s concern was that – as for ‘thin’ routes discussed below – any reduction in competition for ST purchased to terminate non-geographic calls (such as that described in paragraph 7.26 above) could allow BT to increase prices for these ST services.
- 7.28 Similarly, regarding our assessment of the competition concerns, Vodafone argued that BT would be likely to increase prices by a significant amount on ‘thin’ routes,

⁴¹³ Ofcom, *Simplifying non-geographic numbers*, April 2012, <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geographic-no/summary>. We note that since the February 2013 consultation, we have subsequently published a further consultation on non-geographic calls, see Ofcom, *Simplifying Non-geographic Numbers*, 18 April 2013 <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

⁴¹⁴ BT, EE, [X],[X], Lanonyx Ltd, Sky, TalkTalk, UKCTA, Verizon, Virgin Media and Vodafone.

citing the example of BT's unregulated 'number portability transit service'. This product is sold on a commercial basis by BT for the purpose of providing porting conveyance between CPs, for example, where the CPs do not have direct interconnection agreements in place. Vodafone argued that this service provides a good predictor of how BT would tariff 'thin' routes for ST services. BT charges 0.1139ppm peak for such calls, almost five times as much as where its behaviour is constrained (in ST).

- 7.29 We discuss the incentives for BT to price discriminate for ST services (including 'thin' routes and ST purchased for the purpose of terminating non-geographic calls), our relevant competition concerns, and the effectiveness of an *ex post* competition law response in paragraphs 7.67 to 7.79 below.

Effectiveness of competition law

- 7.30 TalkTalk, UKCTA, Verizon, Virgin Media and Vodafone questioned the effectiveness of *ex post* competition law to address the competition concerns in the ST market. TalkTalk, UKCTA, Virgin Media and Vodafone were concerned that the resolution of *ex post* competition law complaints might not be timely enough.
- 7.31 Vodafone was also concerned that, with the cost of geographic call termination falling by a material amount, the cost of single transit will make up a larger proportion of CPs' costs. It argued that CPs would therefore become more susceptible to any adverse price movements for ST prior to the abuse being addressed through *ex post* competition law remedies. We consider the materiality of any abuse in paragraph 7.71 to 7.73, and the timeliness of *ex post* competition law intervention in paragraph 7.74 below.
- 7.32 [X] explained that it was not strictly against the use of *ex post* remedies as long as there was clarification on the "threshold of intervention". [X] argued that Ofcom should outline the *ex post* competition law powers that it would bring to bear in various scenarios. Similarly, Vodafone was concerned that an *ex post* competition law approach might not work. It cited the example of the dispute raised by Gamma regarding the price of BT's Wholesale calls product in 2004, in which the margin squeeze was assessed at the overall product level rather than on a contract by contract basis.⁴¹⁵ It argued that, in the case of ST, it is highly likely that the pricing on the 'thick' routes would mask any anti-competitive pricing on the 'thin' routes. Vodafone argued that, on this basis, any challenge is likely to fail even if margin squeeze was evident on the product on an individual contract basis. We consider whether *ex post* competition law would address our competition concerns in relation to ST in paragraph 7.76 below.

Deregulating ST services

- 7.33 EE, UKCTA, Verizon, Virgin Media and Vodafone were concerned about ST being an important "gatekeeper" product, i.e. deregulation would have competitive implications for adjacent markets. Respondents highlighted that purchasing ST is unavoidable for some services such as those routed via BT's network due to number porting. Vodafone stated that if *ex ante* remedies were removed it would not be an outcome that would serve the consumer interest as it would in fact create obstacles to competition.

⁴¹⁵ *Complaint from Gamma Telecom Limited against BT Wholesale about reduced rates for Wholesale Calls from 1 December 2004* (http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_802/)

- 7.34 Vodafone was also concerned that – in removing *ex ante* regulation on ST – we were undervaluing the importance of the BT Carrier Price List (CPL). It argued that, “*the CPL is without question a market enabler; it provides a comprehensive list of number ranges in the UK, therefore providing the trigger for CPs to open up ranges*”.⁴¹⁶ It believes that the CPL clarifies what proportion of the cost relates to ST and what proportion relates to wholesale call termination, and that without this distinction BT could bundle charges and CPs would be left not knowing how much they were paying for ST. We consider the appropriateness of regulation for ST in paragraphs 7.57 – 7.60.
- 7.35 Finally, [3], Sky, UKCTA, Verizon, Virgin Media and Vodafone agreed that there have not been significant changes in relation to the provision of ST. They also argued that if the market has not changed it is logical that the remedies should remain the same. Similarly, although Verizon and EE recognised that BT’s pricing behaviour provided some evidence of the competitive nature of the market, they did not believe that the evidence was sufficient to remove *ex ante* regulation. EE was not opposed to deregulation in principle but believed that such a decision needs to be based on more than recent pricing trends due to the importance of the market. Our analysis and conclusions relating to the appropriateness of regulation are set out in paragraphs 7.57 to 7.79.

Our analysis and conclusions

Product market

- 7.36 In the 2009 review⁴¹⁷, we concluded that there was a single market for ST services for all routes. In reaching that conclusion, we noted that instead of purchasing BT’s ST, CPs might have the option to buy other transit products (e.g. ITT from BT, or other products that include transit services from other CPs), increase their use of direct interconnection, or invest in establishing additional direct interconnection arrangements.
- 7.37 We found that the substitutability of other BT transit services is limited by the price relationship between ST and ITT. The price of ST is significantly lower than the price of ITT.⁴¹⁸ This means that the price of ST could increase substantially from the competitive level before it would be economic for CPs to use ITT instead. We therefore did not consider that ITT provided an effective constraint on ST.
- 7.38 We also did not believe that, in the 2009 review and during the period considered in that review, other CPs’ transit services would provide an effective constraint for all ST traffic. This was because other CPs were not able to provide termination to as wide a range of CPs as BT. We considered that this limited the ability of other providers of transit services to offer comprehensive termination services to the full range of CPs in the United Kingdom, and therefore that the transit services offered by other CPs were unlikely to provide an effective constraint on many routes in the United Kingdom.

⁴¹⁶ Vodafone consultation response, p 17,

<http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/responses/Vodafone.pdf>

⁴¹⁷ Review of the fixed narrowband services wholesale markets (statement and consultation) – 15 September 2009

http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf

⁴¹⁸ Depending on the time of day and the length of conveyance included in the ITT service, the ITT prices listed in BT’s carrier price list are approximately 5 to 30 times higher than the listed ST prices.

- 7.39 Direct interconnection was considered similarly unlikely to provide an effective constraint for some routes in the United Kingdom. Replacing the use of ST with direct interconnection would be likely to require further investment for CPs, either to increase the capacity of current direct interconnection routes, or to invest in new routes to CPs where direct interconnection was not in place. Due to the expense of such investment, and the relatively low price of BT's ST, we considered that it would be unlikely to be economical for CPs to invest in further direct interconnection for some routes.
- 7.40 We considered that BT was likely to remain the largest provider of fixed-line services during the period of the review, and would therefore be the obvious choice for smaller CPs when seeking to establish interconnection. Due to BT's position as the incumbent network, BT was interconnected with the largest number of CPs and is also subject to an end-to-end connectivity obligation (E2E obligation⁴¹⁹). The E2E obligation means that BT must purchase termination from other CPs (provided the terms and conditions proposed are reasonable) and so BT was considered likely to continue to act as a 'hub' for voice call interconnection for the foreseeable future.⁴²⁰ Given that – on small routes – multiple interconnections are unlikely to be efficient, BT's presence as a 'hub' operator might act as a barrier to entry by other transit providers that could also connect to these smaller players.
- 7.41 For some smaller CPs, the costs of establishing and maintaining interconnection meant that their interests were generally served by interconnecting with BT, since this was the only choice that would provide a 'one stop shop' for their need to pass and receive calls. Therefore direct interconnection between CPs would be unlikely to be an effective substitute for termination to smaller CPs.
- 7.42 Due to the varying incentives for deploying and using direct interconnection described above, we found that the market was comprised of 'thick' (more competitive) routes, and 'thin' (less competitive) routes. Although alternatives to ST existed, such alternatives were not necessarily attractive, in particular as far as the 'thin' routes were concerned.
- 7.43 However, we found that – in the context of the small size of the ST market – it would not be practical or appropriate to analyse every route in the market and assess the competitive conditions that exist in each of them. Consequently, we did not propose to further narrow the definition of the relevant market.
- 7.44 We have gathered evidence and carried out analysis of the ST market again as part of this market review. We have not been provided with any evidence to suggest that there have been changes in the market since 2009 which would call into question the definition of the relevant product market set out in the 2009 review. Nor have we seen any evidence that changes in the market are likely during the period under review which would impact the market definition set out in 2009. In the 2009 review, Cable and Wireless Worldwide (CWW) estimated that BT may be the only CP with direct interconnection to 70 or more of the CPs in the United Kingdom.⁴²¹ In this review we have received information showing that BT remains the CP with the largest number of direct interconnections – approximately 200. Vodafone (which has

⁴¹⁹ See the E2E statement, September 2006, http://stakeholders.ofcom.org.uk/binaries/consultations/end_to_end/statement/statement.pdf

⁴²⁰ See, for example, paragraph 3.24, Ibid.

⁴²¹ See the 2009 consultation, paragraph 19.61, http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf.

since acquired and integrated CWW) is the CP with the next highest number of direct interconnections, with [X] such interconnection arrangements in place.

Geographic market

- 7.45 In the 2009 review, we concluded that the relevant geographic market was one which encompassed the United Kingdom (excluding the Hull area). We have not identified any evidence of changes in the relevant market which would call into question those conclusions either at the present time or during the period of the review.

Market developments since 2009

Pricing and volume developments

- 7.46 Since the 2009 review, BT has maintained a constant price for ST despite the absence of a charge control or cost orientation obligation.⁴²² Although the price has remained constant, total ST traffic volumes have continued to decline since the 2009 review, falling from 23 billion in 2009 to 15.5 billion minutes per annum in the year ending March 2013.

Figure 7.1: [X]

Source: Ofcom

- 7.47 The decline in traffic volume has led to a fall in revenues in the ST market, with total external revenues (i.e. revenues from non-BT CPs) declining from £5m in BT's financial year ending March 2009 to £3m in the year ending March 2013.⁴²³ As the price has not changed, the fall in total revenues simply reflects the declining traffic volumes.
- 7.48 [X] Using data provided by BT we have broken traffic down by traffic type (i.e. fixed CP to fixed CP, fixed to mobile, mobile to fixed, mobile to mobile and traffic related to mobile number portability).
- 7.49 [X]⁴²⁴.

Developments in non-geographic call services

- 7.50 For both geographic and non-geographic calls, the routing path of a call is determined by the network on which the call originates. However, for calls to some non-geographic number ranges (including 080, 0845 and 09), the terminating party pays for transit services. This differs from geographic calls in which the originating party always pays for transiting the call.
- 7.51 When the terminating CP pays for call transit, there is no immediate incentive on the CP originating a call to minimise the cost of routing the call by, for example, sending the call by direct interconnection to the terminating CP. Instead, the call originating CP has the incentive to send the traffic via the route that does not require any further

⁴²² BT publishes ST prices on the BT Carrier Price List. There have been no changes to the nominal Daytime, Evening, and Weekend prices since 01/04/2008.

⁴²³ The revenues for ST are reported in BT's annual regulatory financial statements (RFS) (<http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm>).

⁴²⁴ [X]

investment on its behalf. In the United Kingdom, most CPs directly interconnect with BT. This means that the default routing path for CPs is to send the call to BT's network, which then transits the call to the terminating CP.

- 7.52 However, we note that terminating CPs may create an indirect incentive for originating CPs to implement efficient routing (even when it is the terminating CP that pays for transit) by offering the originating CP a suitable share in any transit cost savings resulting from direct routing. It is our understanding that direct routing has been agreed and is in place between some CPs for calls to non-geographic numbers where the terminating CP would otherwise pay for transit, although we recognise such agreements may not be possible where the transit cost savings are not sufficiently large.
- 7.53 In our April 2013 consultation *Simplifying non-geographic numbers*⁴²⁵ we proposed a number of changes to the non-geographic calls regime. One of our proposals would mean that, in all cases, the terminating party pays transit for all non-geographic calls (including 0870, 0871/2/3 and 0844/3 calls). If affected calls were currently routed via direct interconnection, then we do not see any reason that this change would require CPs to switch to using ST as this change does not create a disincentive for originating CPs to route via direct interconnection. In that case, this proposed change might not affect demand for ST. However, we recognise that this change has the potential to increase the range of non-geographic calls for which BT might be considered the 'default' provider of transit.
- 7.54 The potential non-geographic call changes would also mean that calls to 0800 numbers will be free from all phones, including mobile phones. The proposals also include provisions that mean that consumers will in the future be presented with clear, transparent information on how calls to 08, 09 and 118 numbers will be charged. This could mean that consumers make more calls to non-geographic numbers. If these calls are routed using ST, this could increase the demand for ST purchased for the purpose of terminating non-geographic calls.
- 7.55 In considering any impact on competition for the provision of ST, we note that the terminating operator retains an incentive to minimise transit costs through the use of direct routing, where those costs are lower than transit costs. As with the existing position on non-geographic calls, if those cost savings are shared with the originating operator, the originating CP has an incentive to ensure efficient routing. For those routes where direct routing is a cost effective alternative to ST, the constraint exercised by such a possibility remains important. This would mean that ST purchased for the purpose of terminating non-geographic calls could be as competitive as that purchased for terminating geographic calls. This suggests that, even if the volume of ST purchased increased, we would not expect the competitive nature of the ST market to change significantly from the current market.
- 7.56 Overall we therefore expect the impact of our non-geographic calls proposals, if implemented, on the market for ST to be limited. This means that, even if the volume of non-geographic calls increased, we would not expect a significant change in the nature of competition in the provision of ST services.

⁴²⁵ Ofcom, *Simplifying non-geographic numbers*, 15 April 2013, <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

Appropriateness of regulation

- 7.57 We have not identified any significant changes in relation to ST services which would have an effect on competition for such services. In particular, the observation that prices have remained constant despite the removal of specific price regulation indicates the existence of ‘thick’ routes for which it may not be profitable for BT to raise prices significantly. This suggests that it is unlikely that BT has the incentive to increase prices for all ST as a whole.
- 7.58 We recognise that the structure of interconnection in the UK means that some ‘thin’ routes remain. In order to provide a comprehensive service, CPs need to complete calls to CPs via these ‘thin’ routes and so need to purchase transit to complete some calls. We also acknowledge stakeholder comments that the price of ST has provided a useful reference price, particularly when considered in conjunction with BT’s CPL (see paragraph 7.34 above).
- 7.59 However, as noted above, in order to impose regulatory obligations on CPs within the ST market, the 2007 EC Recommendation sets out that NRAs should ensure that the three criteria summarised in paragraph 7.20 above are cumulatively met.
- 7.60 We have therefore considered each of these criteria in order to determine whether *ex ante* regulation might be appropriate for ST services or whether the market is one whose characteristics do not justify the imposition of regulatory obligations.

Barriers to entry

- 7.61 The United Kingdom telecommunications markets are comprised of a few large CPs and a large number of smaller CPs that use transit services for terminating traffic (see Annex 1, Schedule 3). In the 2009 review, we said that BT faces competitive pressure on routes that carry large volumes of traffic. We mentioned evidence (presented by BT) indicating that alternatives to ST exist for all routes, such as direct interconnection.
- 7.62 On certain routes however – particularly for calls terminating to small CPs – we consider that it is not economically viable for CPs to establish direct interconnection with each other due to the relatively small volumes of calls (compared to the volumes routed by BT), and in the context of the relatively low price of ST. Since direct interconnection is a pre-requisite to providing a transit service for traffic to a terminating CP, this forms a structural barrier to entry. While CPs may choose to interconnect with each other on a case-by-case basis, they are still likely to depend on BT to terminate traffic to a significant number of other (smaller) CPs. This position still reflects the different conditions that exist across the market. In consequence, we continue to consider that there are high and non-transitory barriers to entry in the market for ST services.

Dynamic aspects

- 7.63 Dynamic aspects of a market can suggest that it may be tending towards increased competition. The potential for the ST market to become competitive is related to the large number of CPs in the United Kingdom, many of which terminate very small volumes of traffic. In 2009, we noted (at paragraph 19.47) that *‘evidence of a high degree of consolidation among these CPs could indicate a move towards a market with fewer, larger CPs in which a smaller number of larger routes would be needed to*

replicate or replace transit provided by BT.⁴²⁶ However, in that review we found that there was no evidence to suggest that such a consolidation was likely to occur over the relevant forward looking period.

- 7.64 We note that there has not been evidence of consolidation since the last review. There are more than 170 CPs that provide fixed termination services in the United Kingdom on fixed geographic ranges (see Annex 1, Schedule 3). In the 2009 review we found that there were in excess of 140 CPs terminating calls on United Kingdom fixed geographic, non-geographic and mobile numbers. We therefore do not see any signs of significant consolidation in the markets for fixed termination services, and have not seen evidence that suggests such a consolidation is likely to occur in the period considered in this review. We therefore consider that the complex route and CP structure that we have described in relation to the provision of ST services will continue for the period of this review.
- 7.65 In the 2009 review we also noted that the deployment of new technology could provide opportunities that lead to greater competition. We described how next generation network (NGN) deployments might make competition more effective, to the extent that they provide greater flexibility in call routing and greater economies of scale (NGNs allow CPs to provide multiple services over a single interconnect link). We consider that this remains the case today. However, as in 2009, NGN deployment is unlikely to affect the majority of routes that currently use ST services over the period of this review. Therefore, we do not believe that these developments are likely to address the main issue that providing infrastructure to connect two networks is currently uneconomic on many routes.
- 7.66 In the light of the above, we continue to consider that the market for ST services exhibits a market structure which does not tend towards effective competition over the period of this review.

Sufficiency of competition law

- 7.67 A competition concern identified in the 2009 review was that BT could increase its profits by raising prices on 'thin' routes, as the CPs purchasing ST on these routes would not be able to effectively substitute alternative services and would have to pay the increased price in order to provide connectivity for their customers. Even if it were not practical for BT to target 'thin' routes for price increases directly, BT could theoretically increase prices for these routes by increasing the price of ST for all routes but offer selective discounts for larger CPs or for 'thick' routes (if BT's billing systems were to allow this). This would allow BT to increase its revenues in relation to 'thin' routes.
- 7.68 A second competition concern identified in the 2009 review was that BT might have a strategic incentive to refuse access or substantially increase the price of ST for some CPs. This action would limit the ability of other CPs to provide an end-to-end connectivity service at competitive prices. This might create a competitive advantage for BT's retail services, since BT would still be able to provide full end-to-end connectivity to the full range of CPs with whom it is interconnected. For non-geographic calls, this could distort the hosting market by effectively decreasing the revenues of non-geographic service providers hosted on non-BT networks, which

⁴²⁶ See the 2009 consultation, paragraph 19.47, http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf.

could in turn encourage such services providers to purchase hosting services from BT instead.

- 7.69 As described in paragraphs 7.50 to 7.56 above, we do not expect non-geographic calls to be subject to significantly different competitive conditions to geographic calls. However, if the price of ST for non-geographic calls was not sufficiently constrained, and BT were able to price excessively on these routes, then we would also have a competition concern in relation to BT increasing prices in relation to ST for non-geographic calls.
- 7.70 The recent empirical evidence shows that BT does not have a strong incentive to increase the price of ST across all routes. BT has been subject to an obligation not to unduly discriminate between purchasers of ST since the 2009 review, but has not been subject to a charge control or cost orientation obligation during that time. However, prices for ST have not increased during this time.
- 7.71 We further consider that BT's incentives to seek to increase profits on 'thin' routes and in relation to NGCS traffic are low as BT would have a limited ability to make significant profits from raising the price of such routes where traffic volumes are small. BT currently publishes a list price for ST. Adopting an approach of price discrimination on the basis of competitive conditions would require a strategy of either targeted increases or targeted discounts, which would constitute an additional cost. If BT were no longer to price on a uniform basis for thick and thin routes, or for different termination service providers active in the non-geographic market, purchasers of ST will quickly become aware of such practices and, to the extent that such conduct is anti-competitive, are able to bring this to Ofcom's attention in a timely manner.
- 7.72 We also do not believe that there would be a significant retail advantage for BT to refuse to provide access to 'thin' routes via ST because they do not represent a significant proportion of termination demand. The number of customers served by affected CPs would be very small compared to the United Kingdom market for retail narrowband services overall and therefore any retail advantage experienced by BT due to engaging in this conduct would be minimal, so that the strategic incentive is likely to be limited.
- 7.73 If, notwithstanding, BT did engage in conduct amounting to an abuse of a dominant position (such as refusal to supply access or abusive price discrimination), the competition law tools at our disposal provide a means of addressing this at that time. Depending on the particular circumstances of the case, this could include ordering BT to resume supplying a former customer (in case of an unlawful refusal to supply) or to supply on non-discriminatory terms (in case of unlawful discrimination between customers). BT would also be liable to a possible fine and a claim for damages.
- 7.74 Competition law would also be timely enough to address a scenario in which BT refused to supply ST in relation to 'thin' routes. The impact of BT refusing to supply ST would be that certain other CPs would not be able to offer termination to all other CPs. Over time, retail customers of those originating CPs might choose to switch to a BT service in order to have access to a wider range of terminating services. However, due to the small number of geographic numbers that would be likely to be affected, it is unlikely that many customers would notice a difference in their services and, for those that did notice, it may take some time before they noticed that a number was no longer obtainable via their supplier. Any material effect would therefore be gradual and the total impact on competition at the retail level would be

small. In our view, competition law intervention would be able to ensure that no lasting structural damage occurred in the market.

7.75 We also recognise that – due to the nature of this market – any abuse of dominance in relation to ST could relate to low levels of traffic, or be of low materiality. Nonetheless when deciding whether to open a Competition Act 1998 investigation⁴²⁷ we would be mindful of the conclusions of this review where we indicated that in our view *ex post* competition law would be sufficient to ensure there is no foreclosure of efficient competitors to BT.

7.76 In deciding whether *ex ante* regulation is appropriate, we have had regard to the roles *ex ante* and *ex post* rules serve in the Framework, and the EC's guidance that, where the operation of competition law is sufficient, then it should be relied on, to the exclusion of regulation:

“... recital 27 of the Framework Directive indicates that ... ex ante regulatory obligations (with respect to electronic communications networks and services) should only be imposed where Community competition law remedies are not sufficient to address the problem. Ex ante regulation and competition law serve as complementary instruments in achieving their respective policy objectives in the electronic communications sector and in dealing with any lack of effective competition. At the same time, a principle underlying the regulatory framework is that ex ante regulation should only be imposed where competition law remedies are insufficient and should be rolled back when it is no longer needed.”⁴²⁸

7.77 In the last review we found that *ex post* competition law would not be sufficient to address our competition concerns in relation to this market. We see two relevant differences today, compared to the situation identified in the 2009 review:

- First, we now have some indication of BT's pricing behaviour after the removal of a charge control. Despite not having been subject to regulated price caps, BT has not uniformly increased prices in this market; and
- Second, we have also observed that the total demand for ST has continued to decline, driven by the increasing trend in CPs using direct interconnection for 'thick' routes ([X]). We have also received evidence from information requests that suggests that this trend is likely to continue over the review period.

7.78 In the case of this market, our view is that competition law is likely to be sufficient to address potential competition concerns we have identified in the ST market.

7.79 We recognise that industry has grown to rely on the price of ST for price transparency for other services, and that ST remains an important product in relation to other markets, such as some call termination services. Nevertheless, we do not see that these uses constitute adequate justifications for *ex ante* regulation of ST services. If there are transparency issues in relation to any other services these issues are best dealt with in a review of those services.

⁴²⁷ Our Guidelines for dealing with complaints and disputes are available here: <http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/complaints-disputes/>

⁴²⁸ Explanatory Note to the Recommendation on relevant product and service markets, section 2.2.

LTC/LTT products

Background

- 7.80 The LTC/LTT market was found to be effectively competitive in the 2009 review, and *ex ante* regulation was removed from these services.⁴²⁹ This decision was based on the observation that the volume of LTC/LTT purchased from BT was in steady decline, despite there being no corresponding decline in the volume of wholesale call origination, wholesale call termination and wholesale calls products purchased from BT. We found that this indicated that alternative CPs were increasingly using alternative networks to deliver traffic to/from BT's DLEs.

Summary of February 2013 consultation proposals

- 7.81 In our February 2013 consultation, we proposed that there had been no material changes to the competitive conditions in these markets, which would call into question the conclusions of the previous review.

Consultation responses

- 7.82 BT responded to the February 2013 consultation, arguing that the supply of LTC/LTT products is even more competitive than in 2009. Virgin Media, TTG and Lanonyx Telecom also agreed with our assessment.
- 7.83 However, [X] and Magrathea argued that the fact that BT's price of LTC/LTT products has not decreased suggested that the market was not competitive.
- 7.84 Magrathea argued that prices were still based on TDM cost structures, which have remained static despite lower costs over NGN equipment, and that operators with NGN core networks are only incentivised to set charges slightly below BT.

CPs continue to use alternatives to LTC/LTT

- 7.85 The market for LTC/LTT services is comprised of CPs that purchase wholesale call origination and/or wholesale call termination from BT but do not interconnect directly themselves to BT's DLEs.
- 7.86 BT's published LTC/LTT prices have not risen since the last review, with all prices for these services remaining at the same nominal level for each year since 2008/09. These prices were set by BT to comply with the charge control set by Ofcom in 2005 which sought to align BT's revenues with the forecast efficient costs of providing LTC/LTT in 2009. Routing over an NGN might result in different cost structures for transit services, but LTC/LTT in this context is relevant to BT's TDM network, and it is therefore not clear what the relevant NGN service would be. We therefore have not seen any evidence to suggest that BT's published prices are inefficient in the current market.
- 7.87 The total volume of LTC traffic carried by BT for external CPs has declined by [X] since the last review, from [X] million minutes in 2008/09 to [X] million minutes in

⁴²⁹ The 2009 review concluded that remedies existing prior to 2009 should be retained for a 12 month period after the publication of the Statement in October 2009. See 2009 consultation, paragraph 8.4, http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf.

2011/12. This decline has occurred in the context of increasing use by CPs of BT's wholesale calls product.

- 7.88 In 2009 we found that CPs were able to use a variety of alternatives to LTC/LTT. This included interconnection at the DLE. The decline in BT's LTC volumes, despite no change in BT's list price for these services, indicates that CPs continue to find effective alternatives to using LTC/LTT services, in particular through interconnection at the DLE. We are not aware of any decrease in the extent of DLE interconnection since 2009.
- 7.89 This indicates that the level of competition in the market for LTC/LTT has not decreased since the last review, and that CPs are able to use alternatives to these products to terminate their calls economically.

Section 8

Price regulation of wholesale call termination and origination markets: LRIC, common cost recovery, symmetry and APCCs

Summary of our decision

- 8.1 In Sections 5 and 6, we have set out our decision to impose charge controls in the markets for wholesale call origination and wholesale call termination provided by BT, in the light of the conclusion that BT has SMP in those markets. This section sets out our decision on the appropriate cost standard to be applied in relation to those charge controls.
- 8.2 This section also sets out how we will regulate wholesale call termination provided by CPs other than BT – in particular how we will apply the network access obligation for wholesale call termination services provided by non-BT CPs.
- 8.3 Our decision on the regulation of wholesale call origination provided by KCOM is also discussed in this section, and in particular how we will apply the network access obligation.
- 8.4 In summary, we conclude that:
- BT's fixed termination rate (FTR) should be set on a long-run incremental cost (LRIC) basis⁴³⁰;
 - the charge control on BT's wholesale call origination rate should be set on a LRIC+ basis, with the "+" including an additional mark-up for common costs no longer recovered via FTRs once they are set at LRIC and also a contribution to administrative costs previously recovered via a separate charge for product management, policy and planning ("PPP")⁴³¹;
 - the regulation of FTRs set by CPs other than BT should be on the basis of "fair and reasonable" network access. We provide guidance that FTRs would be presumed fair and reasonable when they do not exceed the Benchmark FTR (i.e. the charge controlled rate), unless a higher rate can be justified by objective cost differences;
 - the regulation of wholesale call origination rates set by KCOM should be on the basis of "fair and reasonable" network access. We provide guidance that KCOM's wholesale call origination rates would be presumed fair and reasonable where they are no higher than the wholesale call origination rate determined by the

⁴³⁰ By "LRIC" we mean "pure LRIC" in the sense that the LRIC of fixed call termination is calculated as the final traffic increment. A fuller description of how we have modelled pure LRIC is set out in Annex 12. Hereafter, when we refer to "LRIC" we mean pure LRIC, unless the circumstances require otherwise.

⁴³¹ In previous market reviews, charges for PPP were subject to a charge control.

charge control on BT, unless a higher rate can be justified by objective cost differences;

- the basis on which we set regulated FTRs should not be adjusted to account for the fact that calls to certain numbers will incur porting conveyance charges (so-called APCCs) levied on the terminating CP, which could in some cases be greater than the LRIC-based FTR.

Choice of cost standard: LRIC+ vs LRIC for termination

Proposals in the February 2013 consultation

8.5 In the February 2013 consultation, we proposed that BT's FTR be set on a long-run incremental cost (LRIC) basis.⁴³²

Stakeholder responses to the February 2013 consultation

8.6 A number of respondents (including EE⁴³³, H3G⁴³⁴, [X]⁴³⁵, TalkTalk⁴³⁶, Verizon⁴³⁷, and Vodafone⁴³⁸) agreed with the proposed approach of setting FTRs at LRIC, while Magrathea⁴³⁹ and Telappliant Ltd⁴⁴⁰ did not object in principle. A range of reasons were provided:

- a) Setting the rates at LRIC would remove the existing competitive distortions between fixed CPs as (i) high FTRs disadvantage smaller CPs who have a greater volume of off-net outbound traffic and (ii) FTRs establish a retail floor for off-net calls and, so have the potential to dampen retail price competition.
- b) Given that mobile termination rates (MTRs) are set using LRIC, there is no credible argument against the principle of imposing LRIC for FTRs, and doing so would remove the existing distortions between fixed CPs and mobile CPs, generating benefits for consumers.
- c) The proposal is consistent with the EC recommendation of May 2009, and also with the decisions of a number of other European NRAs.

8.7 On the other hand, some respondents (including BT, Citrus Telecommunications Ltd, COLT⁴⁴¹, FCS⁴⁴², Lanonyx Telecom, Lexgreen Services, Resilient Networks, Simwood eSMS, [X], 24 Seven Communications Ltd, TSL, and Virgin Media) raised concerns with the proposal to use LRIC as the cost standard for call termination, with some suggesting LRIC+ remains more appropriate.

⁴³² This is as opposed to an approach based on "LRIC+" which involves a contribution to costs common between wholesale call termination and other services

⁴³³ While EE remains of the view that LRIC+ is the appropriate cost standard, in light of the position in mobile, it considers it important for technology neutrality that FTRs are also based on LRIC. EE response to Q8.1 of the February 2013 consultation

⁴³⁴ H3G response to Q8.1 of the February 2013 consultation

⁴³⁵ [X] response to Q8.1 of the February 2013 consultation

⁴³⁶ TalkTalk response to Q8.1 of the February 2013 consultation

⁴³⁷ This was subject to the comments it made on time of day variations in termination rates, discussed in Section 11. Verizon response to Q8.1 of the February 2013 consultation

⁴³⁸ Vodafone response to the February 2013 consultation, section 7.3

⁴³⁹ Magrathea response to Q8.1 of the February 2013 consultation

⁴⁴⁰ Telappliant Ltd response to Q8.1 of the February 2013 consultation

⁴⁴¹ COLT response to Q8.1 of the February 2013 consultation

⁴⁴² FCS response to Q8.1 of the February 2013 consultation

- 8.8 BT⁴⁴³, Resilient Networks⁴⁴⁴, and Virgin Media⁴⁴⁵ noted variations in the implementation of the 2009 EC Recommendation across member states. BT noted that to date only five countries had announced their intention to implement LRIC FTRs in 2013, and suggested there was no consistency of approach between them.
- 8.9 BT also argued that the consumer benefits of the move to FTRs at LRIC would be negligible given the limited reduction in mobile-to-fixed call prices that could be expected (BT estimated that “assuming a complete waterbed effect and relying on Ofcom’s own figures, the maximum reduction in mobile retail charges would be 0.3%”⁴⁴⁶) alongside the higher fixed-originated call prices needed to recoup lost wholesale call termination revenue (which BT estimated at 0.7%). It considered this particularly true given most households have both fixed and mobile devices.⁴⁴⁷ Citrus Telecommunications Ltd⁴⁴⁸ also questioned the benefits of FTRs at LRIC.
- 8.10 Some (Simwood eSMS⁴⁴⁹, TSL⁴⁵⁰) suggested that the proposals favoured larger CPs (particularly those with a retail customer base) who benefit from economies of scale. They considered that larger CPs have a greater number of revenue streams from which they can recoup revenue lost from FTRs (and are generally more resilient at being able to absorb costs elsewhere in their businesses).
- 8.11 In addition, some respondents (Citrus Telecommunications Ltd, COLT⁴⁵¹, FCS⁴⁵², Lexgreen Services⁴⁵³, Resilient Networks, Simwood eSMS⁴⁵⁴, [X], TSL, 24 Seven Communications Ltd⁴⁵⁵) argued, for a variety of reasons, that the impact of the proposals could be disproportionately significant for smaller CPs and/or those with particular business models (affecting their ability to recoup revenue elsewhere). Some respondents maintained that we had not fully taken these effects into account in our analysis. It was noted that the business models of some (particularly smaller) CPs rely on revenue generated from FTRs to contribute to the costs of service provision, and this would be undermined with FTRs at LRIC. In particular they observed that some CPs have asymmetric traffic streams and specialise in call termination (including those offering VoIP), meaning FTRs at LRIC will eradicate much of their income. Further it was argued that this loss in income cannot necessarily be quickly recovered elsewhere as options can be limited, especially as marking up wholesale call origination is not an option for all CPs (e.g. for operators which are predominantly net terminators (i.e. with significantly more inbound traffic) or do not provide wholesale call origination at all with which to subsidise termination). As such, they argued that the financial implications of the change could be significant, and business investment (and recovery of efficiently incurred costs) should not be prevented by regulation. They also argued that this diversity in business models is greater in fixed than it was in mobile, meaning the impact will be greater in the fixed market.

⁴⁴³ BT response to Q8.1 of the February 2013 consultation

⁴⁴⁴ Resilient Network response to the February 2013 consultation

⁴⁴⁵ Virgin Media response to the February 2013 consultation

⁴⁴⁶ BT response to Q8.1 of the February 2013 consultation

⁴⁴⁷ BT response to Q8.1 of the February 2013 consultation

⁴⁴⁸ Citrus Telecommunications Ltd response to February 2013 consultation

⁴⁴⁹ Simwood eSMS response to Q8.1 of the February 2013 consultation

⁴⁵⁰ TSL response to Q8.1 of the February 2013 consultation

⁴⁵¹ COLT response to February 2013 consultation

⁴⁵² FCS response to February 2013 consultation

⁴⁵³ Lexgreen Services response to Q8.1 of the February 2013 consultation

⁴⁵⁴ Simwood eSMS response to Q8.1 of the February 2013 consultation

⁴⁵⁵ 24 Seven Communications Ltd response to the February 2013 consultation

- 8.12 Some concerns were also raised around the implications for other prices of no longer recovering common costs from FTRs. Some respondents (including Simwood eSMS and Lanonyx Telecom⁴⁵⁶) raised concerns that those costs would be passed on to the receiver of the call (breaking with the widely accepted standard that most incoming phone calls are free to receive). Lanonyx Telecom also argued that the costs could be funded by an increase in line rental or outgoing call prices borne by the end-user, which is the person that these proposals are supposed to be benefitting.
- 8.13 Further, Simwood eSMS and TSL argued that CPs not already established or which were new will struggle to find a business case for investment and will therefore default to reselling BT products. However, TSL believes that it is important for small CPs to build their own TDM networks because it is the only way that equivalence can be achieved as relying on wholesale IP solutions reduces the quality of some service elements. They said that, as a result, FTRs at LRIC would stifle competition and innovation (and therefore increase prices), which would not benefit consumers.
- 8.14 Finally, several respondents (both those who disputed the proposed LRIC approach to FTRs and those who did not object) raised concerns specifically in relation to the effective date for LRIC FTRs, and their ability to adjust in this period. We discuss these responses and our conclusions in Section 11 and Annex 9.

Our analysis and conclusions

Background

2009 EC Recommendation and UK regulation of FTRs and MTRs

- 8.15 The 2009 EC Recommendation stated that NRAs should adopt a LRIC standard, which allows only the recovery of the fixed and variable costs incremental to the provision of the wholesale call termination service to third-parties (as opposed to an approach based on LRIC+).
- 8.16 When we last consulted on NCC proposals in March 2009⁴⁵⁷, the 2009 EC Recommendation was not yet finalised. We consulted on and finally determined that the controls on wholesale fixed call termination would be set by reference to fully allocated costs (FAC, a form of LRIC+) until 30 September 2013.
- 8.17 In the September 2009 NCC Statement⁴⁵⁸, we noted that the end of the control period fell only nine months after the date for transition to LRIC set out in the 2009 EC Recommendation (31 December 2012). The 2009 NCC Statement also identified that more work would be required in assessing how we regulate termination markets and explained that we would continue to engage with stakeholders – both nationally and at the European level – through our review of MTRs.
- 8.18 Our review of MTRs was completed in March 2011 and after extensive analysis and consultation we concluded in favour of regulating MTRs on the basis of LRIC in the

⁴⁵⁶ Lanonyx Telecom response to Q8.1 of the February 2013 consultation

⁴⁵⁷ *Review of BT network charge controls: Consultation on proposed charge controls in wholesale narrowband markets (19 March 2009)*

http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/summary/reviewbntncc.pdf

⁴⁵⁸ See paragraphs 1.13-1.15 and 4.94-4.106 of *Review of BT's Network Charge Controls:*

Explanatory Statement and Notification of decisions on

charge controls in wholesale narrowband markets (15 September 2009):

http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/statement/nccstatement.pdf

2011 MCT Statement. That decision was subsequently appealed to the Competition Appeal Tribunal (CAT). During 2012 both the Competition Commission (CC) and the CAT concluded in favour of LRIC as the cost standard to regulate MTRs.⁴⁵⁹ The CAT's judgement was appealed to the Court of Appeal, but by judgement of 6 April 2013, that appeal was dismissed.⁴⁶⁰

NRA experience with implementing the 2009 EC Recommendation

- 8.19 Among the main European NRAs which started reviews of the (fixed) wholesale call termination market after the 2009 EC Recommendation was published, most have adopted, or will soon adopt, LRIC-based FTRs.
- 8.20 Those NRAs which have implemented LRIC-based FTRs or have stated their intention to do so include France, Denmark, and Ireland (which currently have LRIC FTRs); and the Czech Republic⁴⁶¹, Sweden and Belgium (which are all expected to adopt them by 2014).⁴⁶² Similarly, in Portugal, ANACOM recently consulted on its plans to set FTRs on the basis of a LRIC model by 1 July 2014 (decision is pending). In addition, in the meantime, ANACOM proposed to set a rate from 1 October 2013, which was calculated on the basis of a benchmark of pure LRIC rates on which the EC did not express serious doubts.⁴⁶³
- 8.21 While Italy had consulted on proposals to set FTRs at LRIC by January 2015, these proposals were withdrawn in April 2013 following the EC's phase II investigation (which raised concerns about the implementation date). AGCOM has since announced its revised proposals for the period 2013 to 2015 for both IP and TDM FTRs, and while the initial drop is now steeper, the bottom-up LRIC rate will be reached six months later, on 1 July 2015.⁴⁶⁴ In the Netherlands, ACM (the successor to OPTA) also proposed LRIC-based FTRs (and MTRs) from 1 September 2013, however this has since been annulled by the Dutch trade and industry appeals

⁴⁵⁹ Determination by the CC, 9th February 2012 http://www.competition-commission.org.uk/assets/competitioncommission/docs/appeals/telecommunications-price-control/appeals/final_determination.pdf. CAT judgment [2012] CAT 11 of 3rd May 2012 <http://www.catribunal.org.uk/238-7586/Judgment.html>

⁴⁶⁰ Judgement of the Court of Appeal, [2013] EWCA Civ 154

⁴⁶¹ The Czech regulator (CTU) issued a draft measure to the EC that FTRs should be reduced to LRIC by 1 July 2013. The Czech decision was subject to an Article 7a Phase II investigation by the EC, which related to: asymmetric regulation of CPs with SMP in fixed termination; the period by which termination rates are set at LRIC (whether that should be 1 January 2013, rather than 1 July 2013); segmentation of termination rates applicable for local exchange and "transit exchange" interconnection; and the cost model is not fully based on an NGN. Despite being supported by BEREK, the CTU withdrew its proposed FTRs in March 2013, stating that it will review its cost model based on the suggestions made by BEREK and prepare new FTRs. It did not say when it plans to notify this new draft price control decision. See https://circabc.europa.eu/sd/d/591e4d39-3582-48f8-993a-0fc71f1029fc/CZ-2012-1392-1393%20Adopted_EN.pdf and <http://www.cullen-international.com/report/7594>

⁴⁶² Cullen International Cross-Country Analysis May 2013. Table 13 – Fixed termination rates moving towards pure LRIC? <http://www.cullen-international.com/report/7721/t9005>; and Study of approaches to fixed call origination and termination charge controls, Analysys Mason, May 2012 http://stakeholders.ofcom.org.uk/binaries/consultations/narrowband-market-review-call/annexes/analysys_mason.pdf.

⁴⁶³ Cullen International Cross-Country Analysis May 2013. Table 13 – Fixed termination rates moving towards pure LRIC? <http://www.cullen-international.com/report/7721/t9005>

⁴⁶⁴ Cullen International, *WE Telecom Update April 2013*, http://www.cullen-international.com/report/7665/c126758#_AGCOM_withdraws_its and Cullen International, *WE Telecom Update May 2013*, http://www.cullen-international.com/report/7737/c130119#_AGCOM's_revised_proposal

tribunal who have replaced them with rates based on LRIC+ (although we note this decision can still be challenged by ACM).⁴⁶⁵

- 8.22 Of those NRAs not adopting LRIC based FTRs, Norway (although not part of the EU) has stated it will consider LRIC for FTRs in the next market analysis (i.e. after 2014). Germany proposed not to adopt pure LRIC FTRs for either Deutsche Telecom (preferring a form of LRIC+ instead) or the other CPs with SMP (proposing an approach based on symmetry, benchmarked against the Deutsche Telecom rate), and the EC subsequently opened phase II investigations because of this.⁴⁶⁶ The EC has now recommended that the German NRA amend or withdraw the draft measure, most specifically the remedies containing the price control obligation, in order to ensure that the rates are based on a bottom-up LRIC methodology.⁴⁶⁷ Germany will respond to this in September 2013.
- 8.23 We also note that in Spain, CMT consulted at the start of 2013 on a bottom up LRIC model which allows the calculation of FTRs using both LRIC and LRAIC+, and so it is not clear which approach they will adopt.⁴⁶⁸
- 8.24 We recognise that not all countries are adopting LRIC FTRs in 2013, although a number have or will have done so by the end of 2013 and where NRAs have failed to do so the EC has indicated serious doubts and initiated the Phase II process. We are required to take utmost account of the EC Recommendation and while the experience of other NRAs is not something which affects the appropriate decision on FTRs for the United Kingdom, the decisions in other Member States and the EC's interventions in this area provide relevant background to the decision for this market review.

Our analysis

- 8.25 In the May 2012 CFI we indicated that we expected consideration of competitive impacts was likely to be the most decisive economic factor in determining the appropriate cost standard, and reiterated the position set out in the 2011 MCT Statement around the importance of avoiding competitive distortions. Maintaining a consistent regulatory treatment between MTRs and FTRs is also important.
- 8.26 In considering the appropriate cost standard for FTRs, a narrow Ramsey pricing perspective may suggest that a mark-up by reference to the elasticity of demand for

⁴⁶⁵ See Cullen International EU Telecom Flash Message 53/2013, 27 August 2013, <http://www.cullen-international.com/report/7987>. This follows a previous proposal in 2010 based on LRIC FTRs which was also overturned by the Dutch Trade and Industry Appeals Tribunal (in August 2011) and replaced with LRIC+ rates. See http://europa.eu/rapid/press-release_IP-13-760_en.htm

⁴⁶⁶ BEREC has also agreed with the European Commission's serious doubt on Germany's proposed FTRs. See Cullen International WE Telecom Update May 2013, http://www.cullen-international.com/report/7737/c128330#_BEREC_shares_Commission; EU Telecoms Flash 19/2013 <http://www.cullen-international.com/report/7662>; EU Telecoms Flash 47/2013 <http://www.cullen-international.com/report/7921>; and http://www.cullen-international.com/report/7796/c130297#_Commission_opens_another. While a final decision has been made by Germany in relation to MTRs (which will continue to be set using a form of LRIC+), a final decision in relation to FTRs is still pending. http://www.bundesnetzagentur.de/cln_1911/SharedDocs/Pressemitteilungen/EN/2013/130719_Mobile_TerminationRates.html?nn=404530

⁴⁶⁷ The phase II investigation for the other CPs with SMP started later, and so the outcome is still pending.

⁴⁶⁸ Cullen International Cross-Country Analysis May 2013. Table 13 – Fixed termination rates moving towards pure LRIC? <http://www.cullen-international.com/report/7721/t9005>

wholesale call termination is warranted.⁴⁶⁹ However, this is not the only consideration.

- 8.27 As we explained in our analysis in the 2011 MCT Statement, there are factors such as price discrimination at the retail level (e.g. non-linear pricing with upfront subscription fees and different usage charges) which mean that it is more efficient for common costs to be recovered on the retail-side of the market. The CC agreed that common costs can be recovered most efficiently where price discrimination is possible, but noted (as we had) that there were limitations to this.⁴⁷⁰ In considering the extensive analysis undertaken by Ofcom, the appellants and the interveners in the MCT appeals, the CC ultimately concluded that: *“...we agree with Ofcom that allocative efficiency grounds alone do not provide a clear answer as to whether a LRIC or LRIC+ cost standard should be preferred.”*⁴⁷¹
- 8.28 Our choice of LRIC for MTRs was driven primarily by consideration of competition effects. On this the CC agreed: *“We note that at its core the results of our analysis of arguments in relation to the competition assessment is that, though the scale of effect may not be large, our conclusion is that the effect favours the adoption of LRIC. We believe that Ofcom was correct to consider there to be scope for their measures to make the market more competitive and that this is consistent with the entirety of the statutory scheme including the basis for imposing remedies in the first place.”*⁴⁷² While we recognise the extent of the (absolute) margin between LRIC+ and LRIC termination rates is materially lower with FTRs than was the case for MTRs we consider that the competition arguments in favour of LRIC remain the same. (The difference between LRIC+ and LRIC for FTRs is forecast at 0.194ppm in 2013/14 (in 2012/13 prices)⁴⁷³ and for MTRs was forecast as 0.92ppm in 2014/15 (in 2008/9 prices),⁴⁷⁴ approximately 1.09ppm in 2012/13 prices.)
- 8.29 FTRs act as a floor to call prices, and the exact effect on individual CPs is dependent on calling patterns and market share. In particular, we note that FTRs above incremental costs drive a wedge between the marginal costs of off-net and on-net calls. This effect is likely to be more pronounced for CPs with a smaller share of subscribers – since, other things being equal, CPs with a smaller share of subscribers will be expected to have a higher proportion of calls going off-net. This can act as a disincentive to lowering call prices, since lowering call prices is likely to stimulate more calls, and for a CP with a small market share, the majority of these calls will go off-net (and incur an FTR above incremental cost). Therefore, even if the short term impact from FTRs at LRIC on retail prices may not generate significant consumer benefits (as argued by BT), we consider that the competition benefits from FTRs at LRIC will benefit consumers in the longer term.

⁴⁶⁹ Under the simplest Ramsey pricing framework, common costs are recovered via linear prices above marginal (or incremental) costs. These mark-ups are set to achieve full cost recovery (across marginal and common costs) and are determined by reference to the inverse of the elasticity of demand for the services in question. That is, the more elastic the demand for a service, the lower the mark-up and hence the lower the proportionate contribution to common costs. The intuition behind Ramsey pricing is to minimise distortions from pricing based on marginal costs – and so prices are raised above marginal cost the least for those services where demand is most responsive to price.

⁴⁷⁰ 2012 CC Determination, paragraph 2.577.

⁴⁷¹ 2012 CC Determination, paragraph 2.823 and also in summary at paragraph 2.929(b).

⁴⁷² 2012 CC Determination, paragraph 2.929(a).

⁴⁷³ This is based on LRIC+ cost of termination of 0.228ppm and LRIC cost of termination of 0.034ppm in 2013/14 (2012/13 prices).

⁴⁷⁴ In 2008/9 prices, the MTR for 2014/15 was estimated at 1.61ppm at LRIC+ and 0.69ppm at LRIC. See paragraph 7.21 and 7.135 of the 2011 MCT Statement.

- 8.30 As well as the relative balance of off-net and on-net calls (due to market share), the competition effects also depend on the relative volume of inbound and outbound traffic for different customer segments. Even though a small CP would be expected to see a larger share of inbound traffic generated off-net (i.e. from other fixed CPs, from mobile CPs (MCPs), and from overseas) and hence earn higher revenues from FTRs at LRIC+, such an offset will not occur in customer segments where there are more outbound than inbound calls. While we recognise that for those segments where outbound calls are proportionately lower than inbound calls, the effects are reversed, our preference would be for there to be as much of a level playing field across the market as possible – i.e. that particular CPs were not unduly constrained in retail pricing by virtue of the combination of calling patterns, market share and FTRs above LRIC.
- 8.31 In order to consider the scale of the effects of FTRs at LRIC+, we have considered the net per-line effect relative to FTRs at LRIC.⁴⁷⁵ In particular, even though the ppm difference between LRIC+ and LRIC is quite small, the difference on a per line basis is not insignificant. With a net volume across all fixed CPs of off-net terminated traffic (i.e. including incoming mobile- and international-originated calls, but excluding all fixed to fixed traffic) of 36.6 billion minutes, the difference between FTRs at LRIC+ and LRIC would amount to approximately £2.14 p.a. per fixed line (in 2012/13 prices).⁴⁷⁶ In the 2011 MCT Statement, the net effect per subscription from the move to LRIC (from LRIC+) was reported as £2.50 p.a.⁴⁷⁷ (in 2008/9 prices – the equivalent figure in 2012/13 prices is approximately £2.95 p.a.). This serves to illustrate that if FTRs continued to be regulated at LRIC+ there would be an enduring advantage to fixed CPs (on average) of a similar order of magnitude from the per subscriber difference between MTRs at LRIC+ and LRIC.
- 8.32 We also recognise that the impact of the move to FTRs at LRIC is likely to vary by CP, and the ultimate effect is likely to depend on a variety of factors (similar to the competition effects discussed above). For example, for a smaller CP, more incoming calls are likely to be generated off-net (so the CP loses revenue from FTRs at LRIC). However, a greater proportion of outgoing calls are likely to be off-net for a smaller CP (so they benefit from lower call costs with FTRs at LRIC). Therefore the net impact will vary depending on market shares and traffic balances. Further, while some existing business models may not be ultimately sustainable with FTRs set at LRIC, we do not consider this undermines the benefits from setting FTRs at LRIC, nor that it is impossible for these CPs to recover their costs elsewhere. We address

⁴⁷⁵ By net effect, we mean the revenue impact of the change excluding fixed-to-fixed (F2F) call volumes, as these would net off in revenue and outpayments between fixed CPs when FTRs are symmetric (i.e. 1 minute of termination sold to another fixed CP is worth the same as a minute of termination purchased from a competing CP). However, for individual CPs the balance of traffic will matter. For a CP which originates more (less) traffic than it terminates, FTRs at LRIC+ are a greater competitive disadvantage (advantage) relative to FTRs at LRIC. We have considered the net revenue effect because it provides: (i) a simplification to indicate the net importance of FTRs per line on average; and (ii) it allows comparison with the per subscriber effects reported in the 2011 MCT Statement.

⁴⁷⁶ This is made up of approximately 30.8bn minutes of mobile-to-fixed geographic calls in 2012 (Ofcom quarterly data, Q4 2012, Mobile telecoms tables) and approximately 5.8bn minutes of international calls to United Kingdom fixed CPs (Ofcom quarterly data, Q4 2012, Fixed telecoms tables – we have assumed that the number of minutes of international calls received by fixed CPs is equal to those dialled by United Kingdom fixed line consumers). Also based on 33.1 million exchange lines in Q4 2012. See Ofcom quarterly data, <http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/tables/q4-2012/>

⁴⁷⁷ Paragraph 7.135, fn 432, of the 2011 MCT Statement.

the implications for CPs that need to adjust business models in Section 11 and in more detail in Annex 9.

- 8.33 In the light of the common cost recovery shortfall which follows from FTRs at LRIC rather than LRIC+, we acknowledge that prices of other products offered by CPs will need to increase to some extent in order to offset the common costs no longer recovered from FTRs. Generally, we consider that it is for each CP to determine how best to mitigate any shortfall itself through unregulated services (we discuss this issue further in this section when we consider common cost recovery). While some customers may pay more than they currently do, others will pay less (i.e. those calling fixed lines). The extent of common cost recovery should be unchanged, but the structure of prices would be expected to change as common cost recovery is moved away from the termination monopoly to the more competitive side of the market. We do not therefore consider the potential for certain prices to increase to be incompatible with the competition benefits set out above.
- 8.34 Further, while the reduction in termination revenues from FTRs at LRIC could potentially affect investment decisions for some individual CPs relative to the regime today, the recovery of any cost recovery shortfall from other services means such an effect should be limited and transitional. On the other hand, other CPs would gain from lower FTRs (for example, those calling fixed lines) and could expand investment. As a result, we consider that LRIC based FTRs are compatible with efficient investment signals.

Conclusions on the cost standard for regulating termination rates

- 8.35 In the light of the above, we see no reason to deviate from the approach we took on MTRs and the approach consulted on for FTRs in the February 2013 consultation. We will therefore cap FTRs by reference to LRIC, rather than LRIC+. This is also consistent with the 2009 EC Recommendation.

Wholesale call origination

Proposals in the February 2013 consultation

- 8.36 In setting controls for wholesale call origination, the 2009 NCC used CCA FAC, a particular form of LRIC+. In the February 2013 consultation, we proposed to keep LRIC+ as the appropriate cost standard for wholesale call origination, but the basis on which we set the “+” (i.e. the contribution to common costs) would include an additional contribution to common costs no longer recovered from FTRs at LRIC, and administration costs no longer separately recovered through a PPP charge.

Stakeholder responses to the February 2013 consultation

- 8.37 A number of respondents (including BT⁴⁷⁸, TalkTalk⁴⁷⁹, Virgin Media⁴⁸⁰, Vodafone (with some caveats)⁴⁸¹) generally agreed with our proposals for wholesale call

⁴⁷⁸ BT response to Q8.2 of February 2013 consultation

⁴⁷⁹ TalkTalk response to Q8.2 of the February 2013 consultation

⁴⁸⁰ Virgin Media also raised some implementation concerns, but these are discussed further in Annex 9. Virgin Media response to February 2013 consultation

⁴⁸¹ Vodafone response to the February 2013 consultation, section 7.3. While it agreed, it argued that a qualification to this may need to be made in the short-term for NGCS calls and also argued against a blanket uplift (preferring a pro-rata approach), and these issues are discussed further in Section 11 and Annex 6 respectively.

origination to include an additional contribution to common costs no longer recovered from FTRs. BT considered that we should ensure there is no net change to its common cost recovery.⁴⁸² BT also argued that marking-up wholesale call origination would not in any way distort competitive (retail) markets, since internal and external sales of wholesale call origination are subject to the same regulation (so BT cannot discriminate between its own self-supply of wholesale call origination and that which it sells to other CPs when seeking to recover common costs unrecovered from FTRs). It argued that there is no reason to believe that consumers will be affected in any way by a change to the structure of wholesale prices, but did note that imbalances in traffic flows will affect the relative finances of different CPs.

- 8.38 However, some respondents (including EE, [X], Alternative Networks plc, [X], Lexgreen Services) considered our proposal was not appropriate.
- 8.39 Lexgreen Services⁴⁸³ argued that each service should instead cover its own costs, rather than interfering in the market and forcing CPs to cross subsidise some of their services. This, it argued, would be particularly harmful in the fixed narrowband market.
- 8.40 Some respondents also questioned the approach to recovering common costs no longer recovered from FTRs via regulated services only. EE⁴⁸⁴ argued that Ofcom has not set out clear reasons why recovery of common costs from regulated charges only was chosen rather than recovery across regulated and unregulated charges. Further, it argued that as there is some indirect competition between the fixed and mobile sectors, technology neutrality principles imply that at least some of these costs should be recovered from retail services, to be consistent with the approach already imposed on mobile CPs. EE also argued that BT has had the ability to raise retail prices (especially line rental charges) in recent times, and so it is not clear why it would not be able to recover at least a significant proportion of these costs from retail charges (or why this would in practice create any harm to competition).
- 8.41 Similarly, one respondent ([X]) was concerned that the proposed approach allows BT to recover common costs for one product where it has a position of dominance, against another where it also has a dominant position (a point also raised by ITSPA⁴⁸⁵, which noted that competitive pressures cannot be brought to bear by other CPs to mitigate this).
- 8.42 Vodafone argued that once the decision has been taken that termination should not attract any fixed and common costs, there is some inconsistency with then calculating the quantum of fixed common costs that “should” relate to termination and forcing that recovery onto particular services. It argued that an alternative approach would be to simply recover fixed common costs pro-rata from all services except termination, i.e. a LRIC+ EPMU approach.
- 8.43 Some respondents also raised concerns about the impact of our proposals.
- 8.44 One respondent ([X]) noted that even major LLU operators are reliant on wholesale call origination purchased from BT even in areas where they are present (i.e. for providing voice-only), and also argued that in any event, LLU is not always a suitable

⁴⁸² In light of this, BT raised concerns around the proposed implementation of the uplift, suggesting the proposed calculation would still leave some common costs unrecovered and/or a competitive distortion would persist. This is discussed further in Annex 6.

⁴⁸³ Lexgreen response to the February 2013 consultation

⁴⁸⁴ EE response to the February 2013 consultation, Section 4

⁴⁸⁵ ITSPA response to Q8.6 of the February 2013 consultation

way to connect to consumers' premises (e.g. frequently in the case of businesses). By increasing the regulated wholesale price of BT's call origination, it argued that Ofcom is essentially reducing consumer choice in how they originate calls and inflicting substantial consumer price inflation on some demographics with specific calling profiles that are not in an LLU enabled area.⁴⁸⁶ The same respondent also argued that non-LRIC pricing creates a moral hazard by increasing the risk of anticompetitive 'margin squeeze' type behaviour against operators that are non LLU-based operators, or where LLU is not a viable alternative (which, it argued, was the case for the majority of the market).

- 8.45 In relation to the specific regulated products to be uplifted, Vodafone and EE⁴⁸⁷ considered it would not be appropriate to mark-up WLR. EE argued that the distortions it would cause would harm competition and efficiency (particularly in the context of migration to FTTC where WLR may be needed alongside fibre-based broadband to provide voice).⁴⁸⁸
- 8.46 Some respondents also raised concerns around the timing and implementation approach for the uplift to wholesale call origination rates. Our conclusions on timing issues are set out in Section 11 (with more detailed discussion in Annex 9) and the calculation of the uplift is set out in Annex 6.

Our analysis and conclusions

How common cost recovery affects our NCC proposals

- 8.47 FTRs at LRIC will no longer provide a contribution to the recovery of common costs. There is therefore a question around how these costs are recovered. In theory, the extent of contribution to common costs by individual services could be in line with general Ramsey principles, which would suggest the recovery of common costs across all relevant services based on inverse demand elasticities. Therefore, on this theory alone, we might prefer the cost recovery to occur from both unregulated and regulated relevant services.
- 8.48 We also consider that to a large extent common costs should be borne by services that use the infrastructure in question. When firms provide multiple products, they have to make decisions as to how each product should contribute towards common cost recovery, an issue that does not occur in the case of single-product firms. Therefore, any service for which the common costs in question form part of the stand-alone cost (SAC)⁴⁸⁹ might reasonably contribute to the recovery of those common costs. If one service is priced at LRIC, contestable markets theory would therefore point to prices for other services being between LRIC and SAC, such that across the combination of services total costs (and no more) were recovered.

⁴⁸⁶ Alternative Networks also argued that it will effectively lead to an increase in CPS costs which will be passed on to end users and will reduce customer choice of provider.

⁴⁸⁷ EE response to the February 2013 consultation, Section 4

⁴⁸⁸ Vodafone argued it would suggest that WLR is paying for network costs beyond the demarcation point of the customer linecard. Vodafone also argued that there are practical organisational considerations which reflect network structure, in that WLR is an Openreach capability, whereas call conveyance is a BT Wholesale product, so having a levy on WLR would imply payments from Openreach to BT Wholesale.

⁴⁸⁹ Stand alone cost is an economic concept and represents the cost of producing the service in isolation, i.e. on a stand-alone basis. The stand alone cost will include all costs incremental to that service as well as any costs which, if there were production of other services, would be joint or common with those other services.

- 8.49 However, this theory alone does not get to a more specific solution as to how common costs no longer recovered via FTRs should be made up, other than the recovery being across services sharing that infrastructure.
- 8.50 The issue of common cost recovery is not unique to the regulation of FTRs; it also arose in the case of regulating MTRs. In the 2011 MCT Statement we envisaged that MCPs would recover common costs from competitive (and thus unregulated) services i.e. mainly retail services. As the CC noted in its 2012 Determination (2012 CC Determination), “...in general it is preferable for costs to be recovered where there is competition, so that regulated firms have the appropriate incentives to minimize their costs and behave efficiently.”⁴⁹⁰
- 8.51 However, an important distinction in the mobile sector is that asymmetric regulation outside the termination market does not constrain the scope for MCPs to re-optimize their retail packages.⁴⁹¹ In particular, MCPs do not compete against CPs to whom they are required to offer wholesale access and call origination services at regulated rates.⁴⁹²
- 8.52 By contrast, in fixed access and origination markets, there are a number of CPs without direct access⁴⁹³ which supply some of their end customers using wholesale access (wholesale call origination and WLR) provided by BT at regulated rates but do not supply wholesale call termination to those same customers. This means that they do not receive FTR revenues for those calls, and so for those customers whom they supply using such wholesale access provided by BT, these CPs will benefit from FTRs at LRIC (compared with LRIC+). This is because they will pay out lower FTRs and they will avoid facing a reduced (termination) revenue stream. Consequently, they will not have to rebalance their own prices for those customers to continue recovering common costs.
- 8.53 In reality we acknowledge that some CPs use a combination of their own direct access network and wholesale access purchased from BT to serve their customers. The net impact for these CPs may therefore be affected by the overall balance of outbound and inbound traffic across both directly and indirectly connected end customers. However, this does not detract from the fact that CPs without direct access (and, to a lesser extent, those who do not use direct access for all their customers) will not suffer a common cost recovery shortfall for these customers following the introduction of FTRs at LRIC.
- 8.54 Therefore, for those CPs that provide wholesale call termination to at least some customers (i.e. those with direct access networks, which includes LLU operators where they self-supply calls using MPF), reducing FTRs to LRIC will incentivise them to increase prices for other services (or to reduce them less quickly) in order to recover common costs. But CPs that have customers to whom they do not provide wholesale call termination (e.g. CPs that use regulated wholesale call origination/WLR provided by BT to supply some or all of their customers), may be in

⁴⁹⁰ Paragraph 2.577, 2012 CC Determination.

⁴⁹¹ While some price regulation does exist in respect of mobile services other than MCT, it relates to international roaming and is applicable to all MCPs.

⁴⁹² While the four national MCPs offer wholesale mobile access to mobile virtual network operators (MVNOs), such access is commercially provided and is not subject to ex-ante regulation – on either the terms or charges for access.

⁴⁹³ By CPs without direct access, we mean those that use wholesale call origination (whether IA or CPS) for some or all calls because for some or all of their customers they do not own the direct access connection.

a position to undercut CPs that provide direct access for their end customers. For example:

- a) If direct access CPs were to raise retail call prices, the availability of regulated wholesale call origination from BT would allow CPs using this to undercut such call price increases (unless the regulated wholesale call origination rate were increased accordingly).
- b) If direct access CPs were to raise retail line rental prices, the availability of regulated WLR would allow CPs without direct access to undercut any retail line rental increases (unless the WLR charge were to be increased accordingly).

8.55 Because of this risk of competitive distortion, we consider that wholesale charges for regulated voice services should be calculated to allow BT and other direct access CPs (e.g. Virgin Media, and where they use MPF, Sky and TalkTalk) to recover common costs in a manner which does not place them at a competitive disadvantage.

8.56 Further, we do not consider that the recovery of additional common costs where BT has SMP (i.e. regulated services) to raise significant concerns. This is because the charge controls imposed on the two regulated services identified as potentially appropriate for the mark-up (WLR and wholesale call origination) will restrict the additional level of common cost recovery to that previously allocated to wholesale call termination, leaving total cost recovery unchanged.

8.57 We consider this to be consistent with the 2009 EC Recommendation, as we do not consider that it favours one approach to common cost recovery over another. We recognise that the Explanatory Note accompanying the 2009 EC Recommendation makes a passing reference to cost recovery from non-regulated retail services, but it does not present this as a recommendation on how common cost recovery should be addressed. Rather, it does so to illustrate how even with FTRs at zero, there is scope for CPs to recover costs.⁴⁹⁴ Further, we note that at this stage, there does not appear to be a consensus of approach to recovering common costs previously recovered through FTRs among other European NRAs which have implemented (or are in the process of implementing) the 2009 EC Recommendation. For example⁴⁹⁵:

- a) The French regulator, ARCEP, opted for an increase in regulated charges (the WLR charge), and in Norway (although not part of the EU) NPT indicated an increase in wholesale call origination rates. We also note that in Ireland, Comreg proposed that Eircom be allowed to mark-up wholesale call origination (although this was ultimately considered unnecessary⁴⁹⁶). In Denmark, DBA determined

⁴⁹⁴ Commission Staff Working Document accompanying the 2009 EC Recommendation, p. 17: *“Given the two-sided nature of call termination, not all related termination costs must necessarily be recovered from the wholesale charge levied on the originating operator. Even if wholesale termination rates were set at zero, terminating operators would still have the ability to recover their costs from non-regulated retail services. Rather it is a question of how the financial transfers are distributed across operators in a way that best promotes economic efficiency to the benefit of consumers.”*

⁴⁹⁵ Following taken from Cullen International Cross-Country Analysis December 2012. Table 13 – *Fixed termination rates moving towards pure LRIC?* http://www.cullen-international.com/report/7180/t7464#Table_13; and *Study of approaches to fixed call origination and termination charge controls*, Analysys Mason, May 2012 http://stakeholders.ofcom.org.uk/binaries/consultations/narrowband-market-review-call/annexes/analysys_mason.pdf

⁴⁹⁶ In its consultation, Comreg proposed that Eircom be allowed to mark-up wholesale call origination, but in its final statement, found that no particular service required an increase in charges. Therefore

that a proportion of the uncovered costs related to interconnection should be attributed to WLR customers, and therefore should be recovered by means of an increased WLR charge;

- b) In Sweden PTS indicated that recovery should be across unregulated services (although this has not yet been concluded), as did BIPT in Belgium; and
- c) Austria⁴⁹⁷ previously indicated common cost recovery from unregulated services and regulated wholesale origination services.

8.58 At this point it is important to note that the additional recovery from regulated voice services should not be solely via charges to competitors. Specifically, where common cost recovery is allowed via regulated charges, this should involve the same amount per unit of external and internal sales by BT.

8.59 As a result, we do not consider that our preferred approach would cause a retail distortion between fixed CPs. CPs using wholesale products purchased from BT (for either their whole customer base or in addition to their own direct access network), will also have to adjust prices to reflect the change in regulated rates. As external sales of regulated products by BT will be subject to the same charges as internal sales (i.e. self-supply), BT will also need to make similar adjustments. While the recovery of the higher costs that result from this approach through retail prices is ultimately a commercial decision, all CPs will now be faced with similar decisions regarding retail price rebalancing arising from the net reduction in FTRs (taking account of lost revenue from termination sold against the offsetting gain from the lower expenditure from termination purchased). Consequently, while the individual impact may vary by CP (depending on the relative balance of wholesale call origination and wholesale call termination purchased), our preferred approach is that there is a level playing field across CPs, irrespective of whether they have a direct access network or not.

8.60 We also consider that it is desirable to recognise cost-efficiencies in any forward looking assessment of common cost recovery. Therefore, where any wholesale charges are marked up for common cost recovery, we consider that this should reflect only the efficient level of common costs.

8.61 Having concluded in favour of marking up regulated voice services, we now consider whether the mark-up should be on WLR or wholesale call origination.

Mark-up on WLR

8.62 If demand for access lines were more inelastic to price changes than the demand for calls, Ramsey pricing principles alone would point towards recovering common costs more from access than from calls.

8.63 Typically, demand for access has been estimated to be more inelastic than demand for calls.⁴⁹⁸ This is suggested by past estimates as well as the fact that demand for

by implication this decision seems to be driven by the judgment that there was not a sufficiently material impact on the charges for other services, rather than being based on rejecting the principle that charges for wholesale call origination or other regulated services could increase. See paragraph 7.167-177 of *Mobile and Fixed Voice Call Termination Rates in Ireland*, 21 November 2012

<http://www.comreg.ie/fileupload/publications/ComReg12125.pdf>

⁴⁹⁷ https://www.rtr.at/en/komp/Konsult_M_1_8_12

access is essentially a subscription decision (i.e. access or no access at all), whereas demand for calls can be more readily substituted (e.g. on a call-by-call basis) if the user has both a fixed and a mobile connection.⁴⁹⁹

- 8.64 Our own consumer research suggests that consumers show generally high levels of attachment to landline services, with comparatively low proportions of respondents suggesting that they might consider giving up their access or calls packages (19% and 23% respectively).⁵⁰⁰ Similarly, the proportions that agreed with the statements “I would never give up my [landline access/landline calls package]” were relatively high for both (72% for access and 60% for calls). Similar general attachment to landline services is also evident among businesses, with relatively low proportions of business respondents stating they would consider cancelling their fixed line altogether (10%) or would keep their fixed line but give up the ability to make calls (16%).⁵⁰¹ This could be driven by the fact that most consumers (95% of residential respondents and 90% of business respondents) buy access and calls from the same supplier in a bundle.⁵⁰² Nevertheless, on balance, the survey evidence shows slightly greater attachment to access lines than calls.
- 8.65 So, if we were to consider Ramsey pricing principles alone, the available evidence might point towards more additional common cost recovery from line rental than from calls.
- 8.66 However, when there are cross-service demand relationships (i.e. cross-elastic effects) and when the empirical evidence on the full set of relevant elasticities is likely to be difficult to obtain robustly, applying Ramsey pricing can be very difficult. In previous regulatory reviews both we and the CC have rejected applying Ramsey pricing.⁵⁰³ More importantly, for the reasons set out below, Ramsey pricing principles are not the only relevant (or indeed most important) factor to consider in the present case.
- 8.67 Our concerns with applying an additional mark-up to WLR are as follows:

⁴⁹⁸ As summarised in a recent literature review by Vogelsang, I, 2010. *The relationship between mobile and fixed line communications: A survey*, Information Economics and Policy, vol. 22(1), p4-17.

⁴⁹⁹ Briglauer, W., Schwarz, A., Zulehner, C., 2010. *Is fixed-mobile substitution strong enough to de-regulate fixed voice telephony? Evidence from the Austrian markets*. The authors also note that the complementarities between demands for access and calls imply that access substitution also triggers complete substitution of calls.

⁵⁰⁰ Narrowband Market Review Consumer Research, December 2012. Q6c(a/b)

⁵⁰¹ Narrowband Market Review Business Research, December 2012. Q5

⁵⁰² Narrowband Market Review Consumer Research, December 2012. Q4 and Q15. Narrowband Market Review Business Research, December 2012. Q1 and Q4

⁵⁰³ For example, see the CC inquiry decision for Vodafone, O2, Orange and T-Mobile: Reports on references under section 13 of the Telecommunications Act 1984 on the charges made by Vodafone, O2, Orange and T-Mobile for terminating calls from fixed and mobile networks, 2003

http://webarchive.nationalarchives.gov.uk/+/http://www.competition-commission.org.uk/rep_pub/reports/2003/475mobilephones.htm#full; the Mobile Call Termination Statement, 27th March 2007,

http://stakeholders.ofcom.org.uk/binaries/consultations/mobile_call_term/statement/statement.pdf; and the charge control review for LLU and WLR services, February 2012

http://stakeholders.ofcom.org.uk/binaries/consultations/wlr-cc/statement/LLU_WLR_CC_statement.pdf;

- a) The allocation of intra-traffic common costs to access services would result in costs which are not part of the standalone cost of the access network being recovered from access service charges.⁵⁰⁴
- b) It would increase the difference in price between substitutable wholesale access services, i.e. WLR/WLR+SMPF and MPF, which are ultimately used in the provision of retail voice and broadband services. Specifically, if WLR charges were to increase relative to MPF, the differential between the two charges would shift away from the difference in the underlying costs and in particular from the difference in the absolute LRICs, the 'LRIC differential'⁵⁰⁵. This is against our stated preference for LLU and WLR regulation, as the desire to more closely align the difference in charges with the respective LRIC differentials is an important aspect of the economic regulation in the 2012 charge control review for LLU and WLR services, as reiterated in our recent consultation on the same issue.^{506 507}
- c) Distributional issues could arise as an increase in the access price may have a greater effect on vulnerable customers, for whom line rental may make up a large proportion of their fixed telephony expenditure. WLR makes up approximately 38% of average monthly fixed telephony spend⁵⁰⁸, but could be reasonably assumed to represent a greater proportion for lower income groups, who are likely to spend less than average on calls and be on lower priced subscription packages.

Mark-up on wholesale call origination

8.68 The alternative is to mark-up wholesale call origination rates. The advantage of marking up wholesale call origination is that it minimises the distortions that could occur in the access market if WLR is marked-up. More specifically, marking up wholesale call origination:

⁵⁰⁴ Intra-traffic common costs relate to those costs shared between traffic increments (e.g. between termination, origination, and core network conveyance and transit services), but which are not shared between the traffic increment taken as a whole and other increments (such as the increment relating to the access network).

⁵⁰⁵ Broadly reflecting the LRIC differential in the wholesale charges for substitutable wholesale services can be desirable, particularly as it ensures that the choice between alternative wholesale inputs (or the 'build/buy' decision) is not distorted. See Section 7 of the *Charge control review for LLU and WLR services statement*, 7 March 2012, for a discussion of the potential efficiency benefits of LRIC differentials. <http://stakeholders.ofcom.org.uk/binaries/consultations/wlr-cc-2011/statement/statementMarch12.pdf>

⁵⁰⁶ Using MPF, CPs can invest in voice and broadband equipment at BT exchanges in such a way as to gain greater control of services provided to end customers. Using WLR and SMPF, CPs can also provide voice and broadband to end customers, but with less control of the services provided. In the March 2012 *Charge control review for LLU and WLR services*, paragraph 7.65, we concluded that "the price differentials resulting from relevant CCA FAC are reasonable from the point of view of efficiency for the LLU / WLR charge controls. Longer term, we expect to continue to reduce the price differentials to the differences in absolute LRICs."

⁵⁰⁷ We have recently published a consultation for the next WLR and LLU charge controls, in which we have proposed to set WLR and LLU charges so that the differential between MPF and WLR/WLR+SMPF is equal to the incremental cost differences in the final year (2016/17). For the full explanation of this proposal and the rationale, see section 3 of Fixed access market reviews: Approach to setting LLU and WLR Charge Controls, 11 July 2013, <http://stakeholders.ofcom.org.uk/consultations/llu-wlr-cc-13/>

⁵⁰⁸ Based on 2012 WLR prices (£98.21 p.a.) and estimated average household spend on fixed voice telecoms services of £21.61 per month in 2012 (Ofcom CMR 2013)).

- a) ensures that intra-traffic common costs continue to be recovered from call services (rather than from access as would be the case with marking-up WLR);
- b) does not distort the prices of WLR and LLU determined in the 2012 LLU/WLR Statement (as reiterated in recent proposals for WLR/LLU charge controls⁵⁰⁹), and thus protects the move towards more efficient relative prices between substitutable inputs for the same (or similar) downstream access services; and
- c) may also avoid potential distributional concerns arising from WLR charge increases (if passed on to low spending vulnerable consumers).

8.69 At first glance, a potential concern with marking up wholesale call origination might be that BT and all other direct access CPs could still recover common costs via a mark-up on retail line rental without this cost recovery being undermined since calls-only CPs without direct access do not offer retail lines. Therefore marking up wholesale call origination may disadvantage calls-only CPs. However, as previously noted in Section 5, the majority of consumers buy access plus calls together. Therefore, CPs without direct access which use BT's wholesale inputs today typically provide both retail calls and access (the latter via WLR), and so only a small number of CPs are likely to be affected. Indeed, as set out in Section 5 the current number of BT retail lines over which a CP is providing a calls-only retail service using regulated wholesale call origination is small and diminishing. As a result we are removing the regulatory obligation for calls-only CPS on BT retail lines. We therefore do not consider the potential distortion against calls-only CPs without direct access to be material.

8.70 For the above reasons we have therefore decided to address the common cost recovery issue from setting FTRs at LRIC via a mark-up on wholesale call origination rather than WLR.

Administrative costs

8.71 Administrative costs have previously been recovered via BT's separate PPP charge. However, as set out in Annex 6, we have decided to include a contribution to these costs in calculating wholesale call origination rates and, to the extent we consider it to be incremental, within wholesale call termination rates.

8.72 Nonetheless, we will continue to separately charge control PPP until the effective date when FTRs are at LRIC (and wholesale call origination rates at the new LRIC+ level).

Conclusion on common cost recovery

8.73 For the reasons set out above (and in Annex 6 for administration costs), wholesale call origination will be regulated on the basis of LRIC+, but where the "+" will include an additional contribution to common costs no longer recovered from FTRs at LRIC, and administration costs no longer separately recovered through a PPP charge. The calculation for this is set out and explained in Annex 6.

⁵⁰⁹ See Section 3 of Fixed access market reviews: Approach to setting LLU and WLR Charge Controls, 11 July 2013, <http://stakeholders.ofcom.org.uk/consultations/llu-wlr-cc-13/>

Regulating the FTRs of other CPs

Proposals in the February 2013 consultation

- 8.74 In the February 2013 consultation we proposed that the regulation of FTRs set by CPs other than BT would be on the basis of “fair and reasonable” network access. We proposed to continue with the principle of symmetry as described in our 2011 F&R Guidance, with the result that FTRs would be presumed fair and reasonable when they do not exceed the Benchmark FTR (i.e. the BT charge-controlled rate). We also provided updated guidance to the effect that FTRs above the Benchmark FTR would need to be justified by reference to the three-stage test previously set out in our 2011 F&R Guidance.
- 8.75 We also recognised that CPs may wish to vary their rates across different charging periods in a different way to BT. Where a CP does this, but can show that its 24 hour average FTR across all its traffic does not exceed the Benchmark FTR, we proposed that its rates should be considered fair and reasonable.

Stakeholder responses to the February 2013 consultation

- 8.76 BT⁵¹⁰, EE⁵¹¹, [X], H3G⁵¹², Lexgreen Services⁵¹³, TalkTalk⁵¹⁴ and Vodafone⁵¹⁵ agreed with the proposal that FTRs of CPs other than BT should be presumed fair and reasonable where they are no higher than the Benchmark FTR. BT considered this to be consistent with the six principles of pricing and cost recovery⁵¹⁶ sometimes used by Ofcom, and also supported the view that reciprocal charging (as set out in Annex 15 of the February 2013 consultation) is fair and reasonable. One respondent, [X], considered the proposal provides a degree of regulatory certainty⁵¹⁷, and EE⁵¹⁸ considered that it appears consistent with the approach taken to mobile call termination, and appears reasonable and proportionate.
- 8.77 Lexgreen Services pointed out that while agreeing with the proposal, it may still also be reasonable for FTRs of CPs other than BT to be higher than the Benchmark FTR and still presumed fair and reasonable.
- 8.78 However, as discussed above, many respondents objected to LRIC-based FTRs, and as a result did not agree with these proposals, arguing it would have a negative impact on CPs and in a time frame which limits their ability to adjust and accommodate. These comments are addressed above, and on the issue of the time required for them to adjust to new rates, these are discussed in Section 11 and Annex 9.

⁵¹⁰ BT response to Q8.3 of the February 2013 consultation

⁵¹¹ EE response to Q6.5 of the February 2013 consultation

⁵¹² H3G response to Q8.3 of the February 2013 consultation

⁵¹³ Lexgreen Services response to Q8.3 of the February 2013 consultation

⁵¹⁴ Subject to its comments on conversion costs, discussed further in Annex 5. TalkTalk response to Q8.3 of the February 2013 consultation

⁵¹⁵ Vodafone response to the February 2013 consultation. While it considered this approach to be pragmatic, Vodafone also raised concerns around ensuring compliance, and this is discussed further in Section 6.

⁵¹⁶ These are cost causation, cost minimisation, effective competition, reciprocity, practicability and distribution of benefits.

⁵¹⁷ However, it also raised some concerns that there is ambiguity in the position on conversion costs, which is discussed further in Annex 5.

⁵¹⁸ EE response to Q6.5 of the February 2013 consultation

- 8.79 Additionally, Vodafone disagreed with the conclusion that terminating CPs be allowed the flexibility to charge wholesale rates based upon time of day for a range of reasons, which are set out and discussed further in Section 11 (while Section 11 considers BT specifically, the arguments are equally relevant for all other CPs).⁵¹⁹
- 8.80 EE also requested that Ofcom, for the avoidance of doubt, “confirm that the benchmark FTR referred to in the guidance on whether MTRs for operators who provide traffic ‘over the top’ is the same as the benchmark FTR in this guidance”.⁵²⁰ In relation to this point, in the guidance provided in April 2011 for fair and reasonable MTRs⁵²¹, we identified the regulated (benchmark) FTR as a potentially suitable starting point for MCPs providing voice call termination as an over the top (OTT) service (as the benchmark MTR was unlikely to be suitable). Specifically, we stated that “the ‘FTR’ in this context means BT’s Call Termination Local Exchange (LE) rate, which is subject to a charge control as set out in Ofcom’s Explanatory Statement and Notification of 15 September 2009, entitled *Review of BT’s Network Charge Controls*. It would also include a rate set to reflect the efficient cost of terminating a fixed call in any subsequent fixed call termination market review.”⁵²²

Our analysis and conclusions

- 8.81 As explained in Section 6, we are imposing a condition requiring all other CPs with SMP in fixed call termination to provide network access on reasonable request and on fair and reasonable terms, conditions and charges. This continues the regulatory remedies set out in the 2009 NMR Statement.
- 8.82 In the 2011 final guidance for fair and reasonable fixed termination rates (2011 F&R Guidance)⁵²³, we set out our regulatory position that FTRs for wholesale fixed call termination would be presumed fair and reasonable where they were symmetric – i.e. no higher than the Benchmark FTR (as determined by the charge control on BT based on our estimate of the efficient costs of providing wholesale fixed call termination), unless justified in individual cases.
- 8.83 This position of symmetry as a basis for setting fair and reasonable FTRs was presumed, irrespective of the scale, topology or technology of a CP’s network. Central to this decision was our conclusion – confirmed by several respondents to the consultation on that guidance – that differences in network topology between BT and other fixed CPs were not necessarily reliable indicators of efficiently incurred costs of wholesale call termination.
- 8.84 In the 2011 F&R Guidance we set out that FTRs above the Benchmark FTR were likely to be fair and reasonable only where a CP was able to demonstrate that it meets the following three-stage test, all stages of which a CP would need to satisfy to support its claim:

⁵¹⁹ Vodafone response to the February 2013 consultation, Section 7.4

⁵²⁰ EE response to Q6.5 of the February 2013 consultation

⁵²¹ *Wholesale mobile call termination: Guidance on dispute resolution in relation to fair and reasonable charges*, Statement, 5 April 2011.

<http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/guidance.pdf>

⁵²² See paragraph A1.17 to A1.20 of the *Wholesale mobile call termination: Guidance on dispute resolution in relation to fair and reasonable charges*, Statement, 5 April 2011.

<http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/guidance.pdf>

⁵²³ *Fair and reasonable charges for fixed geographic call termination, Statement and Final Guidance*. Published 27 April 2011.

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

- a) charging an FTR equal to the Benchmark FTR would deny the CP recovery of its actual costs of providing wholesale call termination;
- b) its actual costs of providing wholesale call termination were efficiently incurred; and
- c) charging a higher FTR than the Benchmark FTR would be offset by demonstrable consumer benefit.

- 8.85 We also set out our view of what symmetry meant for the time of day profile, whereby CPs charge different rates at different times of the day (e.g. between daytime and evenings) or week.⁵²⁴ The 2011 F&R Guidance stated that it would be presumed to be fair and reasonable where a CP sets rates equal to BT's Local Exchange (LE) rates for the different time periods. Where a CP sets a rate higher than the corresponding BT rate in a particular time period, we would expect that CP to demonstrate that this rate was reasonable, for example by considering whether its average FTR across all of its traffic exceeded BT's 24 hour rate. Where a CP sets particular time of day rates higher than the corresponding BT rates and its 24 hour average exceeds the Benchmark FTR, we identified that the three-stage test may be appropriate in assessing whether the overall rates should be considered fair and reasonable.
- 8.86 Other aspects of the 2011 F&R Guidance related to identification of the nodes in the network from which the symmetric FTR would apply and in the case of TDM-IP interworking costs, which CP should incur those costs. These other aspects of the network access obligation for the provision of wholesale call termination, whether provided by BT or by other CPs, are dealt with in Annex 5.
- 8.87 As discussed in Section 6, this approach has been successful to date in the UK and we also consider it to be an appropriate approach for this review period. In light of this, we have set out guidance on the setting of fair and reasonable FTRs in Annex 10 (which largely reflects the 2011 F&R Guidance).

Conclusion on regulating the FTRs of other CPs

- 8.88 For the period to September 2016, fixed CPs (with the exception of BT) would need to set fair and reasonable termination rates. We will expect these CPs to continue to set symmetric rates as described in the F&R Guidance set out in Annex 10. That is, FTRs that are not above the Benchmark FTR will be presumed to be fair and reasonable whilst FTRs above the Benchmark FTR, while not prohibited, would need to be justified by reference to the three-stage test set out in our guidance. As set out in Section 6, this position should ensure that FTRs for all CPs are based on LRIC in the absence of objective cost differences.
- 8.89 As discussed in Section 11, we consider it appropriate for BT to retain the ability to vary its rates across the time of day. We recognise that other CPs may also wish to vary their rates across different charging periods for the same reasons as BT, and consider this to be reasonable for the same reasons set out in Section 11 in relation to BT. However, we recognise that CPs may wish to vary their rates across charging periods in a different way to BT, and consider they should not be prevented from

⁵²⁴ See paragraph 5.21 et seq. of the 2011 F&R Guidance for a full discussion of this issue, *Fair and reasonable charges for fixed geographic call termination, Statement and Final Guidance*. Published 27 April 2011. <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

doing so. Where a CP wishes to vary rates and can show that its 24 hour average FTR across all its traffic does not exceed the Benchmark FTR, its rates should be considered fair and reasonable.

KCOM - Wholesale fixed call termination

Proposals in the February 2013 consultation

- 8.90 In the February 2013 consultation, we proposed that KCOM's FTR should become subject to the F&R Guidance (and thus would be expected to be no higher than the Benchmark FTR unless it is able to justify otherwise according to the three-stage test) from 1 October 2013. In Annex 15 we proposed a revised version of the 2011 F&R Guidance to reflect this.

Stakeholder responses to the February 2013 consultation

- 8.91 Of those other CPs which explicitly commented on the regulation of FTRs for KCOM, EE⁵²⁵, [X], Lanonyx⁵²⁶ and Lexgreen Services⁵²⁷ agreed with our proposals.
- 8.92 KCOM⁵²⁸ stated that it understood the need for Ofcom to consider the 2009 EC Recommendation and the reason for proposing FTRs at LRIC, but considered that the proposals represented a significant change for KCOM's business. Since it is not currently subject to a charge control, and its termination rates are subject to a cost orientation obligation (rather than the F&R obligation applied to the FTRs of other CPs), it was concerned that any change in the basis of calculation imposed a disproportionate burden to its business and its ability to recover its costs.
- 8.93 While KCOM accepted that the proposed fair and reasonable obligation with respect to its FTRs (and call origination rates, discussed further below) is a pragmatic and proportionate solution, it had qualifications as to what fair and reasonable would mean for the Hull Area. In particular, it argued that given distinctive characteristics (i.e. its specific traffic balance, discussed in more detail in relation to call origination in paragraph 8.107 below), it should be able to set FTRs (and/or call origination rates) above the benchmark rate.
- 8.94 In relation to timing, one respondent ([X]) considered that KCOM's SMP condition in relation to FTRs should be changed immediately. It argued that by the time the new proposed charge control is implemented, we would have had a period of a year where KCOM was recovering more from terminating geographic calls than any other CP in the UK. Conversely, KCOM disagreed with Ofcom's position that it should have the same trajectory to LRIC-based rates as other CPs affected by the change. KCOM felt that the imbalance between its incoming and outgoing traffic and the difference in KCOM's call origination profile meant that Ofcom's view, based on a simple comparison of KCOM and BT's termination rates, is not appropriate.

Our analysis and conclusions

- 8.95 In the 2009 Wholesale Review, we found that for the period to September 2013, KCOM had SMP in wholesale call termination in the Hull Area and we imposed specific regulation, including a cost orientation obligation, in that market.

⁵²⁵ EE response to Q8.4 of February 2013 consultation

⁵²⁶ Lanonyx response to Q8.4 of February 2013 consultation

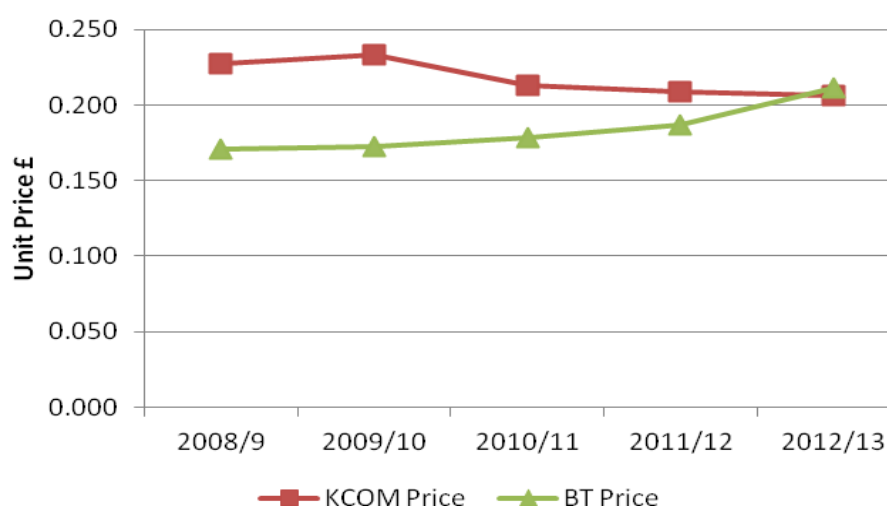
⁵²⁷ Lexgreen Service response to Q8.4 of February 2013 consultation

⁵²⁸ KCOM response to the February 2013 consultation

- 8.96 We indicated in the 2011 F&R Guidance that we would consider the regulation of termination provided by KCOM at the next narrowband market review. We also stated that the same principles (as set out in that guidance) may be applicable to any future consideration of KCOM's FTR, taking into careful consideration any specific circumstances of wholesale call termination in the Hull Area.⁵²⁹
- 8.97 As set out in Section 6, we continue to consider that KCOM has SMP in wholesale call termination in the Hull Area, and we have concluded that KCOM should be subject to the same regulation as CPs other than BT in the provision of wholesale call termination for the period from 1 October 2013 – in particular, (i) an obligation to publish prices; and (ii) an obligation to provide network access on fair and reasonable terms, conditions and charges.
- 8.98 For this reason, we consider that the guidance set out earlier on the interpretation of fair and reasonable network access will now apply to the regulation of the FTR set by KCOM in the Hull Area. We consider this to be proportionate for the reasons set out in Section 6. It is not clear why the F&R Guidance would represent a greater burden for KCOM than for other fixed CPs, particularly as the traffic profiles are likely to vary across all CPs as discussed above (common cost recovery for KCOM is discussed below). Therefore, once subject to the guidance, KCOM's FTR will be presumed fair and reasonable providing it is no higher than the Benchmark FTR, unless it is able to demonstrate that a higher FTR meets the three-stage test (outlined above).
- 8.99 In the application of the 2011 F&R Guidance to all other CPs, we allowed a 17 month transition period (from 27 April 2011 to 1 October 2012) before they were subject to the guidance. On this basis it might be argued that KCOM should be subject to a similar transition period before its FTR is subject to the F&R Guidance. However, any transition period for KCOM needs to be balanced against the delayed benefits from achieving FTRs at no higher than the Benchmark FTR, which from 1 January 2014 is LRIC based (see Section 11).
- 8.100 While KCOM has indicated that it considers the particular circumstances of the market in the Hull Area would justify a charge above the Benchmark FTR, it has not provided any evidence that this is the case at this stage. It will be for KCOM to ensure that it is compliant with the obligations imposed under this review and, in the event that a dispute or complaint is received by Ofcom, to justify a price which is above the Benchmark FTR.
- 8.101 Figure 8.1 shows that KCOM's FTR has been declining since 2009/10 towards the BT rate, and in 2012/13 was virtually identical to BT's external rate (0.21ppm on a weighted average basis over the year and over the day/evening/weekend periods and excluding PPP). Given that KCOM will be starting from a position close to symmetry by the start of the new control period, we do not consider there to be a strong justification for further consideration of whether a delayed transition to symmetry is necessary.

⁵²⁹ See paragraph 5.31-5.32 of the 2011 F&R Guidance, *Fair and reasonable charges for fixed geographic call termination*, *Statement and Final Guidance*. Published 27 April 2011. <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

Figure 8.1: BT and KCOM⁵³⁰ external FTRs



Note: FTR for KCOM excludes PPP, in order to provide a consistent basis for comparison with BT's external reported wholesale call termination local exchange segment services. BT's prices exclude Stick and ISDN.

8.102 In Section 11 we set out our decision to require that from 1 January 2014, the charge controlled rate applied to BT's FTR will be reduced from its 2012/13 level to be based on LRIC. Therefore, the Benchmark FTR will also reduce to LRIC from 1 January 2014, which will affect all CPs currently subject to the F&R Guidance (unless they are able to justify higher FTRs on the basis of the three-stage test as set out in our F&R Guidance). We do not see any compelling reason for KCOM to have a different effective date for LRIC-based FTRs (unless higher FTRs are justifiable according to the three-stage test) to the other CPs affected by this change. For all CPs with direct access, the extent of common costs to be recovered elsewhere will be affected by traffic balances and KCOM is not unique in this regard. Therefore we do not consider that KCOM is disproportionately affected relative to other direct access CPs. We discuss common cost recovery for KCOM in the light of the other SMP regulation it faces in the next sub-section.

8.103 Therefore, we do not see a reason to delay KCOM's FTRs being subject to the F&R Guidance, and so decide that KCOM should be subject to the same F&R Guidance as other CPs with SMP in wholesale call termination from 1 October 2013.⁵³¹

KCOM – Wholesale call origination

Proposals in the February 2013 consultation

8.104 In the February 2013 consultation, we proposed that the regulation of wholesale call origination rates set by KCOM be on the basis of "fair and reasonable" network access. We proposed that KCOM's wholesale call origination rates would be presumed fair and reasonable where they are no higher than the wholesale call origination rate determined by the charge control on BT, unless a higher rate can be justified by objective cost differences.

⁵³⁰ KCOM's rates are currently subject to cost-orientation, which in the specific instance of KCOM's pricing means that its rates are aligned to FAC.

⁵³¹ Annex 10 sets out the revised version of the 2011 F&R Guidance to reflect this.

8.105 We also proposed that any increase in KCOM's wholesale call origination rates, if this were necessary for reasons of common cost recovery, should be on the same timescale as for the move to LRIC-based FTRs.

Stakeholder responses to the February 2013 consultation

8.106 Of those CPs which explicitly commented on the regulation of wholesale call origination for KCOM, Lanonyx⁵³² and Lexgreen Services⁵³³ agreed with our proposals.

8.107 As set out above, KCOM⁵³⁴ considers that imposing a fair and reasonable obligation with respect to wholesale call origination (and termination) rates is a pragmatic and proportionate solution. However, KCOM stated that it would be unable to recover its costs in Hull if there was a move to the rates suggested by Ofcom because:

- a) There is a substantial imbalance between incoming and outgoing geographic calls, with outgoing volumes being lower than incoming volumes. KCOM provided data that showed that in 2011/12 it terminated approximately [X] to geographic numbers in Hull for which it received a termination payment, while outgoing geographic minutes which KCOM was required to pay termination rates for totalled approximately [X].⁵³⁵
- b) KCOM argued that since it provides very low levels of external call origination to other CPs (less than [X] of KCOM's total wholesale call origination), any rebalancing of costs between wholesale call termination and origination rates has a significant impact on KCOM's ability to recover costs.
- c) KCOM estimated that if it used Ofcom's base case it would result in a revenue decrease of approximately [X], potentially impacting between [X] of the relevant revenue in the Hull area.

8.108 As a result, KCOM argued that it should be able to set rates above the benchmark rate.

Our analysis and conclusions

8.109 As for BT, and other CPs which provide wholesale call termination, the move to symmetric and LRIC-based FTRs for KCOM means that there will be some common costs previously recovered from FTRs that will need to be recovered on other services.

8.110 As set out in Section 5, there will be a general requirement on KCOM to provide network access on reasonable request for wholesale call origination. Although wholesale call origination provided by KCOM is not currently widely used in the Hull area, there is currently some use in the form of IA⁵³⁶ (as discussed in Sections 3 and 5). As a result, there are CPs which compete with KCOM using regulated wholesale call origination, but which do not themselves lose termination revenues when FTRs are reduced to LRIC (as they do not supply wholesale call termination themselves), but do gain from reduced FTR payments to KCOM (and other terminating CPs such

⁵³² Lanonyx response to Q8.5 of the February 2013 consultation

⁵³³ Lexgreen Services response to Q8.5 of the February 2013 consultation

⁵³⁴ KCOM response to Q8.4 of the February 2013 consultation

⁵³⁵ In the same year KCOM originated [X] minutes of local traffic.

⁵³⁶ We are also including a 12 month sunset clause on IA, see Section 5.

as BT). Therefore, as with wholesale call origination provided via the BT network, there is a risk of distortion, but this effect is much less material than for BT given the limited retail competition we observe in the Hull Area.⁵³⁷

- 8.111 As with BT, we consider that it is reasonable for common costs no longer recovered from FTRs to be recovered from wholesale call origination. It is important to note that as discussed above in relation to BT, common cost recovery should be calculated across both external and internal sales of wholesale call origination, and not just recovered from external sales, otherwise it may cause a competitive distortion.

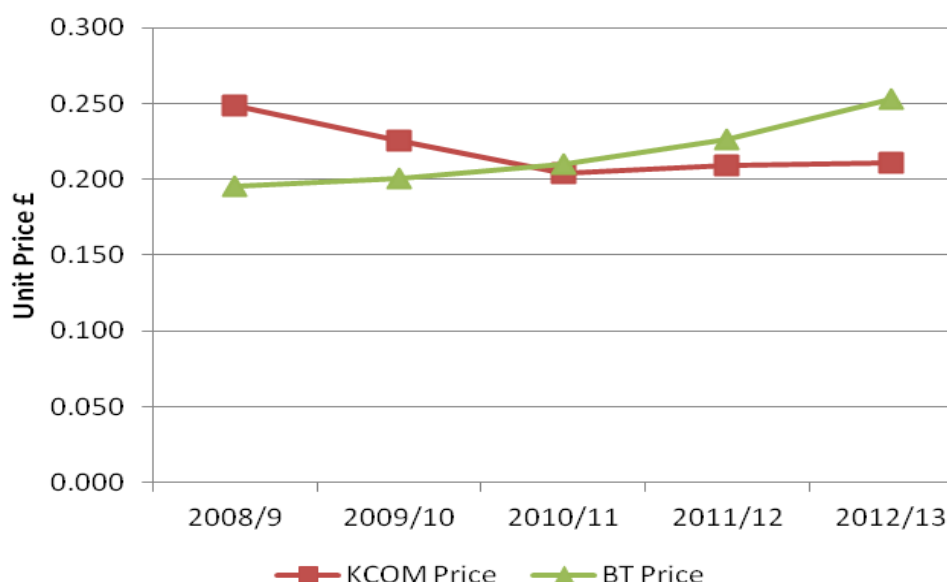
Regulating KCOM's wholesale call origination rates

- 8.112 We are not imposing a charge control for KCOM on wholesale call origination. We are also not imposing a cost orientation obligation on KCOM, which to date has formed part of the SMP obligations on KCOM in the provision of wholesale call origination.

- 8.113 Instead, we are imposing a requirement to provide network access on fair and reasonable terms, conditions and charges. As a first-order test, KCOM's wholesale call origination rates would be presumed fair and reasonable where they are no higher than BT's wholesale call origination rate (which will reflect the common cost recovery uplift).

- 8.114 As background to our preferred approach, it is useful to consider the current level of KCOM's wholesale call origination rate and bear in mind the limited external sales by KCOM. As can be seen in Figure 8.2 below, KCOM's wholesale call origination rates fell below BT's in 2010/11, and has continued to be below the BT rate since. In terms of external sales of wholesale call origination, it can be seen from KCOM's Regulatory Financial Statements, that these were only 4% of KCOM's total wholesale call origination revenues in 2012/13.⁵³⁸

Figure 8.2: BT and KCOM external wholesale call origination rates



⁵³⁷ See Sections 3 and 4 for a discussion of the retail markets in the United Kingdom excluding Hull and the Hull area, respectively.

⁵³⁸ <http://www.kcomplc.com/docs/regulatory-pdf/final-statements-2013.pdf>

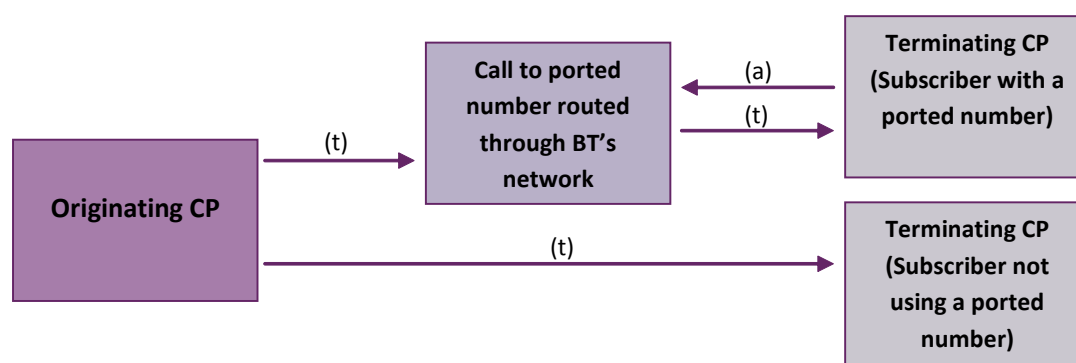
- 8.115 As a result, while our approach would not preclude KCOM from charging more than BT's wholesale call origination rate, it is not clear to us that KCOM would need to charge more than the (now higher, reflecting the common cost recovery uplift discussed above) charge controlled wholesale call origination rate.⁵³⁹
- 8.116 We consider this to be an effective yet proportionate approach to regulating KCOM as it links KCOM's wholesale call origination rates with the costs of an efficient CP (without the added burden of a charge control) while providing regulatory certainty both to KCOM and to other CPs. We consider that any increase in KCOM's wholesale call origination rates, if this were necessary for reasons of common cost recovery, should be on the same timescale as for the move to LRIC-based FTRs, since the two changes are linked (i.e. any increase in the wholesale call origination rate would be to compensate for the reduced common cost recovery from an FTR at LRIC).

Porting conveyance charges

Background and proposals in the February 2013 consultation

- 8.117 When a customer ports their fixed-line telephone number from one fixed CP (the "donor CP" (DCP)) to another fixed CP (the "recipient CP" (RCP)), calls to the telephone number will still be routed across the DCP's network before terminating on the RCP's network. This is known as "onward routing".
- 8.118 Figure 8.3 shows a stylised example of how the APCC and FTRs interact. For illustration only, this example shows BT as the DCP. When making a call to a ported number, the originating CP routes the call to BT's network and pays BT the FTR (denoted as (t) in Figure 8.3). BT onward routes the call to the recipient/terminating CP and pays it (t).⁵⁴⁰ The terminating CP pays BT the APCC denoted as (a) for onward routing the call. The terminating CP therefore effectively receives (t) – (a) when it terminates the call to a ported-in number. When the number has not been ported, the originating CP directly routes the call to the terminating CP and pays it (t).

Figure 8.3: Stylised example of the APCC



⁵³⁹ We also note that unlike BT, KCOM is not subject to a cost-based charge control in relation to access lines. So in the event KCOM was unable to recover its efficiently incurred costs previously recovered from FTRs (which we consider unlikely), attempts by KCOM to recover these costs on other retail prices (e.g. monthly subscriptions) would not be at risk of being undercut by CPs renting wholesale access from KCOM (in contrast to the situation for BT).

⁵⁴⁰ This example assumes symmetric FTRs at the level of t ppm.

- 8.119 The provision of porting conveyance and charges for onward routing are governed by General Condition 18 (GC18). In accordance with Article 30(2) of the Universal Service Directive, GC18 requires that any charges by the DCP for the provision of portability must, subject always to the requirement of reasonableness, be cost orientated and, unless another basis is agreed between the DCP and the RCP or directed by Ofcom, be based on the incremental costs of providing portability.⁵⁴¹
- 8.120 In the February 2013 consultation, we explained that as FTRs fall, for a given level of APCC, the profit on termination will reduce. With FTRs at LRIC, APCCs will be likely to result in a loss, at least in the long run, in the provision of termination for calls to subscribers who have ported their numbers since APCCs are typically greater than the LRIC of wholesale call termination. However, the reduced termination revenue due to the payment of the APCC arises regardless of whether FTRs are at LRIC, LRIC+ or some other level. But what is affected is the expected margin from termination for calls to ported-in numbers. Where subscribers have not ported their number, APCCs will not affect the revenue received per minute of terminated traffic. The overall position of a terminating CP will therefore depend on the volume of calls to ported-in numbers relative to the volume of calls to non-porting in numbers.
- 8.121 In the February 2013 consultation, we explained that although an RCP will face reduced revenues from FTRs at LRIC, this arises from our regulation of termination, not from the separate regulation in relation to porting arrangements. We noted that the setting of porting conveyance charges is governed by the General Conditions and not SMP regulation (which is the basis for regulating termination) and that irrespective of the basis of charges in the NCC, the APCC should be set on a cost-orientated basis in accordance with GC18 as required by Article 30 of the Universal Service Directive.
- 8.122 Therefore, we did not propose to alter the basis on which we set regulated FTRs for the fact that calls to certain numbers will incur an APCC levied on the terminating CP. We noted that APCCs are currently commercially negotiated between CPs, but must be set on terms compliant with GC18, and we considered that this remains the most appropriate way for CPs to set APCCs, including from the point when FTRs will be regulated at LRIC.

Stakeholder responses to the February 2013 consultation

- 8.123 BT⁵⁴² and H3G⁵⁴³ considered that the setting of porting conveyance charges is covered by the General Conditions and not SMP regulation, and therefore the APCC should continue to be set in accordance with GC18.
- 8.124 EE⁵⁴⁴ also agreed that the conveyance charges for onward routing were a separate issue to the question of termination rates, noting that this is consistent with the approach taken for analogous charges in the mobile sector.
- 8.125 Magrathea⁵⁴⁵ agreed that FTRs should not be adjusted for the fact that certain calls will incur an APCC on the terminating CP.

⁵⁴¹ See section 18.5 of Consolidated Version of General Conditions as at 22 November 2012 (including annotations). <http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/general-conditions22nov12.pdf>

⁵⁴² BT response to February 2013 consultation, Q8.6

⁵⁴³ H3G response to February 2013 consultation, Q8.6

⁵⁴⁴ EE response to February 2013 consultation, Q8.6

⁵⁴⁵ Magrathea response to February 2013 consultation, page 3

- 8.126 Lexgreen⁵⁴⁶, Sky⁵⁴⁷, Virgin Media⁵⁴⁸ and [X]⁵⁴⁹ raised the concern of potentially making a financial loss for traffic that terminates to a ported-in number which thereby incurs BT's APCC.
- 8.127 TalkTalk⁵⁵⁰ also indicated that the current APCC would reduce its termination revenues to zero. TalkTalk noted the way in which fixed number portability has been implemented in the United Kingdom means that calls are always routed to the range holder which then has to transit the call to the third-party terminating operator if the number has been ported. The terminating operator cannot in those circumstances avoid paying the APCC because otherwise the range holder operator could refuse to send the calls to them (because the range holder operator would not get paid for their network transit).
- 8.128 TalkTalk considered that the current fixed porting regime puts the DCP in a position of an effective monopoly which has two important competition consequences:
- I. At the wholesale level, the DCP faces no competitive constraint on the provision of APCC services. The RCP cannot choose a different supplier if the operator considered that APCCs were excessive. The DCP is therefore able to set excessive APCCs unless curtailed by regulation.
 - II. At the retail level, there is a separate competition consequence which is that the DCP does not face the same cost when it sets its own retail prices. The DCP does not incur any APCCs when calls are made from third-party operators to its numbers which gives it a cost advantage when setting its retail call prices to its own customers (because it does not face any reduction in call termination revenue). This imbalance is particularly accentuated in BT's favour because of its legacy position in telephony where most of its customers have been allocated telephone numbers from BT number ranges, whereas new entrants like TalkTalk have had to port numbers from the BT network in order to gain new customers (because customers do generally expect to be able to port their telephone number when they switch provider).
- 8.129 [X]⁵⁵¹ suggested that Ofcom's proposed approach would have two effects. First, a raft of regulatory disputes will be brought to Ofcom which will generate extensive regulatory uncertainty. Secondly, a net importer of numbers will be incentivised to cease working with Ofcom's policy preference of the conservation of number stocks.
- 8.130 While Sky⁵⁵² acknowledged that the APCC was not formally part of the NCC, it considered that Ofcom, noting the cost orientation obligation under GC18, should provide further guidance on the appropriate level of APCCs so as to avoid the risk of potential disputes.
- 8.131 Sky⁵⁵³ considered that it would be inconsistent to adopt the approach of setting wholesale call charges on the basis of an NGN, and in relation to FTRs at LRIC, while allowing BT's APCCs to be set by reference to legacy network costs with a mark-up for common costs. Sky considered that in these circumstances, the APCC

⁵⁴⁶ Lexgreen response to February 2013 consultation, Q8.6

⁵⁴⁷ Sky response to February 2013 consultation, page 4

⁵⁴⁸ Virgin Media response to February 2013 consultation, page 9

⁵⁴⁹ [X] response to February 2013 consultation, Q8.6

⁵⁵⁰ TalkTalk response to February 2013 consultation, Q8.6

⁵⁵¹ [X] response to February 2013 consultation, Q8.6

⁵⁵² Sky response to February 2013 consultation, page 4

⁵⁵³ Sky response to February 2013 consultation, page 1

can no longer be considered to be cost oriented (even if it could be before) as required under GC18.

- 8.132 Although TalkTalk⁵⁵⁴ acknowledged that GC18 imposes a reasonableness requirement and a cost orientation obligation with regard to the structure and level of the APCC, it was concerned that the wording does not specify what costs and cost standard should be considered and that this allowed BT to exploit the vagueness of GC18 by continuing to set its APCC based on legacy TDM costs. TalkTalk urged Ofcom to agree with the concerns it had raised in relation to APCCs and lay down some guiding principles as to how the APCC should be set as from 1 October 2013 when the new NCC is due to enter into force. Against the above background, TalkTalk considered it logical that the APCC should be set on the basis of pure LRIC NGN costs.
- 8.133 [X]⁵⁵⁵ suggested that Ofcom should publish new guidance on fair and reasonable charges for APCCs (with timelines).
- 8.134 Although Magrathea⁵⁵⁶ agreed that FTRs should not be adjusted for the fact that certain calls will incur an APCC on the terminating CP, it also suggested that Ofcom publish new guidance on fair and reasonable charges for APCCs indicating that APCCs should be set with reference to the pure-LRIC NGN cost modelling approach.
- 8.135 Vodafone⁵⁵⁷ considered APCCs to be a cost that will need to be recovered from the RCP's retail charges, and that a negative termination rate was not a reason to vary the number portability regime. However, Vodafone considered that the time is ripe for Ofcom to review what was "reasonable" in the context of GC18 for the purposes of setting APCCs. However, it did not consider it appropriate that APCCs should be calculated on a pure-LRIC basis, because the quid pro quo of this would be that some of the range-holder's common network costs, which otherwise would be recovered via the APCC, would instead be recovered from the range-holder's ongoing retail customers. Similarly, it did not consider that a "LRIC++" charging basis for APCCs (i.e. LRIC with a higher share of common costs to allow for those costs displaced from services priced at LRIC e.g. termination rates) would necessarily be correct, as this might imply that charges to ported-out customers pick up costs associated with terminating calls to ongoing customers of the range-holder. Therefore, Vodafone indicated that LRIC+ may be the correct approach, but given the analysis in this Narrowband Market Review, it would not seem reasonable to be charging anything in excess of the costs of efficient network operation.
- 8.136 Virgin Media⁵⁵⁸ argued that since disputes can be referred to Ofcom only after the exhaustion of commercial negotiations, and that disputes often take a significant time to resolve, there is, on current proposals, the potential for a considerable period of uncertainty regarding APCC rates when termination rates are regulated at LRIC. In the light of this, Virgin Media supported a phased introduction of the reduced termination rate in order to minimise the effect of the cost of terminating ported numbers, which would allow industry to assess how it needed to comply with the cost orientation obligation in GC18 in light of LRIC-based FTRs.

⁵⁵⁴ TalkTalk response to February 2013 consultation, Q8.6

⁵⁵⁵ [X] response to February 2013 consultation, Q8.6

⁵⁵⁶ Magrathea response to February 2013 consultation, page 3

⁵⁵⁷ Vodafone response to February 2013 consultation, page 14

⁵⁵⁸ Virgin Media response to February 2013 consultation, page 10

Our analysis and conclusions

- 8.137 A number of respondents raised concerns regarding the financial loss for traffic terminating to ported-in numbers as a result of existing APCCs being above the proposed FTRs at LRIC. Although we recognise this concern, as explained in the February 2013 consultation, the fact that an RCP will face reduced revenues from FTRs at LRIC arises from the regulation of termination, not the separate regulation in relation to porting arrangements. Therefore, setting FTRs at LRIC reflects our view of the appropriate remedy to address SMP in wholesale call termination.
- 8.138 As explained in the February 2013 consultation, APCCs are currently commercially negotiated between CPs, but must be set on terms compliant with GC18. We continue to consider that this remains the most appropriate way for CPs to set APCCs, including from the point in time when FTRs will be regulated at LRIC.
- 8.139 Notwithstanding the above, we recognise that the decision to set FTRs at LRIC, which is at a level below the current set of APCCs, could motivate certain CPs to raise disputes regarding the interpretation of GC18.
- 8.140 We do not consider it appropriate in this market review to determine how GC18 might be interpreted in the context of a dispute in the light of our decision to set FTRs at LRIC based on the costs of an NGN. Even though we did not explicitly consult on the interpretation of GC18, from the responses received to the February 2013 consultation it is clear that different stakeholders take differing views on how GC18 should be interpreted in future. We recognise that further guidance on the interpretation of GC18 has been requested by a number of stakeholders and that this would provide greater certainty for CPs. Therefore, following the completion of the Narrowband Market Review we will commence a project to consider how GC18 should be applied in setting porting conveyance charges.
- 8.141 We have concluded that the basis on which we set regulated FTRs should not be altered for the fact that calls to certain numbers will incur an APCC levied on the terminating CP. APCCs are currently commercially negotiated between CPs, but must be set on terms compliant with GC18.
- 8.142 Our discussion and decision on the appropriate effective date for setting FTRs at LRIC is provided in Section 11 of this document. We do not see the way that APCCs might be set or that GC18 might be interpreted as causing us to change our conclusions there.

Section 9

Cost modelling for the charge control on wholesale call termination and wholesale call origination

Section Summary

- 9.1 In Sections 5 and 6 we concluded that it was appropriate to set cost-based charge controls for wholesale call origination and wholesale call termination (we deal with the price regulation of interconnect circuits in Section 10, Annex 5 and Annex 6). In Section 8 we concluded that the appropriate cost standard for regulating FTRs was LRIC and that wholesale call origination rates should be regulated on a LRIC+ basis, including the contribution to common costs previously recovered from FTRs.
- 9.2 In this section we first summarise the key features of the cost modelling (e.g. technology choice), and, second, the key modelling assumptions (e.g. traffic forecasts, market share, cost of capital and treatment of passive network elements).
- 9.3 This section is intended as an overview of the key modelling decisions. The more detailed aspects of the model design, assumptions, and implementation are contained in Annexes 5-8.

Key features of the 2013 NCC Cost model

Assessment of the technology to model⁵⁵⁹

- 9.4 In the 2009 NCC, we modelled a hypothetical ongoing TDM network as the basis for setting cost based charges. In the February 2013 consultation⁵⁶⁰ we identified two approaches to setting cost-based charges during a period of significant technology change:
- i) the anchor pricing approach; or
 - ii) the modern equivalent asset (MEA) approach.
- 9.5 We proposed not to identify NGN as the MEA for the services in this market review. However, we did propose that NGN technology could be an appropriate basis for setting cost-based rates.
- 9.6 There was general agreement from respondents that NGN technology could be an appropriate basis for setting cost-based rates (subject to some specific concerns discussed in Annex 5 of this statement). However, there were different views on whether NGNs should be considered the MEA.
- 9.7 In the light of the responses to the February 2013 consultation and after further consideration of the issues as set out in Annex 5, we have decided not to identify

⁵⁵⁹ A detailed assessment of our modelling technology choice and responses to the February 2013 consultation can be found in Annex 5.

⁵⁶⁰ See February 2013 consultation, Annex 9.

NGNs as the MEA for voice wholesale call termination, wholesale call origination and interconnection. However, we have decided that a hypothetical NGN forms a reasonable basis on which to set regulated charges for wholesale call termination and wholesale call origination.⁵⁶¹ The regulation of charges for interconnection is discussed in Section 10, Annex 5 and Annex 6).

Bottom-up and top-down modelling⁵⁶²

- 9.8 In the 2009 NCC we built a top-down cost model that started with BT's accounting data.⁵⁶³ In the May 2012 CFI, September 2012 consultation and February 2013 consultation we proposed to build a bottom-up cost model as recommended in the 2009 EC Recommendation.
- 9.9 Responses to our consultations generally supported this proposal (subject to some specific implementation concerns discussed in Annex 6). We have therefore continued with a bottom-up approach and have set charges based on the outputs from this model.

Calculating (pure) LRIC⁵⁶⁴

- 9.10 In the February 2013 consultation, we consulted on a cost model that enabled us to estimate the unit costs of wholesale call termination on a LRIC and a LRIC+ basis. We proposed a decremental approach to calculate LRIC, similar to that applied in our 2011 MCT model. The decremental approach involves calculating the difference in cost produced by the network model when it is run with and without wholesale call termination.⁵⁶⁵ In the February 2013 consultation, we also sought to identify specific assets that we believed were incremental to termination that were not captured by the decremental approach. This assessment led us to adapt the model to include a share of the cost of call server software licences (CSSLs) in the incremental cost of wholesale call termination.
- 9.11 In general, stakeholders agreed with our use of the decremental approach. Consequently, we have now used the decremental approach when calculating the LRIC of termination.
- 9.12 Some respondents raised concerns about our proposals to adapt the model to include a share of the cost of CSSLs in the incremental cost of wholesale call termination. Since the February 2013 consultation we have also gathered further evidence relating to the purchase of CSSLs. In the light of the evidence we have collected, and further consideration of this issue in the light of stakeholder comments, we have changed our approach to CSSLs. We now treat CSSLs and call servers as a composite asset. This means that CSSLs are now an incremental cost to termination to the extent that call servers are incremental costs. This issue is discussed in detail in Annex 6.

⁵⁶¹ Our full justification for why we believe NGN is the most appropriate technology to model can be found in Annex 5.

⁵⁶² Our assessment of the type of model to build can be found in Annex 6.

⁵⁶³ We made adjustments to this accounting data so it better reflected a hypothetical ongoing network.

⁵⁶⁴ Our approach to calculating LRIC is described in Annex 6.

⁵⁶⁵ A full explanation of the decremental approach can be found in Annex 6.

Design and implementation of the 2013 NCC cost model

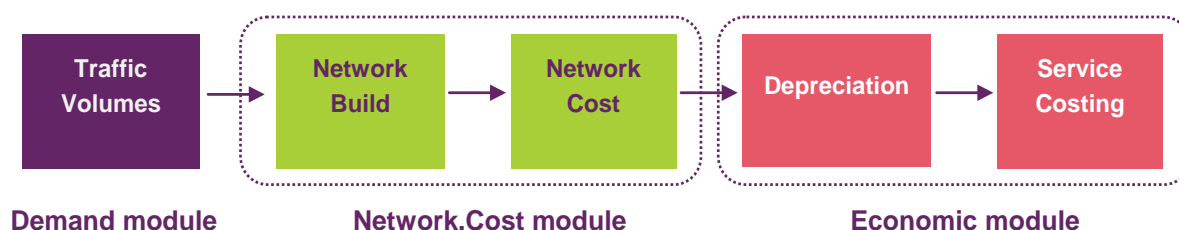
Model design⁵⁶⁶

9.13 Our model design is very similar to that which we laid out both in the September 2012 consultation and the February 2013 consultation. The model calculates unit costs in 5 steps⁵⁶⁷:

- a) Step 1: Calculate the network traffic that is carried by the modelled NGN.
- b) Step 2: Dimension a network capable of carrying this traffic.
- c) Step 3: Calculate the cost of the assets in the dimensioned network.
- d) Step 4: Recover the costs of the network over time using an economic depreciation algorithm.
- e) Step 5: Recover the cost of the network across services based on the routing factors used to dimension the network.

9.14 Figure 9.1 below shows how the Excel model is structured.

Figure 9.1: NCC model structure



Traffic volume forecasts

9.15 It is necessary to calculate traffic forecasts for the hypothetical NGN in order to calculate how much network infrastructure will be required. In the February 2013 consultation, we explained that it is necessary to produce forecasts for data services as well as voice services in an NGN due to the economies of scope in NGN equipment. We created and published a range of traffic forecasts in the February 2013 consultation, based on extrapolated trends in the number of active voice/broadband lines and the use per line of different traffic types.

9.16 In the light of responses to the February 2013 consultation, and the availability of more recent data, we have updated our voice and data forecasts. Our forecasts for industry-wide voice and data traffic are shown in Figures 9.2⁵⁶⁸ and 9.3 respectively.

⁵⁶⁶ Detail of the network demand forecasts and cost recovery can be found in Annex 6. Detail of the modelled network design can be found in Annex 7.

⁵⁶⁷ An explanation of how LRIC is calculated by the model is provided in Annex 6.

⁵⁶⁸ The breakdown of residential and business outgoing minutes per line can be found in Annex 6.

Figure 9.2: Originating voice minutes per line per year⁵⁶⁹

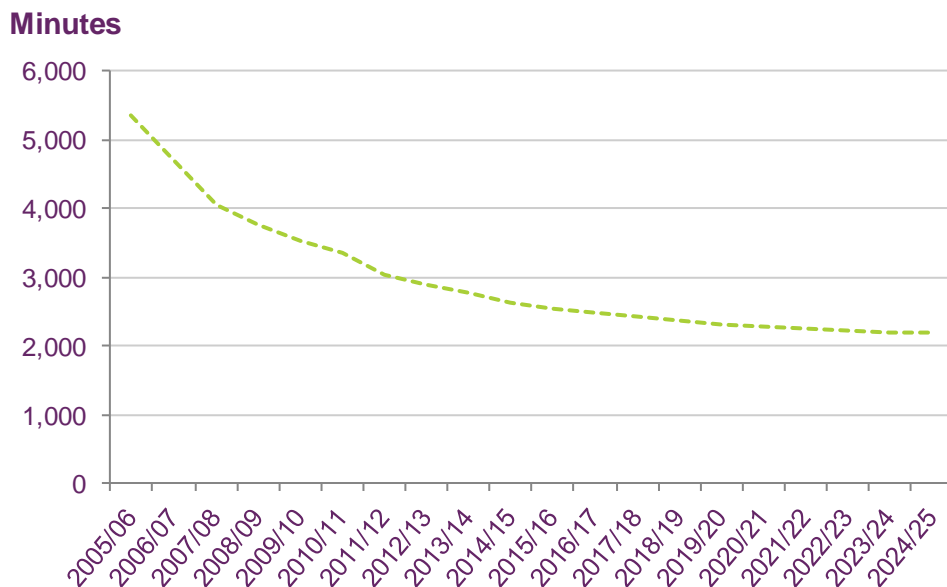
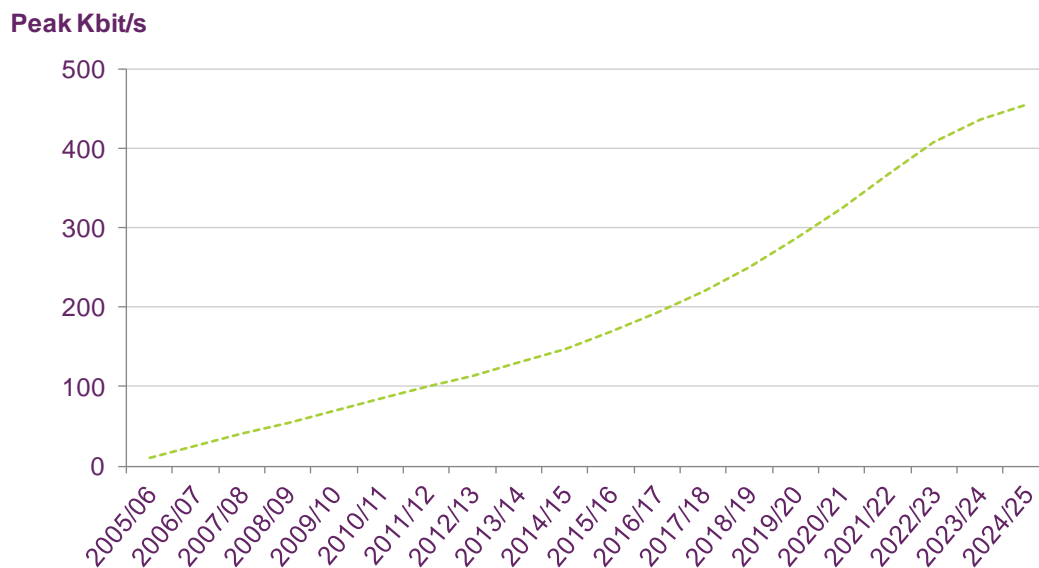


Figure 9.3: Data use in peak Kbit/s per line⁵⁷⁰



Market share and NGN deployment assumptions

9.17 Having projected industry-wide traffic volumes, it is necessary to consider the quantity of traffic carried by the modelled network. This is determined by the market share of voice and broadband lines for the hypothetical CP over time. In the February 2013 consultation, we presented three market share scenarios, but proposed to use a base case 50% market share for the modelled operator. This was based on using a market share that was consistent with a finding of SMP in the wholesale call origination market.

9.18 Respondents to the February 2013 consultation gave a range of views regarding the appropriate market share. In the light of the responses received and for the reasons

⁵⁶⁹ Weighted average of residential and business usage.

⁵⁷⁰ Peak kbps per line relates to the average traffic generated by each line in the network busy hour.

set out in Annex 6, we have now decided to use a 33% market share. We consider that this fits with our regulatory goals; is consistent with our modelling approach; and best reflects the empirical evidence on the competitive environment faced by CPs.⁵⁷¹

Network costs: “Scorched node” assumption

- 9.19 In the February 2013 consultation we proposed basing our bottom-up network model on a ‘scorched node’ approach (which takes account of a network’s existing topology), and therefore using the location and serving area of BT’s existing exchanges. This was because we believe that BT’s existing local exchange topology provides an acceptable proxy for an efficient network, and our cost model is predicated on competitive entry using LLU and NGN deployment at BT’s local exchanges.
- 9.20 We received limited responses to the consultation on the scorched node approach. We have decided to continue basing the 2013 NCC model on a scorched node approach.

Network costs: “passive” network elements

- 9.21 In addition to NGN specific assets, an NGN will contain assets that could be used by either a TDM network or an NGN. In the February 2013 consultation, we proposed not to model these shared assets on a bottom-up basis, but rather use the cost of the assets that are currently allocated to NCC services on a top-down basis as a proxy. We identified three types of asset that fall into this category:
- ducts (the conduits through which underground cables are passed);
 - land and buildings (both corporate offices and network buildings); and
 - core transmission used to link exchanges (e.g. fibre).
- 9.22 We received some responses regarding the level of passive costs recovered in our model and the way passive costs change over time. However, we do not believe a more suitable alternative was suggested to the approach to modelling passive costs on a top-down basis. Consequently, we have decided to maintain our approach to modelling passive network assets on a top-down basis. However, we have made adjustments to the level of costs for passive assets, which are discussed in more detail in Annex 6.

Non-network costs

- 9.23 In addition to network costs, other non-network costs are included in the 2013 NCC model (known as ‘administration costs’). In previous NCCs, administration costs have been charged as a separate service, i.e. PPP⁵⁷² recovered from any wholesale calls using the BT network. In the February 2013 consultation, we proposed to model administration costs as a cost item within the cost stack for the modelled conveyance services rather than as a separate charge controlled service. However, we did not propose to include administration costs within the LRIC for wholesale call termination as there did not appear to be a clear link between termination traffic volumes and the cost of administration services.

⁵⁷¹ We discuss the impact of changing the market share in Annex 9.

⁵⁷² Product management, policy and planning.

- 9.24 In response to our February 2013 consultation, BT argued that a number of PPP costs were incremental to termination traffic volumes. We have undertaken further analysis on the relationship between PPP costs and the call termination increment and have found that a limited number of specific assets that contribute to PPP are incremental to termination traffic. Consequently, we have decided to include some administration costs in the LRIC of fixed call termination. This is discussed in more detail in Annex 6.

Cost of capital

- 9.25 In the February 2013 consultation we outlined our approach to estimating the weighted average cost of capital (WACC), based on a disaggregated WACC for the different parts of BT (specifically a disaggregated WACC for BT's copper access business and another rate for the 'rest of BT') in order to reflect variation in systematic risk. We proposed that the 'rest of BT' rate is appropriate for services considered in this market review. The 'rest of BT' rate has also been used in previous NCC reviews.
- 9.26 BT disagreed with our use of the 'rest of BT' WACC in our modelling. However, we have decided that this approach remains appropriate.⁵⁷³
- 9.27 The value for the 'rest of BT WACC' that we have used in the 2013 NCC reflects Ofcom's most recent statement determining the BT WACC, i.e. the March 2013 BCMR statement.⁵⁷⁴

Figure 9.4: Real pre-tax WACC series⁵⁷⁵

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Real WACC	8.7%	8.7%	8.7%	8.7%	8.3%	8.3%	8.3%	6.9%

Cost recovery: over time

- 9.28 Once the total costs of the hypothetical NGN have been calculated, we must determine how these costs are recovered over time. In the February 2013 consultation, we proposed to adopt economic depreciation rather than accounting depreciation as it better mimics the outcome of a competitive market. In particular, we proposed to use a form of economic depreciation known as Original ED.⁵⁷⁶
- 9.29 Although we received some concerns about some of the detail of the economic depreciation algorithm in the model (addressed in Annex 6), we did not receive any responses that lead us to change our view that this is the appropriate approach to depreciation. Therefore we have decided to continue to use Original ED.

⁵⁷³ We discuss our approach to WACC in more detail in Annex 6.

⁵⁷⁴ Business Connectivity Market Review, 28 March 2013.

<http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/> While we have since consulted in the context of the LLU and WLR charge control consultation on proposals for the WACC for those charge controls, the base case consulted on remains as set out in the 2013 BCMR statement.

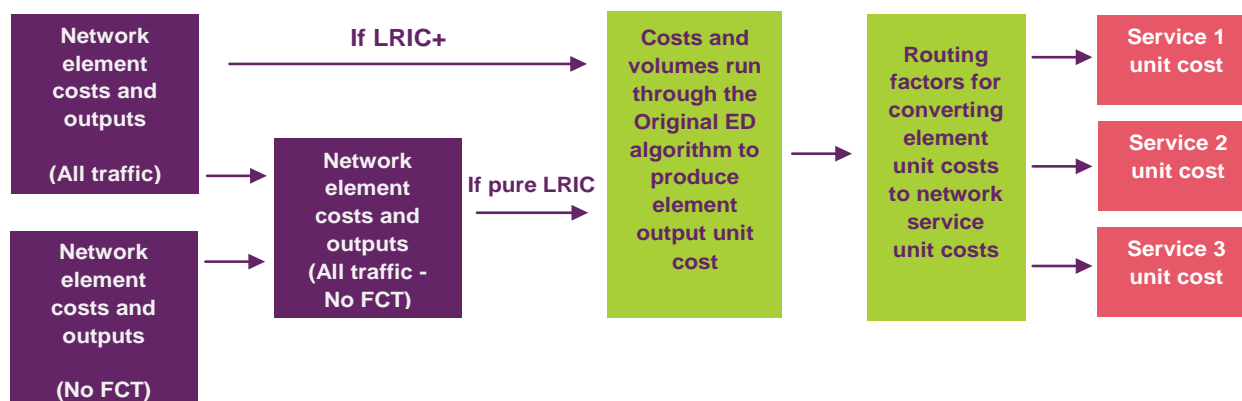
⁵⁷⁵ From 2012/13, the WACC is held constant at 6.9% in pre-tax real terms in perpetuity.

⁵⁷⁶ Original ED is a form of economic depreciation that seeks to match the cost of equipment to its actual and forecast use over the long term. A detailed description of Original ED can be found in Annex 6.

Cost recovery: between assets

9.30 In the February 2013 consultation we described how the costs of a particular network element should be recovered over time from different network services, according to adjusted routing factors (linked to the costs that are driven by that network service). Figure 9.5 below shows the flow of calculations when costs are being allocated across time and between services.

Figure 9.5: Cost recovery over time and across services^{577 578}



9.31 Some specific issues were raised by respondents to the February 2013 consultation regarding the use of routing factors to recover costs across assets. Based on our review since, we have made some minor changes to the calculations, but we have not changed the overall approach. The changes we have made are outlined in Annexes 6 and 7.

Verification of model outputs⁵⁷⁹

9.32 When we have built bottom-up cost models for other charge controls, in particular the model for wholesale mobile call termination, we have sought to calibrate the model outputs against network operator data. We are not able to calibrate the 2013 NCC model because there are currently no fully national NGN operators.

9.33 In the February 2013 consultation, we identified that we could not perform a standard calibration. However, we still believed that it would be desirable to perform verification of the model outputs. In order to do this we have sought to satisfy the following conditions which amount to historic and forward-looking cost recovery checks:

- i) The model should not recover more costs in historic periods⁵⁸⁰ than was possible given the regulated charges prevailing at the time; and
- ii) The model unit cost estimates for the regulated services combined should be no lower over the next charge control period than the unit costs of a heavily depreciated TDM network.⁵⁸¹

⁵⁷⁷ For illustration only, the figure shows a 3 service model.

⁵⁷⁸ In the diagram, FCT stands for “(wholesale) Fixed Call Termination”.

⁵⁷⁹ The model verification process is described in Annex 6.

⁵⁸⁰ In our base case our model does not start to recover costs until 2008/09 and so the relevant period is 2008/09 to 2013/14.

- 9.34 In the February 2013 consultation, our model forecast higher costs in the early years of network deployment than permitted under the then prevailing charge controls. Therefore in order to meet the first of these conditions, we adjusted cost recovery to reduce unit costs in historic periods. To allow cost recovery over the entire modelling period, more costs had to be recovered in future periods. This had the effect of adding a “mark-up” to costs recovered in future periods. We did not need to make any adjustments to satisfy the second condition.
- 9.35 Some respondents to the February 2013 consultation considered that the historic cost recovery check was unnecessary. On the other hand, BT considered that we were not allowing enough costs to be recovered for the depreciated network cross-check. We have considered the responses in Annex 6 and believe that our model cross-checks are necessary and at the appropriate level.
- 9.36 In order to check the LRIC outputs of our model, we have also compared them to the outputs of other NRA models. Although we do not consider it would be appropriate to try and match the outputs of other NRA’s models, we believe they can nevertheless be informative as to whether our own estimates are in a reasonable “ballpark”. Although our LRIC estimates appear at the bottom-end of the caps set by other NRAs, we believe that the difference is within a reasonable range and supported by the evidence we have gathered relating to network build parameters and network costs.⁵⁸²

Model outputs

- 9.37 The results for wholesale call origination and termination are outlined in Figure 9.6 below. A fuller description of these results, in addition to a sensitivity analysis of the effect that key variables have on the unit costs of each service can be found in Annex 8.

Figure 9.6: Results from the 2013 NCC cost model (ppm, in 2012/13 prices)

	2013/14 Forecast Real	2014/15 Forecast Real	2015/16 Forecast Real
Termination			
LRIC outputs	0.034	0.033	0.032
Origination			
LRIC+ outputs	0.415	0.401	0.387

⁵⁸¹ As discussed in Annex 12, this model verification exercise is different from a comparison against a hypothetical ongoing network (an anchor pricing check), which we do not believe would be appropriate as a check on cost recovery.

⁵⁸² We outline this information in Annex 6.

Section 10

Interconnect circuits

Summary of our decision

- 10.1 In this section we discuss the approach we have adopted in respect of the provision of interconnect circuits. We have not identified the provision of interconnect circuits as a relevant market for the purposes of this market review but, as the provision of interconnect circuits is closely related to the provision of regulated services in the markets previously discussed, we consider it appropriate to impose obligations on those services to ensure the effectiveness of regulation in the relevant markets.
- 10.2 We have decided that we should require BT to provide interconnect circuits based on our conclusions that it has SMP in the following markets:
- wholesale call origination on fixed public narrowband networks in the United Kingdom excluding the Hull Area; and
 - wholesale call termination services which are provided by BT to another communications provider for the termination of calls to United Kingdom geographic numbers in the area served by BT.
- 10.3 Based on our conclusions that KCOM has SMP in wholesale call origination on fixed public narrowband networks in the Hull Area we have also decided that we should require KCOM to provide interconnect circuits.
- 10.4 In Annex 5 we explain that we consider that the point of interconnection (and hence technology used for interconnection) should be determined by the network technology (and topology) by which the end customer is physically connected. Based on this, in order to meet its obligations, BT is required to provide interconnect circuits based on TDM technology connected to the BT DLE where the end customer is connected. Similarly, to meet its obligations, KCOM is required to provide interconnect circuits based on TDM technology connected to the KCOM exchange where the end customer is connected.
- 10.5 In addition, in Annex 5 we explain our approach to the costs of conversion between TDM networks and NGNs (and, to the extent required, between NGNs). We consider that the provision of conversion should, in the first instance, be agreed by commercial negotiation between interconnecting parties and so we are not imposing obligations related to the provision of conversion.
- 10.6 The remedies we are imposing in relation to interconnect circuits are:

Figure 10.1: Remedies we are imposing for interconnect circuits

BT obligations	KCOM obligations
Requirement to provide network access on reasonable request Requests for new forms of network access Requirement not to unduly discriminate Requirement to publish a reference offer Requirement to notify charges Requirement to notify technical information Cost accounting Accounting separation Transparency as to quality of service Charge control	Requirement to provide network access on reasonable request Requirement not to unduly discriminate Requirement to publish a reference offer Requirement to notify charges Requirement to notify technical information

10.7 The rest of this section is set out as follows:

- introduction, including background on interconnect circuits and how they have previously been regulated;
- our reasons for regulating interconnect circuits, setting out our proposals in the February 2013 consultation, stakeholder responses to the February 2013 consultation and our conclusions;
- our approach to regulating BT's provision of interconnect circuits and the conditions we are imposing on BT, setting out our proposals in the February 2013 consultation, stakeholder responses to the February 2013 consultation and our conclusions; and
- our approach to regulating KCOM's provision of interconnect circuits and the conditions we are imposing on KCOM, setting out our proposals in the February 2013 consultation, stakeholder responses to the February 2013 consultation and our conclusions.

Introduction

10.8 Interconnect circuits provide the physical infrastructure to connect the exchanges (switches) of two CPs in order to allow traffic to pass between them. Some CPs may use leased lines to provide the transmission facilities between their locations although interconnect circuits differ from leased lines since they include switch ports and, where required, termination of signalling links.

10.9 All CPs have obligations related to interconnection under General Condition 1 (GC1).⁵⁸³ In this section we also consider whether we should impose specific obligations requiring all CPs to provide interconnect circuits in addition to these more general obligations.

⁵⁸³ General Conditions of Entitlement, <http://stakeholders.ofcom.org.uk/telecoms/ga-scheme/general-conditions/>

- 10.10 Interconnect circuits are not identified within the 2007 EC Recommendation as a market in itself that should be considered for ex ante regulation. However, paragraph 5 of Section 2.6 of the Explanatory Note⁵⁸⁴ states:

“In principle, the proposed obligations should pertain to the relevant product market in which SMP has been found. However, in dealing with lack of effective competition arising from a position of SMP in an identified market, it may be necessary to impose several obligations to remedy the competition problem relating to services both inside and outside the market. In principle, an NRA may impose obligations in an area outside but closely related to the relevant market under review, provided such imposition constitutes:

- *the most appropriate, proportionate and efficient means of remedying the lack of effective competition found on the relevant market; and*
- *an essential element in support of obligation(s) imposed on the relevant SMP market without which those obligations would be ineffective.”*

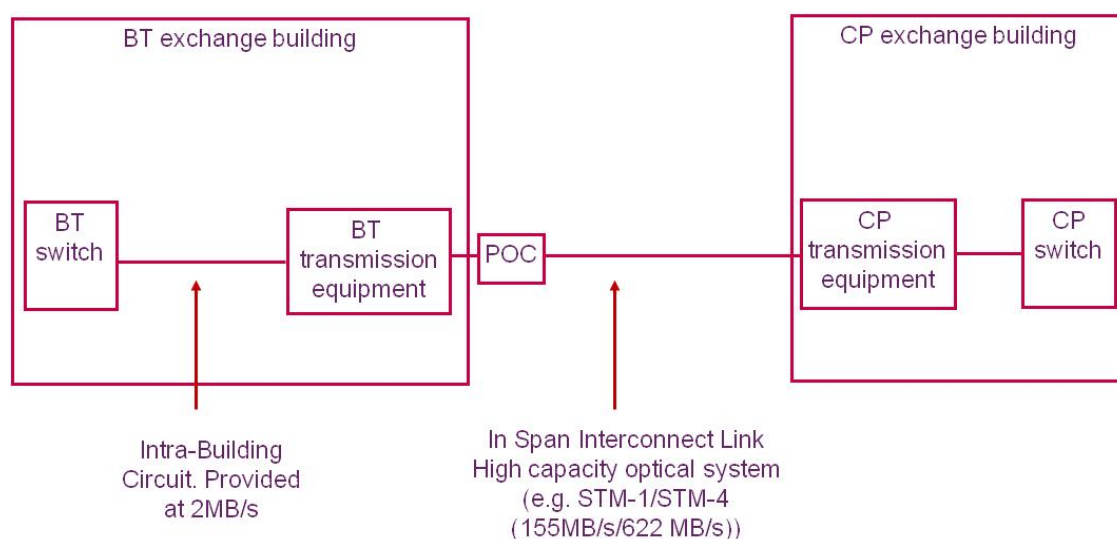
Description of interconnect circuits currently provided by BT and KCOM

- 10.11 BT currently supports four types of interconnect circuit:

- In Span Interconnection (ISI): to provide ISI, a CP builds its own network up to a Point Of Connection (POC), generally located just outside the BT exchange. BT then connects its network to the POC. Individual interconnect circuits of 2Mb/s capacity are then provided via the ISI link. An Intra Building Circuit (IBC) is required at each end of this 2Mb/s circuit to provide connection onto the interconnecting switches. The ISI configuration is shown below in Figure 10.2;
- Interconnect Extension Circuit (IEC): IECs build out from a POC provided via ISI (as above), and allow CPs to extend their interconnection network beyond the building to which they have built their own network. IECs are provided at 2Mb/s capacity and again require IBCs;
- Customer Site Interconnection (CSI): CSI does not require any infrastructure build by the CP. Instead, BT builds to the CP's site. Individual 2Mb/s interconnect circuits are then provided via this CSI link as required. Once again, IBCs are also required. The CP can use the BT-provided CSI infrastructure to interconnect to other BT exchanges; and
- Virtual Interconnect circuits (VICs): VICs require an interconnection to a tandem exchange using ISI or CSI. A “virtual” circuit is then provided. The virtual circuit provides capacity to the CP using the existing BT network to the DLE. This virtual circuit is charged for as if it were an IEC (i.e. the IEC charges apply). The CP then pays the rates for conveyance that would be charged by BT as if there was a physical interconnection at the DLE – i.e. the call origination or termination rate without a charge for LTC.

⁵⁸⁴ Commission Staff Working Document, “Explanatory Note accompanying 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”, 13 November 2007, http://ec.europa.eu/information_society/policy/ecomm/doc/implementation_enforcement/eu_consultation_procedures/sec_2007_1483_2.pdf

Figure 10.2: In Span Interconnect (ISI) Link Architecture



- 10.12 CPs with larger networks and larger traffic volumes are likely to provide some or all of their interconnection via ISI. This minimises ongoing payments to BT, albeit at higher initial cost for the CP. CPs can also buy Nominated ISI from BT. This is similar to an ISI connection, except that BT builds out its network some way in order to meet the CP's network. The CP pays for this extension from the BT exchange to the nominated POC.
- 10.13 Once a CP has established ISI to a particular BT exchange, it can use this, in conjunction with an IEC, to connect to other BT exchanges. The extent to which IECs can be used to extend reach is restricted based on the structure of the BT network (IECs can only be used to connect two exchange buildings if transmission links already exist in the BT network between them) and geography. IECs incur fixed installation and annual rental charges as well as distance-related rental charges.
- 10.14 CPs that have not built ISIs use CSIs to connect to BT exchanges, where BT provides the interconnect infrastructure to the CP's location. This reduces the up-front cost of interconnection. CSIs incur fixed installation and annual rental charges as well as distance-related rental charges.
- 10.15 VICs were agreed through commercial negotiations between BT and CPs without intervention from Ofcom, even though they involve charges referenced to regulated services (i.e. IECs). They were put in place to support migration to 21CN but have been used more widely. While BT has subsequently suspended its plans to migrate voice services onto 21CN it has continued to provide new VICs.
- 10.16 KCOM provides ISI and IECs. It does not provide CSI or VICs.

The 2009 Market Review and developments since

- 10.17 We reviewed the arrangements applying to interconnect circuits in the 2009 Wholesale Market Review.⁵⁸⁵

⁵⁸⁵ Section 10 and Section 11, *Review of the Fixed Narrowband Services Wholesale Markets- statement on the markets, market power determinations and remedies including further*

- 10.18 We discussed the TDM-based interconnection products that BT and KCOM supplied at the time and set out our understanding of the interconnection products BT was proposing to supply as part of its migration of voice services onto 21CN. BT put on hold its deployment of voice services on 21CN prior to our final determination in the 2009 Wholesale Market Review.
- 10.19 We focused our regulation on TDM interconnect circuits. In relation to BT, we imposed the following obligations: requirement to provide network access on reasonable request; requirement not to unduly discriminate; requirement to publish a reference offer; requirement to notify charges; requirement to provide transparency as to quality of service; requirement to notify technical information; requirement in relation to requests for new network access; a cost orientation obligation; a charge control and cost accounting and accounting separation obligations.
- 10.20 In relation to KCOM we imposed a requirement to provide network access on reasonable request; requirement not to unduly discriminate; requirement to publish a reference offer; requirement to notify charges; requirement to notify technical information; a cost orientation obligation, and cost accounting and accounting separation obligations.
- 10.21 We considered issues that could affect our approach to interconnection in the 2011 F&R Guidance.⁵⁸⁶ We discuss this in Annex 5 in relation to our approach to technology choice for interconnect circuits.

Reasons for requiring the provision of interconnect circuits

Proposals in the February 2013 consultation

- 10.22 In the February 2013 consultation we proposed that we should require BT to provide interconnect circuits based on our provisional conclusions that it had SMP in the following markets:
- wholesale call origination on fixed public narrowband networks in the UK excluding the Hull Area; and
 - wholesale call termination services which are provided by BT to other communications providers for the termination of calls to United Kingdom geographic numbers which BT has been allocated by Ofcom in the area served by BT.
- 10.23 We proposed that we should require KCOM to provide interconnection circuits based on our provisional conclusions that it had SMP in wholesale call origination on fixed public narrowband networks in the Hull Area.
- 10.24 We also proposed that KCOM had SMP in wholesale call termination. But as for all other CPs except BT, we did not propose that an obligation to provide interconnect circuits was required in order to make our proposed remedies in the wholesale call termination markets effective.

consultation, 15 September 2009,

http://stakeholders.ofcom.org.uk/consultations/wnmr_statement_consultation/summary.

⁵⁸⁶ Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011 <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>.

- 10.25 In Annex 11 of the consultation we explained that we considered that the point of interconnection (and hence technology used for interconnection) should be determined by the network technology (and topology) by which the end customer is physically connected. Based on this, our proposal to require BT to provide interconnect circuits related to interconnect circuits based on TDM technology connected to the BT DLE where the end customer is connected (and the equivalent point in the KCOM network).
- 10.26 In addition, in Annex 11 we set out our approach to the costs of conversion between TDM networks and NGNs (and, to the extent required, between NGNs) by proposing that the provision of conversion should, in the first instance, be agreed by commercial negotiation between interconnecting parties.

Stakeholder responses to the February 2013 consultation

- 10.27 Several stakeholders (TalkTalk⁵⁸⁷, [X]⁵⁸⁸, Magrathea⁵⁸⁹ and Sky⁵⁹⁰) commented on our proposals related to the regulation of physical interconnection, specifically whether TDM networks such as BT should be required to provide IP interconnection and/or interconnection at 20 Poles. We discuss these comments in Annex 5. In a separate response, [X] argued that wholesale call termination cannot be purchased without an interconnect circuit also being used and so “*interconnection circuits and wholesale geographic call termination are essentially a basket of products*” and that it was not possible to “*purchase wholesale call termination from BT without there being an interconnect circuit in the value chain*”.⁵⁹¹
- 10.28 Vodafone agreed with our proposed regulation but considered that the cost standard should reflect that used for the traffic which it carries. Vodafone considered that logically interconnect circuits for termination should be charged on a LRIC basis. However, it considered that in practicable terms at the moment it would be disproportionate to construct a suitable cost model and noted that interconnect circuits were used for multiple traffic streams. Nevertheless, Vodafone identified that the reduction in CPS traffic, the changes in the NGCS regime and a move towards IP interconnection would result in more straightforward reciprocal arrangements such that the next review should be based on pure LRIC IP interconnect.⁵⁹²
- 10.29 BT agreed with our proposal requiring it to provide interconnect circuits.⁵⁹³

Our analysis and conclusions

- 10.30 We have discussed in Annex 5 our approach to choosing the network technology to model for the purposes of setting cost-based charge controls and our approach to interconnection. Within that discussion we conclude that NGN technology provides an appropriate basis for setting charge controls for wholesale call origination and wholesale call termination and have included 20 Poles in the model. We also explain in Annex 5 that:

⁵⁸⁷ TalkTalk response to February 2013 consultation, page 2.

⁵⁸⁸ [X]

⁵⁸⁹ Magrathea response to February 2013 consultation, page 2.

⁵⁹⁰ Sky response to February 2013 consultation, para 10.

⁵⁹¹ [X]

⁵⁹² Vodafone response to February 2013 consultation, page 24.

⁵⁹³ BT response to February 2013 consultation, para 10.12 to 10.14.

- it is uncertain whether NGNs can be identified as the MEA for the provision of all voice services; and
 - a history of infrastructure-based entry is likely to result in a market with competing CPs using different technologies. Where it is likely to be efficient for CPs to continue to exploit existing infrastructure rather than to invest in duplicate infrastructure when new technologies become available, and the continued use of different technologies is not clearly inefficient, technology neutrality favours an approach in which the termination (and origination) rates set by regulation applies at the node to which the customer is actually connected.
- 10.31 On this basis, for interconnection to BT, we conclude that the Pol would be at the DLE to which the customer is connected. Similarly, for other terminating CPs that have deployed a TDM network the Pol would be the existing switch to which the called customer is connected. We have concluded we should not require TDM networks to provide IP interconnection at a reduced set of Pols. In particular, BT is not required to provide IP interconnection at 20 Pols as used in our model or at the “27+2” previously agreed by NGNuk.
- 10.32 For NGNs, the locations of Pols are decided by the specific network implementation of the specific CP.
- 10.33 In addition, in Annex 5 we set out our approach to the costs of conversion between TDM networks and NGNs (and, to the extent required, between NGNs). We have excluded the costs of this conversion from the regulated charges for wholesale call origination and wholesale call termination. In our view, conversion is potentially a contestable service. It is our view that the provision of conversion should, in the first instance, be agreed by commercial negotiation between interconnecting parties and so we are not imposing regulation related to the provision of conversion.
- 10.34 In response to Vodafone on the approach to regulating the provision of interconnect circuits in the next review, as in this review we will take account of any changes in the markets to which interconnect circuits relate and the extent to which CPs have moved towards IP interconnection when we consider our approach to the regulation of interconnect circuits at the time of the next review.
- 10.35 We now consider whether we need to impose specific regulation on the provision of interconnect circuits by BT, KCOM and other CPs to allow access to services in the wholesale call origination and wholesale call termination markets.

BT

- 10.36 BT, like other CPs, has an obligation under General Condition 1 of the General Conditions of Entitlement, which states:

“The Communications Provider shall, to the extent requested by another Communications Provider in any part of the European Community, negotiate with that Communications Provider with a view to concluding an agreement (or an amendment to an existing agreement) for Interconnection within a reasonable period.”⁵⁹⁴

⁵⁹⁴ Ofcom, *General Conditions Of Entitlement*, last updated 22 November 2012, <http://stakeholders.ofcom.org.uk/telecoms/ga-scheme/general-conditions/>

- 10.37 We consider that this obligation, alone, is insufficient to address the concerns we have identified in this market review. We have concluded that BT has SMP in both the wholesale call origination and wholesale call termination markets. Wholesale call origination is a one-way access service. A CP with SMP in this market is able to discriminate against competing providers seeking access to this service. This could be achieved through the call origination service itself or via other services that are strong complements, such as interconnection. In the case of BT, because its network footprint extends beyond that of all other CPs and, in addition, includes a large number of DLEs at which CPs would need to interconnect, in the absence of regulated interconnect circuits, CPs would need to either extend their own networks, which is unlikely to be economic, or seek to secure services provided by BT through commercial negotiations in order to access call origination services. Therefore, in the absence of regulation on the provision of interconnect circuits, BT would have the ability and incentive to leverage its SMP from the wholesale call origination market into the provision of interconnect circuits, thus undermining the remedies imposed on BT in the wholesale call origination market.
- 10.38 Wholesale call termination is a two-way access service. Where two CPs of similar scale, both of which are subject to similar regulatory obligations (such as the regulation we have concluded we should impose on providers of fixed geographic call termination in Section 6) seek to purchase call termination from each other and so also need to interconnect, both CPs could in theory seek to leverage their SMP in wholesale call termination into the provision of interconnection. However, since they need to purchase services from each other to support their downstream products we consider that commercial negotiation is likely to be sufficient to address this concern and allow for the parties to agree terms for interconnection, including the provision of interconnection circuits. Nevertheless, because of BT's network scale, it is unlikely in the absence of regulation, that another CP would be able to negotiate on this basis with BT and so BT might be able to leverage its SMP in call termination in its provision of interconnect circuits and so undermine the regulation of call termination.
- 10.39 Therefore, we conclude that BT should be required to provide interconnect circuits in order to support the regulation imposed in the markets for wholesale call origination and wholesale call termination which allow other CPs to effectively compete in downstream markets. We have decided to require BT to provide interconnect circuits as follows:
- ISI, as this will allow larger CPs to take advantage of their own infrastructure deployments to provide interconnection;
 - IECs, as this will then allow those CPs that have deployed ISIs to maximise the utilisation of these investments;
 - CSI as this will allow CPs that are not of sufficient size and network reach to viably deploy ISI to provide services in downstream markets based on wholesale call origination and call termination services provided by BT; and.
 - as in the 2009 Market Review, we have concluded that we should not regulate VICs. This is because VICs are a substitute for other services purchased from BT (in particular LTC) which are subject to effective competition and because VICs are priced by reference to IECs, themselves a charge controlled interconnect service.
- 10.40 One stakeholder argued that wholesale call termination and interconnect circuits were a basket of services and should not be treated separately. However, as

discussed above in paragraph 10.36 to 10.39, we consider it necessary to regulate BT's provision of interconnect circuits because of its SMP both in wholesale call origination and wholesale call termination. On the other hand, as discussed below in paragraph 10.44, we do not consider it necessary to impose regulatory obligations on other CPs even though we have concluded they have SMP in wholesale call termination. As such, while it is clearly the case that interconnect circuits are required whenever a call is conveyed between two networks it does not follow that the interconnect circuits that allow CPs to access the regulated termination services of CPs (in particular BT) should be considered as inextricably linked to that service if the same circuits can be used for other services with different characteristics and a different regulatory treatment.

KCOM

- 10.41 We have concluded that KCOM has SMP in both the wholesale call origination and wholesale call termination markets in the Hull Area. For the same reasons as set out above for BT, KCOM could seek to leverage its SMP in wholesale call origination into the provision of interconnect circuits. While KCOM's network does not have the same scale as BT's we consider its SMP in wholesale call origination would still allow KCOM to discriminate against any CPs seeking to provide downstream services in the Hull Area based on wholesale call origination services provided by KCOM.
- 10.42 In relation to wholesale call termination, KCOM's much smaller network (as compared to BT and some other CPs providing wholesale call termination services in the United Kingdom) suggests it may be less likely that it could leverage SMP in wholesale call termination into the provision of interconnect circuits. In the light of this, we consider that it is unnecessary to impose obligations requiring KCOM to provide specific interconnect circuits as a result of its SMP in wholesale call termination.
- 10.43 However, due to the potential for KCOM to leverage its SMP in wholesale call origination, we conclude that KCOM should be required to provide interconnect circuits. We have decided that KCOM should be required to provide ISI and IECs. We are not requiring it to provide CSI because it would not be reasonable to require KCOM to provide CSI circuits to CPs' locations outside of the Hull Area and, where a CP has a location within the Hull Area, we do not consider CSI would be required if ISI and IECs are available.

Other CPs

- 10.44 In this review we have determined that other CPs have SMP in wholesale call termination. We do not consider that it is appropriate to require these CPs to provide interconnect circuits. For CPs that are found to have SMP in wholesale call termination and, as a result, are subject to an obligation to provide network access on reasonable request, interconnection would be relevant to the provision of such access in accordance with GC1. As discussed above in paragraph 10.38, as wholesale call termination is a two-way access service, commercial negotiations between CPs coupled with these regulatory obligations are, in our view, likely to be sufficient to allow CPs to gain the access they require to the wholesale call termination services offered by others. Consequently, we do not consider that CPs would be able to leverage the SMP identified in call termination into the provision of interconnect circuits and, as a result, no additional regulation is required.

Regulation of BT's provision of interconnect circuits

Proposals in the February 2013 consultation

10.45 We proposed to impose the following obligations on BT:

- Requirement to provide network access on reasonable request;
- Requests for new forms of network access;
- Requirement not to unduly discriminate;
- Requirement to publish a reference offer;
- Requirement to notify charges;
- Requirement to notify technical information;
- Cost accounting;
- Accounting separation;
- Transparency as to quality of service; and
- Charge control.

10.46 While these proposed conditions were largely the same as those imposed in the 2009 Market Review, we proposed the following changes:

- In the requirement to publish a reference offer, we proposed to remove the obligation to include information relating to network components;
- In the requirement to notify charges, we proposed to reduce the notification period to 56 days and to remove the obligation that the notice should include the relevant usage factors for the network components used to provide the service;
- In the requirements related to the transparency as to quality of service we proposed to remove the requirement to notify Ofcom with information related to specific CPs' purchases of interconnect circuits;
- In the requirement related to cost accounting, we said that DLRIC and DSAC data should not be published but that they should be provided to Ofcom; and
- In relation to the charge control, we proposed a constant nominal cap (i.e. 0% controlling percentage) with sub-caps on individual services based on our view that returns are expected to be in line with economic costs.

Stakeholder responses to the February 2013 consultation

10.47 In relation to our proposed remedies for interconnect circuits, BT referred to its earlier comments on the remedies we had proposed in wholesale call origination.⁵⁹⁵ We discuss these in Section 5 in relation to our conclusions on wholesale call origination.

⁵⁹⁵ BT response to February 2013 consultation, paragraph 10.18 to 10.20.

- 10.48 In relation to the requirement to provide network access on reasonable request, requests for new network access, the requirement to publish a reference offer and the obligation to notify technical information, BT said it did not object to the obligation. BT was supportive of our proposal in relation to KPIs, including our proposal to remove the requirement to provide specific information to Ofcom.
- 10.49 In relation to the obligation not to unduly discriminate, in relation to wholesale call origination as explained in Section 5, BT argued that irrespective of any SMP decision, the materiality of direct and indirect constraints mean BT should be given much more flexibility in pricing of call origination, and traditional restrictive remedies are inappropriate. In the light of this, BT argued that the “no undue discrimination” obligation was not appropriate. It did not make any further arguments specific to interconnect circuits. We discuss the need for a no undue discrimination obligation in relation to interconnect circuits in paragraph 10.62 below.
- 10.50 In relation to our proposals to reduce the notice period for changes to charges from 90 to 56 days, BT, Vodafone and EE responded. Our proposals, and responses to our proposals, were the same for wholesale call origination, wholesale call termination and interconnect circuits. We have discussed these responses and our position in Section 5.
- 10.51 BT said that our analysis of its cost recovery was consistent with BT’s observations on asset cost trends. However, it did make two points that it said supported a cap at RPI-0 rather than RPI-RPI. It said that the returns do not take account of cost sharing arrangements for CSI circuits and adjusting for this would reduce returns. It also said that significant build-out of LLU meant there would be less demand for IECs (or would at least provide a constraint on pricing of them) which would reduce returns.⁵⁹⁶ We address these comments in Annex 6.
- 10.52 [X] agreed with the requirement for BT to provide interconnect circuits but it argued that the approach to price regulation allowed BT to continue to over-recover based on the costs of legacy TDM infrastructure. It said that while a downward glide path was a move in the right direction, Ofcom missed an opportunity to set in place incentives to migrate to the efficient technology of NGNs.⁵⁹⁷ It also said that as a consequence of its view that interconnect circuits were inextricably linked to the provision of wholesale call termination, interconnect circuits should be regulated based on LRIC.⁵⁹⁸ We explain our approach to the technology over which BT should provide interconnect circuits in Annex 5 and discuss the specifics of the charge control below and in Annex 6.
- 10.53 Virgin Media and EE responded on cost accounting generally, as discussed in Section 5 (see paragraphs 5.253 and 5.254). BT and Vodafone commented on the cost accounting and accounting separation obligations. BT set out concerns regarding these obligations in relation to wholesale call origination (see paragraph 5.250 to 5.252), and referred to those concerns as being relevant for interconnection services. There, it argued that reporting at a detailed level greater than the market or even basket level is disproportionate where cost orientation obligations do not apply.
- 10.54 Vodafone argued that cost orientation was still needed in this market and that, in those circumstances, cost reporting would also be necessary. We discuss cost accounting below.

⁵⁹⁶ BT response to February 2013 consultation, paragraph 11.80 to 11.86.

⁵⁹⁷ [X]
⁵⁹⁸ [X]

- 10.55 Vodafone said that cost orientation should be maintained in addition to the charge control as this ensures that prices do not move out of line with costs and, in so doing, minimises the scope for over-recovery. It said that cost accounting, including the reporting of DLRIC and DSAC should also be maintained to allow CPs to monitor this.⁵⁹⁹ We discuss cost accounting and whether we should maintain cost orientation in addition to a charge control below, in Annex 6.
- 10.56 Notwithstanding the points TalkTalk raised in relation to IP interconnection arising from the MEA discussion and the conversion costs issues (both of which are discussed in Annex 5), TalkTalk agreed that BT should be required to provide interconnect circuits and that the obligations proposed on BT seemed appropriate.⁶⁰⁰

Our analysis and conclusions

- 10.57 As explained above in paragraphs 10.36 to 10.40 we consider it necessary to impose regulatory obligations on BT to enable the effectiveness of the remedies we are imposing in the wholesale call origination and call termination markets, where we have found BT to hold SMP in the United Kingdom.
- 10.58 In this section we set out our conclusions on remedies to address our concerns related to interconnect circuits. We start by discussing what we see as the main options for remedies as follows:
- Option 1: network access, non-discrimination and transparency obligations; and
 - Option 2: price regulation (in addition to network access, non-discrimination and transparency obligations).
- 10.59 Having discussed the approach that we consider to be most appropriate, we then discuss each specific condition in relation to whether it meets the relevant legal tests for imposing such conditions.

Option 1 (network access, non-discrimination and transparency obligations)

- 10.60 As set out above, in the absence of regulatory remedies to secure the supply of interconnect circuits, BT could restrict access to other providers and this could in turn restrict competition in the provision of retail offers. Therefore, we consider it is important that BT is required to provide interconnect circuits on fair and reasonable terms to all CPs that request such services.
- 10.61 In the wholesale call origination and call termination markets we have imposed an obligation on BT not to unduly discriminate in order to allow other CPs to compete with BT in downstream markets. BT argued that a no undue discrimination obligation was not appropriate in wholesale call origination, and referred to these arguments in relation to interconnect circuits (though it did not make further specific arguments in relation to interconnect circuits). We discuss its comments in relation to wholesale call origination in Section 5.
- 10.62 In relation to interconnect circuits, where BT needs to interconnect to other CPs to terminate calls to these networks, interconnect circuits are required. BT is able to provide its own interconnect circuits for these calls given the scale of its network. These interconnect circuits would be provided in a similar way to interconnect circuits

⁵⁹⁹Vodafone response to February 2013 consultation, pages 46 – 47.

⁶⁰⁰TalkTalk response to February 2013 consultation, response to Q10.1 to Q10.3

provided by BT to other CPs, although BT could seek to provide interconnect circuits to these CPs on different terms and conditions and/or charges than it applies to its own circuits. This would allow it to discriminate against CPs that rely on these interconnect circuits to compete with BT in downstream markets. BT could also discriminate in the provision of interconnect circuits by, for example, providing services to some CPs on less attractive terms than to others. BT may take this approach to impair the ability of specific CPs to compete with BT's own retail services. Consequently, we consider an obligation not to unduly discriminate is required to ensure that CPs can purchase interconnect circuits on terms and conditions and/or charges that allow them to compete with BT in downstream markets.

- 10.63 In order to ensure that BT complies with the obligations to provide network access and not to unduly discriminate, we are imposing additional obligations related to transparency. Transparency obligations provide third parties with access to the information needed in order to make informed decisions about BT's interconnection services. Without these obligations, not only would it be difficult for third parties to assess whether BT was meeting its obligations to provide network access and to not discriminate unduly, it may also be the case that third parties would not have sufficient information to decide which interconnection products to purchase. Transparency obligations would require BT to publish a reference offer, charges and technical information related to interconnection services with sufficient notice so that third parties could act on the information in a timely manner. Without this, BT could change products or pricing with insufficient (or ultimately without) notice, in such a way as to discriminate in favour of its retail divisions.
- 10.64 In response to BT's points about the notice period for notification of changes to charges, as for wholesale call origination and wholesale call termination, we consider that a period of 56 days is appropriate as this recognises, on the one hand, that notifications can be provided instantaneously between BT and purchasers of services and, on the other hand, that there may be a number of CPs in the supply chain between BT and the retail level, each of which requires a period of notice such that 28 days would not be sufficient notice of changes in the charges for SMP services.
- 10.65 Some stakeholders said that their agreement on reducing the notice period to 56 days was subject to commercial agreement from BT to increase notice periods from 28 to 56 days for unregulated services. It would not be appropriate to make regulation contingent on commercial agreements in competitive services. Rather, the regulation we impose should be the minimum level of intervention required to address the competition concerns we have identified. In response to the February 2013 consultation, a number of CPs indicated that they consider that 56 days notice periods would be sufficient, whether based on agreements for other services or on a standalone basis. Therefore, we consider that if 56 days notice is sufficient for the regulated services, this would be the case irrespective of any changes to notice periods for other services. Hence, we have required BT to notify charges and any changes to charges at least 56 days before the price change takes effect.
- 10.66 In addition, we are also imposing an obligation to account separately for internal and external sales of interconnect circuits to allow CPs and Ofcom to monitor BT's behaviour in relation to its obligation not to unduly discriminate.

Option 2 (Option 1 and price regulation)

- 10.67 We have set out in Sections 5 and 6 that we consider charge controls are required for wholesale call origination and wholesale call termination provided by BT as

otherwise BT would be in a position to increase prices for these services to the detriment of its competitors and ultimately consumers. Without price regulation on interconnect circuits, it would similarly be in BT's interests to increase the price of these services to impair the ability of other CPs to compete in downstream markets. If BT increased the price, CPs would be unable to purchase interconnection to BT's network from elsewhere. Consequently, BT could leverage its SMP from the wholesale call origination and call termination markets by price increases in interconnect circuits.

- 10.68 While there may be some pricing constraint flowing from the general access remedies proposed above, we do not consider that this would be sufficient, given the importance to all other CPs of interconnection to BT (due to its scale and geographic reach).
- 10.69 We therefore conclude that price regulation is required on interconnect circuits provided by BT. We consider three approaches to price regulation – fair and reasonable charges, cost orientation and charge controls – below.

Fair and reasonable charges

- 10.70 In addition to requiring network access to be provided on fair and reasonable terms and conditions, we could require BT to provide interconnect circuits at fair and reasonable charges. However, on its own, we do not consider this would provide sufficient constraint on BT's pricing. We have concluded that BT should provide interconnect circuits due to its SMP in the wholesale call origination and wholesale call termination markets, where we have also concluded it should be subject to a charge control. Requiring interconnect circuit charges to be fair and reasonable, without further pricing obligations could allow BT to set high prices that restrict downstream competition and the effectiveness of the SMP remedies imposed in the call origination and call termination markets.

Cost orientation

- 10.71 In previous reviews we have imposed cost orientation in addition to charge controls on interconnect circuits. In doing so, we have considered that LRIC plus an appropriate mark up for common costs is the preferred method for this type of regulation in communications markets.
- 10.72 In the February 2013 consultation we considered whether we should impose a cost orientation obligation alone (without a charge control) but we said this would not provide sufficient restriction on BT's pricing behaviour to address our competition concerns. No respondents disagreed with this approach.
- 10.73 In June 2013 we published a consultation on our approach to cost orientation ("the June 2013 cost orientation review") in which we set out the approaches we may take to cost orientation (both in terms of when it may be an appropriate remedy either instead of, or in addition to, a charge control and the cost standard we may use).⁶⁰¹
- 10.74 Taking into account responses to the February 2013 consultation and the June 2013 cost orientation review, we do not consider that we should impose only a cost orientation obligation on BT. This is because:

⁶⁰¹ Ofcom, *Cost orientation review consultation*, 5 June 2013, <http://stakeholders.ofcom.org.uk/consultations/cost-orientation/>

- If we were to rely solely on a cost orientation obligation and provide guidance that BT's prices should be between distributed long run incremental cost (DLRIC) and distributed stand alone costs (DSAC), there would not be sufficient constraint on BT's pricing. The DLRIC and DSAC figures reported in BT's regulatory financial statements for 2013⁶⁰² provide a wide range for each of the interconnection services. If BT were subject to just a cost orientation obligation, this could enable it to increase the prices of some, or all, of its interconnection services to levels well above costs (and, by implication, the competitive level). For example, even if no individual charges were in excess of DSAC, without further restriction on BT's pricing, and given its market power, it could set a combination of charges at or close to DSAC in such a way that it recovered more than the incremental and common costs incurred.
- On the other hand, if we provided guidance that BT should set prices based on fully allocated costs (FAC) or a variant of this (i.e. setting prices within a range of FAC, which we call FAC+), this could remove flexibility from BT efficiently to recover common costs. For example, BT's regulatory financial statements for 2012 and 2013 show that the prices for some services are below FAC whilst others are above. We do not consider that requiring BT to rebalance prices to reflect its reported FAC figures would be appropriate in addressing our competition concerns (as this may, for example, require the prices of services used by all CPs such as IBCs to be increased whilst the prices of services used by a subset of CPs, such as CSIs may reduce); and
- A cost orientation obligation would not provide the efficiency incentives inherent in price cap regulation.

Charge control

- 10.75 Since, by definition, interconnect circuits connect the BT network to another CPs' network, there may be an incentive on BT to price interconnect circuits appreciably above costs to limit competition in markets where its own downstream divisions are active.
- 10.76 We have set out above why we do not consider that other remedies would be sufficient to address this concern. Where there is a risk of a firm setting excessive prices, as we have identified in relation to interconnect circuits provided by BT, a charge control can help ensure that customers and ultimately consumers are not exploited. As well as seeking to cap price changes, our approach to charge control regulation based on a control period of three years and the use of glide paths seeks to incentivise cost efficiency on the part of the dominant provider, thereby imitating the effect of a competitive market. If BT can reduce its costs below the level expected when the cap was set, then the firm retains the increased profits, at least for the period when the control is in place.
- 10.77 A charge control would also provide certainty for purchasers of BT's interconnect circuits in that the maximum price which they could be charged would be known for the period of the review. Therefore, we have imposed a charge control to address the concerns identified.
- 10.78 Interconnect circuits can be used to carry wholesale call origination. Wholesale call origination is a one way access service where we have concluded that a LRIC+ cost

⁶⁰² BT, *Regulatory financial statements – 2013*

<http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2013/index.htm>

standard for charge controls should be used. In contrast, wholesale call termination is a two-way access service where we have concluded that a LRIC cost standard for charge controls should be used (see Section 8 of this statement).

- 10.79 Since we consider LRIC+ to be the appropriate cost standard for the one-way access service of call origination, pricing interconnect circuits used to support call origination on a LRIC basis would be inappropriate even if LRIC were appropriate for pricing interconnect circuits used to support the two-way access service of termination. While it might be argued that two sets of interconnect circuits could be introduced, one set designed and priced for call termination (i.e. on a LRIC basis) and one set designed and priced for call origination (on a LRIC+ basis), this introduces complexity. One particular complexity relates to how the level of these two sets of interconnect circuit charges is determined, including the issue of whether, and if so how, the common costs otherwise recovered from circuits used for call termination should be recovered from other regulated charges.
- 10.80 In order to avoid the inefficiency arising from under utilisation of physical circuits that may occur with separate sets of interconnect circuits, circuits could be shared by different traffic types (as now) but it would be necessary to determine the pricing rules for circuits supporting both call origination and call termination. These pricing rules would need to be sufficiently robust and not unduly complicated whilst avoiding arbitrage opportunities. For example, it would be necessary to establish the charging arrangements when the connection charge paid is for circuits initially used for termination, but then the CP wishes to convert the circuits to also be used for call origination. In this case, not only would the rental charges need to change to take account of the different traffic types (and the relative volume of each traffic type on the circuit), but also the rules would need to consider whether any additional connection payment would be needed (since the original connection charge would have been set on a LRIC basis).
- 10.81 Therefore, because it is likely to be efficient in a number of cases for interconnect circuits to be shared and because devising different LRIC and LRIC+ pricing rules (including how these then might be combined for circuits supporting both termination and origination) is likely to be complex, we do not agree that the charge control for interconnect circuits should be based on LRIC.
- 10.82 We discuss our approach to setting the level of the charge control in Annex 6 where we address the comments from BT and [X].
- 10.83 In previous reviews, we have also imposed cost orientation to provide protection against excessive pricing of individual services (in addition to the charge control which applied to the overall basket in aggregate). However, as explained in Annex 6, we consider that sub-caps on individual services are more appropriate to address this concern and so have concluded that we should not impose cost orientation in addition to the charge control.
- 10.84 We have considered whether, in addition to the charge control on the overall basket and sub-caps on individual services, we should require charges to be fair and reasonable. However, for those services within the charge control we consider the overall control and the sub-caps are sufficient. If there were services not covered by the charge control (or services within the control without specific sub-caps), or the potential for new services to be provided outside the scope of the charge control, a fair and reasonable charges condition may be relevant. The only service not directly included in the control is VICs, and the prices of VICs are based on those of the charge controlled services and substitutes to VICs also exist (i.e. LTC which is

competitively provided). We also do not consider that any new interconnect products are likely to be provided by BT during this review.⁶⁰³

- 10.85 In addition to the charge control, we are imposing on BT cost accounting and accounting separation remedies. The specific obligations we are imposing and the reasons for doing so are set out in detail below (see paragraphs 10.171 onwards).

Summary

- 10.86 Based on the discussion above, we have concluded we should impose general network access, non-discrimination and transparency obligations and a charge control on BT. We now set out the specific conditions we are imposing.

Requirement to provide network access on reasonable request

- 10.87 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as it 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 that conditions are complied with within the periods and at the times required.
- 10.88 When considering the imposition of such conditions, Ofcom must have regard to the six factors set out in section 87(4) of the Act, including, inter alia, the technical and economic viability of installing other competing facilities and the feasibility of the proposed network access.

Aim of regulation

- 10.89 We conclude that it is appropriate to impose a requirement on BT to meet reasonable requests for network access in relation to interconnect circuits, due to its SMP in the markets for wholesale call origination and wholesale call termination. This remedy is required because, without it, BT would have an incentive not to provide interconnect circuits on a reasonable basis which would reduce the effectiveness of the remedies we are imposing in the wholesale call origination and call termination markets. The ability of competing CPs to request, and to be provided with, interconnection services will facilitate competition in downstream markets by allowing providers other than BT to offer competing end-to-end narrowband services.

The condition

- 10.90 The condition will require BT to provide network access in response to such a reasonable request and that access should be provided on fair and reasonable terms and conditions.
- 10.91 As we are also imposing a charge control on BT's provision of interconnect circuits, we have excluded the requirement to provide services at fair and reasonable charges from this condition. This is because we consider that a charge control is sufficient to address our competition concerns so that additional price regulation is not required, as explained in paragraphs 10.70 and 10.84. An additional requirement for charges to be fair and reasonable, over and above the charge control, might give rise to uncertainty for BT and other CPs. In particular, it may distort the incentive properties

⁶⁰³ BT may offer new products on a commercial basis, for example transit services via its IP Exchange service.

of price cap regulation if BT considers that efficiency improvements it makes mean that prices must be reduced within the control period to keep them fair and reasonable.

Legal tests

10.92 We consider that the condition meets the criteria set out in section 47(2) of the Act. The condition is:

- objectively justifiable as its intention is to promote downstream and ultimately retail competition by ensuring third parties are able to acquire wholesale access on fair and reasonable terms where they are unable to replicate BT's network;
- non-discriminatory as we are imposing it on BT, which we conclude has SMP in both wholesale call origination and wholesale call termination services, and for which we consider that interconnect circuits are required to be provided by BT to allow remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. A similar obligation is imposed on KCOM as a result of similar concerns in relation to its SMP in wholesale call origination. We are not imposing such an obligation on other CPs that we conclude have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;
- proportionate since without such an obligation BT could refuse to provide access and this would mean other CPs would not be able to effectively compete in relevant downstream markets, but does not require BT to provide access where it is not technically feasible or reasonable; and
- transparent as it is clear the intention is to ensure that BT provides access to its networks in order to facilitate competition.

10.93 We have considered our duties under section 3 of the Act. We consider that, in ensuring Network Access is provided at the reasonable request of third parties, the condition would in particular further the interests of consumers in relevant markets by the promotion of competition.

10.94 We have considered the Community requirements as set out in section 4 of the Act. We consider that the obligation will promote competition in relation to the provision of electronic communications networks and encourage the provision of network access for the purpose of securing efficient and sustainable competition in markets for electronic communications networks and services.

10.95 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requests for new forms of network access

10.96 We conclude that it is appropriate to impose an obligation on BT regarding the process by which it will address requests for new forms of network access in terms of interconnect circuits.

10.97 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as it 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 that conditions are complied with within the periods and at the times required.

- 10.98 When considering the imposition of such conditions, Ofcom must have regard to the six factors set out in section 87(4) of the Act, including, inter alia, the technical and economic viability of installing other competing facilities and the feasibility of the proposed network access.

Aim of regulation

- 10.99 The aim of this regulation is to support access seekers in understanding the process they should follow in order to make reasonable requests for access from BT. To make such a request, the CP should provide BT with a Statement of Requirements (SOR) against which the reasonableness of the request can be assessed.

- 10.100 There are certain key principles that BT's process for handling SORs should meet in order for it to be effective. Therefore, the condition we are imposing will require BT to have in place, and follow for each SOR, an SOR process which:

- is documented end-to-end and this documentation is available to CPs;
- has reasonable timescales for each stage of the process;
- clearly identifies the criteria by which a SOR will be judged;
- sets out the information that should be provided in order for an SOR to be accepted; and
- should be agreed between BT and industry.

- 10.101 We consider that the SOR process as currently documented (based on the process previously set out by us in specific SMP conditions in the 2003 market review) meets these criteria. In 2009 we removed the requirement to adhere to the specific process as set out in the 2003 condition to allow for changes to the existing process to be made if agreed by industry and BT. We have decided to impose a condition that again sets out the main principles but allows industry to agree the specifics of any changes to the process.

Legal tests

- 10.102 Section 87(3) of the Act authorises the setting of SMP services conditions in relation to the provision of network access. We consider that that under section 87(5)(a), the condition will assist in securing fairness and reasonableness in the way in which requests for new forms of network access are made and responded to. The condition provides a framework for agreeing and implementing improvements to the existing system, while retaining a 'safety-net'.

- 10.103 We consider that the condition meets the criteria set out in section 47(2) of the Act. The condition is:

- objectively justifiable; as it recognises that a process for handling requests for new forms of network access is needed but that the condition should be flexible to allow for process improvements;

- not unduly discriminatory; as we are imposing it on BT, which we have concluded has SMP in both wholesale call origination and wholesale call termination services, and for which we consider that interconnect circuits are required to be provided by BT to allow remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. Whilst we have also concluded that KCOM has SMP in wholesale call origination and therefore certain interconnection obligations are necessary, we are not imposing a similar condition because of the much lower demand for interconnect circuits from KCOM compared to BT. We have decided not to impose such an obligation on other CPs found to have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;
- 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; as it is clear that the intention is to ensure that a process exists by which CPs can request new forms of network access and that any changes to this process that BT seeks to make are reflective of industry feedback.

10.104 We have considered our duties under section 3 of the Act. We consider that, in ensuring access seekers are able to make requests for new forms of network access based on an agreed SOR process, the condition would in particular further the interests of consumers in relevant markets by the promotion of competition.

10.105 We have considered the Community requirements as 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 purpose of securing efficient and sustainable competition in markets for electronic communications networks and services.

10.106 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

10.107 We conclude that it is appropriate to impose a condition on BT not to unduly discriminate in relation to the provision of interconnect circuits.

10.108 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.

Aim of regulation

10.109 As set out in paragraph 10.62 in the absence of a requirement not to unduly discriminate, BT could discriminate against CPs in favour of its own downstream business, or between different CPs, which would have the effect of restricting or distorting competition in the retail market.

Legal tests

10.110 We consider that the condition meets the criteria set out in section 47(2) of the Act. We believe the condition is:

- objectively justifiable; as it provides a safeguard to prevent BT from favouring its own retail businesses, to the disadvantage of its competitors as discussed in paragraph 10.62;
- not unduly discriminatory; as we are imposing it on BT, which we have concluded has SMP in both wholesale call origination and wholesale call termination services, and for which we consider that interconnect circuits are required to be provided by BT to allow remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. We have decided to impose a similar obligation on KCOM as a result of similar concerns in relation to its SMP in wholesale call origination. We are not imposing such an obligation on other CPs that we have found to have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;
- proportionate; in that it is the least restrictive means of ensuring that BT does not discriminate in favour of its own downstream operations in providing access to wholesale call termination services in a manner which would distort competition at the downstream level; and
- transparent; as it is clear that its intention is to prevent undue discrimination.

10.111 We have also considered our statutory obligations and the Community objectives set out in sections 3 and 4 of the Act.

10.112 On the basis that we have found that BT has SMP in the provision of wholesale call origination and wholesale call termination services, we consider that BT should also provide interconnect circuits to allow for the remedies we have imposed in those markets to function effectively, as BT controls key inputs used in downstream call markets. Together with an obligation to provide network access, the obligation would in particular encourage the provision of network access and service interoperability for the purpose of securing efficient and sustainable competition.

10.113 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.

10.114 Further, we consider that, in line with section 4 of the Act, the condition in particular promotes competition in relation to the provision of electronic communications networks by securing efficiency and sustainable competition in downstream markets for electronic communications networks and services, resulting in the maximum benefit for retail consumers.

10.115 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Transparency

10.116 We consider that it is appropriate to ensure that there is transparency of charges, terms and conditions in the provision of services by a dominant provider. Without such obligations, third-party providers would not be able to check that they were being provided service on fair or reasonable terms and conditions.

10.117 We have decided to impose the following obligations to provide transparency:

- requirement to publish a reference offer;

- requirement to notify charges;
- requirement to notify technical information; and
- transparency as to quality of service.

10.118 Section 87(6)(b) of the Act authorises the setting of SMP services conditions which require a dominant provider to publish all such information, and in such manner as Ofcom may direct, for the purpose of securing transparency. Section 87(6)(c) of the Act authorises the setting of SMP services conditions requiring the dominant provider to publish, in such manner as Ofcom may direct, the terms and conditions on which it is willing to enter into an access contract. Section 87(6)(d) also permits the setting of SMP services conditions requiring the dominant provider to include specified terms and conditions in the reference offer. Finally, section 87(6)(e) permits the setting of SMP services conditions requiring the dominant provider to make such modifications to the reference offer as may be directed from time to time.

Requirement to publish a reference offer

10.119 We conclude that it is appropriate to require BT to publish a reference offer (RO) for interconnect circuits.

Aim of regulation

10.120 The main reasons for requiring the publication of a RO are to assist with transparency in monitoring for potential anti-competitive behaviour and to give visibility to the terms and conditions on which other providers would be able to purchase interconnection services.

10.121 The publication of a RO would allow for speedier negotiations and might avoid possible disputes. Together with a non-discrimination requirement, the publication of a RO would give confidence to those purchasing wholesale services that they were being provided on non-discriminatory terms.

The condition

10.122 Ofcom considers that it is appropriate for the published RO to include:

- a clear description of the services on offer;
- terms and conditions including charges and ordering, provisioning, billing and dispute resolution procedures. The RO will also provide sufficient information to enable providers to make technical and commercial judgements;
- information relating to technical interfaces and points of interconnection. Such information should ensure that providers are able to make full and effective use of all the services provided;
- conditions relating to maintenance and quality (service level agreements and guarantees). The inclusion of service levels, as part of the contractual terms of the RO, that provide for a minimum acceptable level of service, will ensure that services are provided in a fair, reasonable, timely and non-discriminatory fashion; and

- terms and conditions that are fair and reasonable. This will ensure that products are offered on terms and conditions as they would in a competitive market.

Changes to the condition

10.123 In the 2009 market review, we required BT to include information relating to network components in the RO. We have removed this specific obligation, on the basis that we no longer consider that this information is required in order to assist CPs in monitoring for potential anti-competitive behaviour by BT, or to provide transparency that would allow CPs to make better informed decisions regarding purchasing interconnect circuits.

Legal tests

10.124 We consider that the condition meets the criteria set out in section 47(2) of the Act. The obligation is:

- objectively justifiable; in that it requires that terms and conditions are published allowing competing providers the ability to ensure they are receiving offers that are provided on fair and reasonable terms and are not unduly discriminatory, therefore encouraging competition to the benefit of consumers;
- not unduly discriminatory; as we are imposing it on BT, which we have concluded has SMP in both wholesale call origination and wholesale call termination services, and for which we consider that interconnect circuits are required to be provided by BT to allow remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. We are imposing a similar obligation on KCOM as a result of similar concerns in relation to its SMP in wholesale call origination. We are not imposing such an obligation on other CPs that we have found to have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;
- proportionate; in that it only requires publication of key information that is necessary for CPs to make decisions about which interconnect circuits to purchase, and whether these are offered on fair and reasonable terms and conditions and on a non-discriminatory basis, and does not require publication of additional information that is not necessary for this purpose; and
- transparent; as it is clear the obligation is designed to ensure that potential competitors have sufficient information to make entry and investment decisions and to monitor anti-competitive behaviour.

10.125 We have also considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

10.126 The requirement to publish a RO would, in combination with a requirement not to discriminate unduly, facilitate service interoperability, secure freedom of choice for wholesale customers of BT and allow CPs to make informed decisions about future entry into the relevant downstream markets. The condition would make it easier for Ofcom and other CPs in the relevant market to monitor any instances of terms and conditions which were not fair or reasonable. Therefore, we consider that the condition furthers the interests of consumers in relevant markets by the promotion of competition in line with section 3 of the Act.

10.127 Ofcom considers that the condition meets the Community requirements set out in section 4 of the Act. In particular, the condition promotes competition and facilitates the provision of network access and service interoperability for the purpose of securing efficient and sustainable competition for the maximum benefit for consumers. The publication of a RO would mean that other CPs would have the necessary information readily available to allow them to make informed investment and entry decisions.

Requirement to notify charges

10.128 We conclude that it is appropriate to require BT to publish any planned changes to charges in advance of those changes taking place.

Aim of regulation

10.129 The notification of charges at the wholesale level has the joint purpose to assist transparency for the monitoring of compliance with the charge control and to give advance warning of charge changes to competing providers who purchase wholesale access services. The latter purpose ensures that competing providers have sufficient time to plan for such changes. Notification of changes to charges therefore helps to ensure stability in markets, without which, effective downstream competition may be undermined.

The condition

10.130 We consider that the notice should include:

- A description of the access service;
- The location of terms and conditions in the RO;
- The effective date or period from which the changes will have effect; and
- The current and proposed charge.

Changes to the condition

10.131 In the 2009 market review, we required BT to give 90 days' notice before any proposed changes would be effective.

10.132 In relation to wholesale call origination and wholesale call termination, where we have found that BT holds a position of SMP, we have decided that BT should be required to provide at least 56 days' notice of changes to prices. This is because price changes are notified electronically, so changes can be notified much more quickly.

10.133 On the basis that obligations related to interconnect circuits are based on the SMP found in the wholesale call origination and wholesale call termination markets, we consider it is appropriate that BT should provide at least 56 days' notice of changes to prices for interconnect circuits.

10.134 In addition, the condition imposed in 2009 included the requirement to also include the relevant usage factors and network components in the charge notification. We have removed this, for the same reasons as we have removed this requirement from the obligation to publish a RO, as discussed above in paragraph 10.123.

Legal tests

10.135 We consider that the condition meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable; because general and reliable visibility of BT's prices is necessary to enable competitors to set prices for their services that are based on purchasing the regulated inputs. It also allows Ofcom and other CPs to monitor BT's compliance with the charge control;
- not unduly discriminatory; as we are imposing it on BT, which we have found to have SMP in both wholesale call origination and wholesale call termination services, and for which we consider that interconnect circuits are required to allow remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. We are imposing a similar obligation on KCOM as a result of similar concerns in relation to its SMP in wholesale call origination. We are not imposing such an obligation on other CPs that we have found to have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;
- proportionate; in that only information that other network providers would need (in order to adjust for any changes) is to be notified. Periods are proposed to be the minimum required to allow changes to be properly reflected in downstream offers; and
- transparent; as it is clear the intention is to ensure that BT notifies those CPs that purchase interconnect circuits of changes to charges.

10.136 We have also considered our statutory obligations and the Community requirements under sections 3 and 4 of the Act.

10.137 In particular, the condition would facilitate service interoperability and secure freedom of choice for the customers of CPs. The condition would promote the interests of purchasers of interconnection services by enabling them to adjust their downstream offerings in competition with BT, in response to changes in BT's charges. Finally, the condition would make it easier for Ofcom and BT's competitors to monitor any instances of discrimination.

10.138 For the above reasons, 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.

10.139 Ofcom considers that the condition meets the Community requirements set out in section 4 of the Act. In particular, the condition promotes competition and secures efficient and sustainable competition for the maximum benefits of consumers by ensuring that CPs have the necessary information to allow them to make informed investment and entry decisions.

Requirement to notify technical information

10.140 We conclude that it is appropriate to require BT to notify technical information. We have required that the period for notifying changes to charges should be 56 days, reduced from 90 days. However, changes to technical information may have greater impact on CPs that purchase services from BT because they may mean some physical network re-arrangement may need to be considered. Therefore, we consider

that a minimum of 90 days in advance of providing new wholesale services or amending existing technical terms and conditions is appropriate.

Aim of regulation

10.141 The aim of an obligation to provide advance notification of technical characteristics is to ensure that competing providers have sufficient time to respond to changes that may affect them. For example, a competing provider may need to introduce new equipment or modify existing equipment or systems to support a new or changed technical interface.

10.142 Technical information 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). Relevant information about network configuration is likely to include information about the function and connectivity of points of access, for example, the connectivity of exchanges to end-users and other exchanges.

The condition

10.143 The condition requires the notification of new technical information 90 days in advance of providing new wholesale services or amending existing technical terms and conditions. We continue to believe that 90 days is the minimum time that competing CPs would need to make modifications to their network to support technical changes by BT.

Legal tests

10.144 We consider that the condition meets the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable; as it enables competing CPs to make full and effective use of network access. The period allows CPs time to react to proposed changes without imposing an unnecessarily long notification period on BT that may restrict its ability to develop and deploy new features or products;
- not unduly discriminatory; as we propose to impose it on BT, which we have concluded has SMP in both wholesale call origination and wholesale call termination services, and for which we consider that interconnect circuits are required to be provided by BT to allow other remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. We are imposing a similar obligation on KCOM as a result of similar concerns in relation to its SMP in wholesale call origination. We are not imposing such an obligation on other CPs that we have found to have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;
- proportionate; as we consider that 90 days is the minimum period necessary to allow competing providers to modify their networks; and
- transparent; in that it is clear in its intention that BT notify technical information.

10.145 We consider that, by ensuring that other CPs' systems are interoperable with any changes to technical specifications that might affect their businesses, 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.

10.146 Further, we consider that, in line with section 4 of the Act, the condition 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.

Transparency as to quality of service

10.147 We conclude that it is appropriate to impose an obligation on BT to provide transparency as to quality of service. This obligation will require BT to publish such quality of service information as Ofcom may direct and will be accompanied by a direction setting out key performance indicators (KPIs) in relation to the provision of interconnect circuits.

Aim of regulation

10.148 The intention of the transparency of quality of service remedy is to monitor whether any undue discrimination is occurring by requiring the publication of data regarding the delivery of wholesale services by BT to downstream BT businesses and third-party CPs. In relation to interconnect circuits, BT may seek to gain competitive advantage in downstream markets through extended provisioning or fault repair times for CPs that compete with it in these downstream markets.

The condition

10.149 We believe that service provision and fault repair are critical areas in which to maintain transparency of BT's service levels. These areas remain critical as they are where differentiated service levels could be key determinants of a positive customer experience and could cause switching away from a CP.

10.150 In previous market reviews we have imposed a requirement on BT, through an SMP Condition and associated Direction, to publish data on specified KPIs in relation to the provision of interconnect circuits to all CPs (as an aggregate figure). These are summarised in Table 10.4 below:

Table 10.4 – BT's non-discrimination KPIs in relation to Interconnect Circuits

Proposed KPIs to be reported
Percentage of Completed Orders that were completed by the Contract Delivery Date during the Reporting Period.
Average time (in hours) during the Reporting Period for BT to achieve Restored Service after a Fault has been registered.
Total number of Committed Orders that became Completed Orders during the Reporting Period.
Number of faults where BT subsequently achieves Restored Service during the Reporting Period.
Percentage of Data Management Amendments for new numbers that become Completed Orders during the Reporting Period.
Total number of Data Management Amendments for new number ranges that became Completed Orders during the Reporting Period.

10.151 We have decided to continue with the existing quarterly reporting of KPIs for interconnect circuits as we believe they provide a useful level of transparency without being overly burdensome on BT. We have decided to remove the requirement that BT provides information to Ofcom in relation to the provision of interconnect circuits to individual CPs. Our view is that providing information to purchasers of interconnection services is sufficient, since they are best placed to raise concerns with BT about service provision. In the event of such concerns being raised formally with Ofcom, we are able to formally request relevant data from BT on a case-by-case basis.

10.152 This approach is reflected in the Direction in Annex 4.

Legal tests

10.153 We consider that the condition and associated direction meet the requirements in section 47(2). The condition and associated Direction are:

- objectively justifiable; because in the absence of a requirement to publish specific KPIs, it would not be possible to monitor if there is any undue discrimination in the quality of service provided by BT;
- not unduly discriminatory; as we have decided to impose it on BT, which we have concluded has SMP in both wholesale call origination and wholesale call termination services, and for which we consider that that interconnect circuits are required to be provided by BT to allow remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. While we have also concluded that KCOM has SMP in wholesale call origination and therefore certain interconnection obligations are necessary, we are not imposing a similar condition because of the much lower demand for interconnect circuits from KCOM compared to BT. We are not imposing such an obligation on other CPs that we have found to have SMP in wholesale call termination, for the reasons set out in paragraph 10.44;
- proportionate; as BT will only be required to publish data related to key business processes; and
- transparent; as it is clear that its intention is to monitor the quality of service provided by BT.

10.154 We consider that, in ensuring the network access that third party CPs receive from BT allows CPs to provide products that compete with those provided by BT in downstream markets, 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.

10.155 We have considered the Community requirements in section 4 of the Act and believe that the condition promotes competition and secures efficient and sustainable competition by ensuring transparency through comparison of the service levels BT provides to itself versus third-party CPs.

Charge Control

10.156 Section 87(9) of the Act authorises the setting of SMP services conditions imposing on the dominant provider price controls connected with the provision of network access.

Aim of regulation

10.157 As discussed above in paragraphs 10.67 to 10.85, CPs are dependent on the provision of interconnect circuits by BT in order to make the remedies imposed in the wholesale call origination and wholesale call termination markets effective. As such, BT has the ability and the incentive to set prices above the competitive level and we propose a charge control is necessary as a result.

The condition

10.158 The charge control condition we are imposing aims to ensure that BT does not price excessively for interconnect circuits.

10.159 In Section 11 and Annexes 6 and 7 we explain the charge control we have imposed on interconnect circuits. BT is currently subject to a charge control, which we apply to a basket of services (the interconnect services basket (ISB)). The basket includes the three types of interconnect circuits that BT provides – ISI, IEC and CSI – plus Intra-Building Circuits (IBCs) which are required on each interconnect circuit provided by these three interconnection types.

10.160 Based on our analysis in Annex 6, we have concluded that charges for the interconnect circuits basket should be subject to a constant nominal cap (i.e. controlling percentage of zero) and that individual charges should be subject to a sub cap with a controlling percentage limiting potential price rises to a maximum of 10% per annum.

Legal tests

10.161 We consider that a charge control obligation would meet the criteria set out in section 47(2) of the Act. It is:

- objectively justifiable; because, without the charge controls, BT would have the ability and incentive to price excessively to third parties which would ultimately benefit its own downstream divisions.
- not unduly discriminatory; because we are imposing the charge control on BT based on the scale of its network and the importance of interconnection to BT for all other providers. We are not imposing a charge control on KCOM in the Hull Area even though we have concluded that some specific interconnection regulation is required. We set out below in paragraph 10.206 why we consider this would not be proportionate.
- proportionate; as it requires BT to comply with the charge control, which we consider will support the level of competition we currently observe in the retail market, while allowing BT to recover its efficiently incurred costs. It also incentivises BT to improve its efficiency as it would retain any savings resulting from cost reductions for the period of the control.
- transparent; in that it is clear in its intention to control BT's charges while creating efficiency incentives and allowing BT to recover its efficiently incurred costs.

10.162 In addition to the tests set out in section 47(2) of the Act, we also consider that the proposed condition satisfies the tests set out in section 88 of the Act.

- 10.163 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears to them 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 explained above that we consider that in the absence of charge controls BT may price excessively, and therefore there is such a risk of adverse effects.
- 10.164 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of:
- i) promoting efficiency;
 - ii) promoting sustainable competition; and
 - iii) conferring the greatest possible benefits on the end-users of public electronic communications services.
- 10.165 Setting the controlling percentage at zero reasonably reflects the economic costs incurred by BT in providing interconnect circuits to its DLEs, provides the incentive to improve cost efficiency, and provides a stable trajectory of prices for TDM interconnection whilst we consider these circuits are still required. This is because of the reasons explained in Annex 6.
- 10.166 We consider that this approach promotes sustainable competition by allowing CPs to purchase interconnection services from BT (and to invest in their own infrastructure where this is efficient to do so) at prices that, along with the prices for wholesale call origination and wholesale call termination service, allow them to compete effectively at the retail level. We consider that this approach is appropriate for the purposes of conferring the greatest benefits on end users of the services.
- 10.167 We are also required, under section 88(2) of the Act, to take into account BT's investment. We have explained in Annex 6 our rationale for the level of the control proposed. That analysis considered the costs currently incurred by BT in providing physical interconnection based on the approaches described above (i.e. ISI, IEC, CSI and IBCs).
- 10.168 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.
- 10.169 In particular we have sought to impose a charge control that furthers the interests of consumers by promoting competition. We have sought through the charge control to secure efficient and sustainable competition and the maximum benefit for the persons who are customers of CPs by imposing an obligation that will ensure the charges for interconnection services provided by BT are not set excessively, but will also allow BT to recover its efficiently incurred costs.
- 10.170 We have considered the Community requirements set out in Section 4 of the Act and believe that the condition meets these requirements. Specifically, we believe that 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 setting a charge control that seeks to promote competition.

Cost accounting

10.171 We consider that it is appropriate that BT is required to comply with obligations governing cost accounting systems and processes as set out in *The regulatory financial reporting obligations on BT and Kingston Communications Final Statement and notification*, published in July 2004 (the “July 2004 Statement”),⁶⁰⁴ for the following reasons:

- Cost accounting ensures CPs and Ofcom have the necessary information to monitor the effectiveness of remedies, in particular to ensure that the charge control remedies we are implementing continue to address the competition problems identified, and to enable timely intervention should such intervention ultimately be needed;
- Cost accounting also ensures we have the necessary 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;
- Cost accounting obligations further ensure that BT records all information necessary for the purposes listed above at the time that relevant transactions occur, on an ongoing basis. Absent such a requirement, there is a strong possibility that the necessary information would not be available when it is required, and in the necessary form and manner; and
- The imposition of cost accounting obligations ensures that wholesale costs are attributed across the wholesale markets (and the individual services within them) in a consistent manner. This mitigates the risk of over-recovery of costs or that costs might be loaded onto particular products or markets.

10.172 We have concluded that BT will still be required to publish FAC data at the service level. This is because the interconnection charge controls are informed by an analysis of BT’s costs. The publication of FAC information will aid transparency, and allow CPs and Ofcom to monitor the effectiveness of the charge controls. It will also support market reviews.

10.173 We believe that it is necessary for BT to provide this information for each of the regulated services. In the interconnect basket there are a wide range of services, and CPs might purchase some but not all of these services. Service level information will provide the costs of provision of each service, allowing Ofcom and CPs to monitor the effectiveness of the charge control basket and sub-caps in controlling each individual service.

10.174 As part of this review we have concluded that BT will not be subject to a cost orientation obligation for interconnection services. Some CPs argued that BT should nonetheless still be required to publish DLRIC and DSAC information. We do not agree that this information is required by CPs as CPs will no longer need this to

⁶⁰⁴ Ofcom, *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf . See also Ofcom, *Changes to BT’s regulatory financial reporting and audit requirements*, May 2007, <http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf> and Ofcom, *Changes to BT and KCOM’s regulatory and financial reporting 2012/13 update*, January 2013, <http://stakeholders.ofcom.org.uk/binaries/consultations/bt-kcom-2012-13/summary/condoc.pdf>

monitor compliance with a cost orientation obligation (or compliance with remedies we are imposing). Therefore we conclude that BT will no longer be required to publish DLRIC and DSAC information. This is consistent with our approach and reasoning in other recent decisions where we have removed cost orientation obligations.⁶⁰⁵

10.175 However, we will continue to require BT to provide DLRIC and DSAC information to Ofcom on an annual, confidential basis. In setting the charge control for interconnect circuits we have taken account of BT's costs. As part of our analysis we have looked at FAC, DLRIC and DSAC levels for each service within the basket. Because BT's costs are an important part of our analysis when determining the level of the charge control, we have concluded that BT must provide DLRIC and DSAC data to us annually, on a confidential basis, for interconnect circuits to allow us to monitor the effectiveness of the charge control. Such cost data also informs our market reviews, in particular our assessment of SMP and our analysis of appropriate remedies where such SMP is present.

10.176 We note that while we impose cost accounting on BT as part of this market review, the specific changes to BT's regulatory reporting requirements (in this case in particular around DSAC/DLRIC reporting) will be implemented as part of Ofcom's annual update to the regulatory reporting obligations (as has been our practice in the past).

Aim of regulation

10.177 Ofcom believes it is appropriate to retain cost accounting obligations for the reasons set out at paragraphs 10.171 to 10.176 above.

Conditions

10.178 BT is required to comply with obligations governing cost accounting systems and processes as set out in an Ofcom statement published in 2004.⁶⁰⁶ The outputs, relevant to this review, include:

- Preparation of a variety of financial statements;
- Preparation of extensive supporting documentation explaining how the financial statements have been put together;
- Provision of an independent assurance statement;
- Publication of information; and
- Preparation of reconciliation statements.

⁶⁰⁵ See *Business connectivity market review*, 28 March 2013,

<http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/>

⁶⁰⁶ Ofcom, The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting, July 2004,

http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf.

See also Ofcom, Changes to BT's regulatory financial reporting and audit requirements, May 2007,

<http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf> and

Ofcom, Changes to BT and KCOM's regulatory and financial reporting 2012/13 update, January 2013, <http://stakeholders.ofcom.org.uk/binaries/consultations/bt-kcom-2012-13/summary/condoc.pdf>

Legal tests

10.179 Under sections 87(9) to 87(11) and 88 of the Act, appropriate cost accounting obligations may be imposed on dominant providers in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities.

10.180 We consider that the condition meets the criteria set out in section 47(2) of the Act. The obligation is:

- objectively justifiable, for the reasons set out above;
- not unduly discriminatory. It is not imposed on KCOM since we do not feel that it would be proportionate to do so. While KCOM is subject to price regulation in the form of a fair and reasonable charges obligation, we do not believe that this, or KCOM's situation, constitutes, in this particular case, sufficient justification to impose the regulatory burden of a cost accounting obligation. This is particularly the case given that KCOM is not subject to a charge control and due to the much lower demand for interconnect circuits from KCOM compared to BT;
- proportionate; since only the information that is necessary to support transparency is required to be provided; and
- transparent; as it is clear the intention is to monitor the effectiveness of price control remedies and to support market reviews. The particular cost accounting requirements of BT are clearly documented in the July 2004 statement.⁶⁰⁷

10.181 In addition to the tests set out in section 47(2) of the Act, Ofcom is also required to ensure that the condition satisfies the tests set out in section 88 of the Act.

10.182 Section 88(1)(b) of the Act states that Ofcom are not to 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 pricing effects arising from price distortion and it also appears that the setting of the condition is appropriate for the purposes of:

- i) promoting efficiency;
- ii) promoting sustainable competition; and
- iii) conferring the greatest possible benefits on the end users of public electronic communications services.

10.183 Section 88(2) also requires us to take account of the extent of the investment when setting this type of condition.

10.184 We have identified the risk of excessive pricing by BT of interconnect services and imposed a charge control and other remedies which seek to promote efficiency and sustainable competition and confers the greatest possible benefits on the end users of public electronic communications services. The cost accounting remedy supports the effectiveness of our regulatory approach in this market. We have also taken

⁶⁰⁷ Ofcom, *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf.

account of the extent of the investment by BT in the matters to which the cost accounting obligations relate.

10.185 We have also considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

10.186 We consider that the imposition of a cost accounting obligation 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 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 this obligation will allow the monitoring of the effectiveness of obligations designed to curb potentially damaging exploitation of SMP – including the setting of prices at excessive levels.

10.187 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.

Accounting Separation

10.188 We conclude that it is appropriate to retain the accounting separation obligation on BT in relation to interconnect circuits. Under section 87(7) and 87(8) of the Act, appropriate accounting separation obligations may be imposed on the dominant provider in respect of the provision of network access, the use of the relevant network and the availability of relevant facilities.

Aim of regulation

10.189 The accounting separation obligation requires BT to report separately for each of the relevant markets and services, and account separately for internal and external revenues.⁶⁰⁸ This will provide more detailed information (and therefore transparency) than that derived from the statutory financial statements of the notified operator, and allow Ofcom, and third parties, to monitor the activities of BT to ensure that it does not discriminate in favour of its own downstream business. In the light of this, we are retaining the existing obligation and the associated reporting requirements. BT will therefore publish information including revenue, prices and volumes at a service level, separately identifying internal and external activities. BT will also publish FAC at a market level.

Legal tests

10.190 We consider the condition meets the criteria set out in section 47(2) of the Act. The obligation is:

⁶⁰⁸ Article 11 of EC Directive 2002/19/EC of 7 March 2002 on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), as amended by Directive 2009/140/EC; See also Commission Recommendation of 19 September 2005 on accounting separation and cost accounting systems under the regulatory framework for electronic communications (2005/698/EC).

- objectively justifiable; as it is necessary to allow monitoring for compliance with the requirement not to unduly discriminate;
- not unduly discriminatory; as we are imposing it on BT, which we conclude has SMP in both wholesale call origination and wholesale call termination services, and for which we consider that interconnect circuits are required to allow remedies imposed in these markets to function effectively as explained in paragraphs 10.36 to 10.40 above. Whilst we have also concluded that KCOM has SMP in wholesale call origination and therefore certain interconnection obligations are necessary, we are not imposing a similar condition because of the much lower demand for interconnect circuits from KCOM compared to BT. We are not imposing such an obligation on other CPs found to have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;
- proportionate; as it is necessary as a mechanism to allow us and third parties to monitor potentially discriminatory behaviour by BT; and
- transparent; as it is clear the intention is to monitor compliance with specific remedies and the particular accounting separation requirements of BT are clearly documented.⁶⁰⁹

10.191 We have considered our statutory obligations and the Community requirements set out in sections 3 and 4 of the Act.

10.192 We consider that the imposition of an accounting separation obligation is necessary and proportionate to promote competition in relation to the provision of electronic communications networks and services; to ensure the provision of network access 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 the potentially damaging exploitation of market power – in particular the requirement not to unduly discriminate - can be effectively monitored and enforced.

10.193 We have considered the Community requirements set out in section 4 of the Act and believe that the 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 ensuring BT complies with remedies implemented to promote competition.

Regulation of KCOM's provision of interconnection

Proposals in the February 2013 consultation

10.194 We proposed to impose the following obligations on KCOM:

- Requirement to provide network access on reasonable request;
- Requirement not to unduly discriminate;

⁶⁰⁹ Ofcom, *The regulatory financial reporting obligations on BT and Kingston Communications, Final Statement and notification: Accounting separation and cost accounting*, July 2004, http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf.

- Requirement to publish a reference offer;
- Requirement to notify charges; and
- Requirement to notify technical information.

10.195 As for BT, we proposed the following changes:

- In the requirement to publish a reference offer, we removed the obligation to include information relating to network components; and
- In the requirement to notify charges, we proposed to reduce the notification period to 56 days and to remove the obligation that the notice should include the relevant usage factors for the network components used to provide the service.

Stakeholder responses to the February 2013 consultation

10.196 KCOM agreed with our proposed approach to regulating interconnect circuits. TalkTalk agreed KCOM should be required to provide interconnect circuits but did not comment on the obligations we proposed to impose on KCOM.⁶¹⁰

10.197 No respondents disagreed with our proposals.

Our analysis and conclusions

10.198 In this section we set out the remedies we are imposing to address our concerns. We start by discussing general options for remedies:

- Option 1: general access and non-discrimination remedies; and
- Option 2: price controls in addition to general access and non-discrimination remedies.

10.199 Having discussed the approach that we consider to be most appropriate, we then discuss each specific condition in relation to whether it meets the relevant legal tests for imposing such conditions.

Option 1 (access and non-discrimination obligations)

10.200 We have explained in paragraphs 10.41 to 10.43 our reasons for imposing obligations on KCOM to provide interconnect circuits.

10.201 In the absence of regulatory remedies KCOM could restrict access to other CPs and this could in turn restrict competition in the provision of downstream services by competing CPs. Therefore, we consider that it is important that KCOM provides interconnection on fair and reasonable terms to all CPs that request access.

10.202 As set out in paragraph 10.42, it is less clear that KCOM would be able to leverage its SMP in wholesale call termination in the way that BT might due to the much smaller scale of its network. Therefore, we have not based our approach to interconnect circuits on our finding of SMP in the wholesale call termination market. We recognise that in addition, KCOM provides significantly lower volumes of wholesale call origination than BT. However, as for BT (as discussed in paragraph

⁶¹⁰ TalkTalk response to February 2013 consultation, response to Q10.1 to Q10.3

10.62), we consider that KCOM could seek to discriminate against other CPs through the provision of interconnect circuits in favour of its own downstream businesses. Therefore, we consider that a no undue discrimination obligation is required in relation to interconnect circuits.

10.203 In order to ensure KCOM is complying with the obligations to provide Network Access and the requirement not to unduly discriminate, we propose that additional obligations related to ensuring transparency are required. Transparency obligations would provide third parties with access to the information needed in order to make informed decisions about purchasing KCOM's interconnection services. Without these obligations, not only would it be difficult for third parties to assess whether KCOM was meeting its obligations to provide network access and to not discriminate unduly, it may also be the case that third parties would not have sufficient information in order to decide which interconnection products to purchase from KCOM. We have concluded that KCOM should publish a reference offer, charges and technical information related to interconnection services with sufficient notice so that third parties can act on the information in a timely manner. Without these conditions, KCOM could change products or pricing with insufficient or no notice to its wholesale customers with the effect of discriminating in favour of its downstream divisions.

10.204 However, we are not imposing an obligation for KCOM to account separately. This is due to the low volume of circuits that KCOM provides externally and because it does not provide interconnect circuits to support its own retail services in the Hull area.

Option 2 (Option 1 and price controls)

10.205 We have set out above that in order to secure the supply of interconnect circuits by KCOM on terms that allow CPs to compete with it in downstream markets, we consider that network access, non-discrimination and transparency obligations are required. We now consider whether these are sufficient to address our concerns or whether further remedies to address specific pricing concerns are also required.

10.206 We have concluded that BT should be subject to price regulation in addition to general network access and non-discrimination obligations and have imposed a charge control. Given the volume of supply of these services by KCOM we consider that imposing a similar form of price regulation on KCOM would be disproportionate.

10.207 Because we have imposed a charge control on BT for interconnect circuits, we do not consider it appropriate to also impose additional requirements for charges to be fair and reasonable on BT. However, as we have decided not to impose a charge control on KCOM, we consider it is necessary to impose a requirement that charges should be fair and reasonable and we consider that this would provide sufficient protection from the risk of excessive prices for purchasers of interconnect circuits from KCOM.

10.208 Because of the low volume of interconnect circuits that KCOM provides we have concluded it would not be proportionate to require it to provide cost accounting data.

Summary

10.209 Based on the above, we have concluded that we should impose general network access, non-discrimination and transparency obligations on KCOM.

Requirement to provide network access on reasonable request

10.210 Section 87(3) of the Act authorises Ofcom to set SMP services conditions requiring the dominant provider to provide network access as it 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 that conditions are complied with within the periods and at the times required.

10.211 When considering the imposition of such conditions, Ofcom must have regard to the six factors set out in section 87(4) of the Act, including, inter alia, the technical and economic viability of installing other competing facilities and the feasibility of the proposed network access.

Aim of regulation

10.212 We conclude that it is appropriate to impose a requirement on KCOM to meet reasonable requests for network access in relation to interconnect circuits, due to its SMP in the market for wholesale call origination. This remedy is required because, without it, KCOM would have an incentive not to provide interconnect circuits on a reasonable basis which would reduce the effectiveness of the remedies we have proposed in wholesale call origination. The ability of competing CPs to request, and to be provided with, interconnection services will facilitate competition in downstream markets by allowing CPs other than KCOM to offer competing end-to-end narrowband services.

The condition

10.213 The condition will require KCOM to provide network access in response to such a reasonable request and that access should be provided on fair and reasonable terms, conditions and charges. It will not require KCOM to provide network access in cases where the request is not reasonable.

10.214 We are not imposing a charge control on KCOM. Therefore, we conclude that KCOM should provide interconnect circuits on fair and reasonable terms, conditions and charges.

Legal tests

10.215 We consider that the condition meets the criteria set out in section 47(2) of the Act. The condition is:

- objectively justifiable, as its intention is to promote downstream and ultimately retail competition by ensuring third parties are able to acquire wholesale access on fair and reasonable terms where they are unable to replicate KCOM's networks;
- non-discriminatory, as we are imposing it on KCOM, which we have concluded has SMP in wholesale call origination, and for which we consider that interconnect circuits are required to be provided by KCOM to allow remedies imposed in this market to function effectively. A similar obligation is imposed on BT and the difference (i.e. the requirement for KCOM to supply at fair and reasonable charges) is because we are not imposing a charge control on KCOM due to the low volume of supply. We are not imposing such an obligation on other

CPs that we have found to have SMP in wholesale call termination only, for the reasons set out in paragraph 10.44;

- proportionate, since without such an obligation KCOM could refuse to provide access and this would mean that other CPs would not be able to effectively compete in relevant downstream markets, but does not require KCOM to provide access where it is not technically feasible or reasonable; and
- transparent, as it is clear the intention is to ensure that KCOM provides access to its networks in order to facilitate competition.

10.216 In addition to the tests set out in section 47(2) of the Act, Ofcom is 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.

10.217 Section 88(1)(a) of the Act requires that Ofcom must not impose price control conditions unless it appears to them 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 such regulation of its pricing KCOM may price excessively, and therefore conclude that there is such a risk.

10.218 Section 88(1)(b) of the Act requires that the charge control condition should be appropriate for the purposes of:

- i) promoting efficiency;
- ii) promoting sustainable competition; and
- iii) conferring the greatest possible benefits on the end-users of public electronic communications services.

10.219 We consider that fair and reasonable charges will prevent KCOM from passing on inefficiently incurred costs to other wholesale providers through excessively high prices. In this way, this condition supports the aim of improved efficiency.

10.220 We also consider that the provision of network access on fair and reasonable terms will promote sustainable competition by ensuring that other CPs can effectively compete at the retail level. We consider this to be the appropriate approach for the purposes of conferring the greatest benefits on end-users of the services.

10.221 We are also required, under section 88(2) of the Act, to consider KCOM's investment. We believe that fair and reasonable charges will allow KCOM's costs to be taken into account and will also provide for common cost recovery. This condition is therefore an appropriate basis upon which to control KCOM's prices.

10.222 We have considered our duties under section 3 of the Act. We consider that, in ensuring Network Access is provided at the reasonable request of third parties, the condition would in particular further the interests of consumers in relevant markets by the promotion of competition.

10.223 We have considered the Community requirements as 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 purpose of securing efficient and sustainable competition in markets for electronic communications networks and services.

10.224 For the reasons set out above, we consider that the condition is appropriate to address the competition concerns identified, in line with section 87(1) of the Act.

Requirement not to unduly discriminate

10.225 We conclude we should impose a condition on KCOM not to unduly discriminate in relation to the provision of interconnect circuits. The condition, the rationale for this regulation and the legal tests are the same as discussed above for BT in paragraphs 10.107 to 10.115.

Transparency

10.226 As for BT, we consider that it is appropriate to ensure that there is transparency of charges, terms and conditions in the provision of services by KCOM.

10.227 We conclude that we should impose the following obligations on KCOM to provide this transparency:

- requirement to publish a reference offer;
- requirement to notify charges; and
- requirement to notify technical information.

10.228 We are not imposing an obligation relating to transparency as to quality of service – which we have imposed on BT. This is because we believe the obligation to provide network access on reasonable request and the obligation to publish a reference offer are likely to be sufficient. A requirement to publish quality of service information is likely to be disproportionate, given the low volumes of interconnect circuits likely to be provided by KCOM.

Requirement to publish a reference offer

10.229 We conclude we should require KCOM to publish a RO for interconnect circuits. The condition, the rationale for the regulation and the legal tests are the same as discussed above for BT in paragraphs 10.119 to 10.127.

Requirement to notify charges

10.230 We consider it appropriate to impose a requirement on KCOM to publish any planned changes to charges in advance of those changes taking place.

10.231 As discussed above in relation to the similar condition we are imposing on BT, we have decided to reduce the notice period to 56 days for the same reasons as discussed in paragraphs 10.131 to 10.134.

10.232 The condition, the rationale for this condition and the legal tests are the same as discussed above for BT in paragraphs 10.128 to 10.139.

Requirement to notify technical information

10.233 We consider that it is appropriate to retain a requirement on KCOM to notify technical information. We are imposing a similar obligation on BT and have said that a minimum of 90 days is required (see paragraph 10.140). We consider that the same is true in the case of KCOM and have concluded that KCOM should give a minimum of 90 days' notice for changes to technical information.

10.234 The proposed condition, the rationale for this condition and the legal tests are the same as discussed above for BT in paragraphs 10.140 to 10.146.

Section 11

Charge control specification

Introduction and summary of our decisions

- 11.1 In Sections 5, 6 and 10 we have explained our decisions to impose controls on charges for wholesale call origination, wholesale call termination and interconnect circuits, respectively. In Sections 8, 9 and 10 we have explained the reasons for adopting particular cost standards in our charge controls on these services and we have explained our approach to cost modelling.
- 11.2 This section explains how we will implement the network charge controls (NCC) and how we will assess compliance. In summary:
- we will set a charge control that lasts for 3 years;
 - there will be separate baskets for wholesale call origination, wholesale call termination and interconnect circuits;
 - wholesale call termination will be set at the NGN LRIC level from 1 January 2014;
 - wholesale call origination will be set at the NGN LRIC+ level (including an additional mark-up for common costs no longer recovered from FTRs) from 1 January 2014;⁶¹¹
 - the charge control on wholesale call origination and wholesale call termination will be based on a weighted average of charges at different times of day;
 - the interconnect services basket will include sub-caps on individual services but not a cost orientation obligation; and
 - the NTS Retail Uplift and PRS Bad Debt Surcharge will be capped at current levels until the new NGCS regime takes effect.

Charge control duration

- 11.3 In the February 2013 consultation, we proposed a three-year charge control for the NCC. Three years reflects the new market review cycle specified in the Framework Directive as amended in 2009 (effective from May 2011).⁶¹² We did not receive any objections from stakeholders in relation to the proposed three-year duration of the next NCC. We have therefore decided to impose a three-year charge control for the NCC. The NCC will run from 1 October 2013 until 30 September 2016.

⁶¹¹ As explained below, the wholesale call origination basket will include calls with and without operator assistance.

⁶¹² Art 16 of the Framework Directive 2002/21/EC, as amended by Directive 2009/140/EC

Effective date for new FTRs and wholesale call origination rates

Proposals in the February 2013 consultation

- 11.4 In the February 2013 consultation, we identified the benefits of moving FTRs to LRIC as soon as possible, and our assessment did not indicate that there were potential adverse consequences on consumers, competition or investment that would cause us to deviate from this. Therefore, we proposed that FTRs would be set at LRIC on the first day of the new charge control period (i.e. 1 October 2013).
- 11.5 We also proposed that the cap for wholesale call origination should be linked to that for wholesale call termination, with an adjustment to rates at the start of the charge control (1 October 2013) to bring them in line with the new LRIC+ rates (including the additional common cost mark-up).

Stakeholder responses to the February 2013 consultation⁶¹³

- 11.6 In response to the February 2013 consultation, 6 CPs (including 3 mobile CPs) agreed with our proposal to set FTRs at LRIC from 1 October 2013.⁶¹⁴ These CPs variously cited the following reasons for supporting our proposal:
- it would provide regulatory consistency between MTRs and FTRs as soon as possible, further noting that MTRs have been set at LRIC since 1 April 2013;
 - the proposed date at which termination rates should reach LRIC levels under the EC Recommendation has already passed;
 - unlike the review of mobile call termination, the prospect of an immediate reduction in termination rates was raised early on in the consultation process by various parties (and therefore there was not an expectation of delay); and
 - [X]⁶¹⁵ and [X]⁶¹⁶ have also indicated that they intend to launch new services on the basis of FTRs being reduced to LRIC on 1 October 2013 (or without undue delay).
- 11.7 16 stakeholders (including BT) raised concerns about the speed of adjustment under our proposals.⁶¹⁷ Those that objected to an immediate reduction in FTRs to LRIC variously argued that:
- the case for moving FTRs to LRIC is weaker than for MTRs because the absolute level of FTRs is lower. Consequently, an immediate reduction is a disproportionate measure;
 - our proposals would severely disrupt some business models where 1-5 year contracts are used;

⁶¹³ Annex 9 provides further detail of the responses to the February 2013 consultation and our analysis of those responses.

⁶¹⁴ TalkTalk, Three, Vodafone, EE, Verizon, [X]

⁶¹⁵ [X]

⁶¹⁶ [X]

⁶¹⁷ BT, Colt, Magrathea, Resilient Networks, Virgin Media, Telephony Services Ltd, Federation of Communication Services, ITSPA, Lanonyx Telecoms, KCOM, Lexgreen, Simwood eSMS, Telappliant, [X],[X],[X].

- stakeholders expected us to use a glide path because we generally adopt glide paths when setting charge controls and, in particular, we used a glide path when reducing MTRs to LRIC;
 - there has been limited progress across the EU in implementing the 2009 EC Recommendation and FTRs set in other countries using LRIC appear to be significantly higher than the rates we were proposing;
 - competition would be adversely affected because some CPs would gain from our proposals and some CPs would lose;
 - some consumers will be harmed by increasing prices and the potential loss of some services;
 - our proposals would disrupt investment decisions due to the impact on available funds; and
 - our proposals would lead to an increase in nuisance calls.
- 11.8 A number of CPs also expressed a concern about our proposals to set wholesale call origination rates at the NGN LRIC+ level on 1 October 2013. These CPs made reference to the disruption caused to business models by increasing wholesale call origination rates in the NTS sector (particularly ahead of the introduction of the unbundled NGCS arrangements).
- 11.9 CPs that objected to an immediate reduction in FTRs typically favoured glide paths ranging between 18 months and 3 years.

Our analysis and conclusions

- 11.10 For the reasons set out in Section 8, consistent with our view in the February 2013 consultation, we continue to believe that FTRs should be set at LRIC as soon as possible. We also consider that the cap on wholesale call origination rates should be increased to avoid a competitive distortion in common cost recovery at the same time that FTRs move to LRIC.
- 11.11 A number of CPs made arguments about the adverse consequences of setting FTRs at LRIC too quickly. However, for the reasons set out below and in Annex 9, we do not consider that this evidence is sufficient to outweigh the benefits we have identified in setting FTRs at LRIC as soon as possible.
- 11.12 Our analysis suggests that the overall impact on fixed CPs of setting FTRs at LRIC will be less than was the case from the reduction in MTRs to LRIC – which at the time of this statement will have been at LRIC for more than 6 months.⁶¹⁸ Nevertheless, we recognise that there are practical and contractual processes that CPs must go through when rates are changed – including those determined by ex-ante regulation.

⁶¹⁸ In the March 2011 MCT statement (footnote 433), we calculated that the reduction in MTRs was 3.5ppm in 2008/09 prices and equated to around £8 per subscriber (in 2012/13 prices this would be approximately £9.44) and (in paragraph 10.34.4) around 4% of MNO retail revenues. The current reduction in FTRs is just under 0.2ppm in 2012/13 prices, which amounts to around £2.04 per fixed line, just over 0.6% of retail revenues from calls, access and broadband.

11.13 In assessing the impact on individual CPs we consider the following to be of relevance:

- As part of this market review, we have specifically considered the regulatory notice periods for changes to FTRs. While views on the appropriate length of notice periods varied (with some CPs arguing for 28 days, and other CPs arguing for 90 days), we have concluded that 56 days is appropriate. In doing so, we considered that use of email and online publication means that price notifications can now be almost instantaneous. However, we also recognised that CPs need to have sufficient notice of wholesale price changes so they can adjust their own offerings in a timely manner. Taking account also of contractual notice periods in retail contracts, we have concluded that 56 days would be appropriate.
- Although in the February 2013 consultation we proposed that regulatory notice periods might be relaxed somewhat in order to allow the new FTRs to be effective from 1 October 2013, we now believe that it is appropriate to allow the new FTRs to work through the contractual chain in the ordinary manner, given the relative size of the change to both FTRs and call origination rates we are imposing.
- While from 1 October 2013, the new 56 day notice period might enable the new rates for wholesale call termination and wholesale call origination to be effective from 1 December 2013, the reduction in FTRs (and increase in wholesale call origination rates) is larger than anticipated in the February 2013 consultation. It also starts from a rate which is currently one of the lowest in the EU and will move to a LRIC level which is likely to be the lowest in Europe.⁶¹⁹
- The process of setting rates will include undertaking the necessary internal analysis and going through internal governance for the changes that will need to be made in FTRs, call origination rates and, if necessary, charges for downstream services. As billing cycles generally run from the start of each month, this would mean that, practically, 1 January 2014 is the earliest that new rates could be accommodated. As our final decision is not published until 26 September 2013, we do not believe 46 working days would provide sufficient time for BT to finalise its new rates and notify them in time to take effect on 1 December 2013.
- Further, because our fair and reasonable guidance on FTRs presumes all CPs will meet their obligations by setting rates that are symmetrical to the benchmark LRIC rate applied to BT, each of the other 171 CPs that provide wholesale call termination services will also need to consider their rates based on those notified by BT. While the regulatory notice period on these CPs is shorter than that imposed on BT, the commercial interconnect agreement with BT – the Standard Interconnect Agreement (SIA) – requires 56 days' notice of a rate change.

⁶¹⁹ The latest BEREC termination rates benchmark snapshot (January 2013) shows the UK with an FTR (0.28 euro cents for "layer 1") considerably lower than the European average (0.5 euro cents). Of the 34 countries listed only 5 had lower rates – Denmark, Sweden, Greece, Italy and France – although we note that the analysis excludes the lower rated weekend calls in the UK (which would further lower the UK rate reported).

http://berec.europa.eu/eng/document_register/subject_berec/reports/1279-termination-rates-benchmark-snapshot-as-of-july-2012-integrated-report-on-mobile-termination-rates-amp-sms-termination-rates As far as we are aware, since the BEREC report, only Malta and Ireland have moved to LRIC FTRs, although the rates in question would be above the LRIC-based cap for the UK from 1 January 2014.

- There are certain CPs affected by the new regulated rates with very different business models from those of typical fixed CPs providing both retail call origination and wholesale call termination. In particular, we are aware that some CPs provide value added inbound call management services to large users (e.g. businesses, government agencies, etc) and we understand that the contracts covering these services will often deal exclusively with inbound calls and not outbound calls (so there is no offsetting benefit from LRIC FTRs paid to other CPs). Companies providing such inbound call management services are therefore likely to need to make significant adjustments to their businesses in light of the reduction in FTRs. An effective date for the new rates of 1 January 2014 provides a short period for these CPs to commence any necessary negotiations with their customers and/or begin to change their business models. We note that this period will now be slightly longer than the period proposed in our February 2013 consultation (which would have been six weeks).
- Nevertheless, we are not convinced that it would be appropriate to delay the date when the new rates become effective beyond 1 January 2014 until such time as these alternative CPs might have progressed negotiations and/or business changes to an advanced stage (or indeed completion). Doing so would delay the benefits that arise from setting FTRs at LRIC.⁶²⁰
- We have assessed the impact of the changes in FTRs and wholesale call origination rates on the NTS value chain. In light of this analysis, we do not consider that the effects in the NTS value chain give rise to particular concerns that would otherwise cause us to delay the date at which we propose to set FTRs at LRIC (and wholesale call origination rates at the new LRIC+ levels).
- Although some CPs raised concerns that our proposals could increase the level of nuisance calls, we do not consider that we have received compelling evidence that a reduction in FTRs will lead to an increase in such calls. In any case, we currently have a programme of work in place to deal with nuisance calls and do not believe that it would be appropriate to use remedies designed to address the problem of market power in termination to try and steer policy outcomes in another area.

11.14 In conclusion, considering the benefits to competition and ultimately to consumers, but also recognising the commercial and practical implications of notice periods, and the associated impact on certain CPs, we consider that we should move to FTRs at LRIC and wholesale call origination at the new LRIC+ rates from 1 January 2014.

Period from 1 October 2013 to 31 December 2013

11.15 In the period 1 October 2013 to 31 December 2013, we have concluded that the rate for each service in the call termination basket should be no higher than the rate prevailing on 30 September 2013.

11.16 In the period 1 October 2013 to 31 December 2013, we have also concluded that the rate for each service in the wholesale call origination basket should be no higher than the rate prevailing on 30 September 2013.

⁶²⁰ We also note that CPs which are net purchasers of wholesale call termination will gain from FTRs at LRIC, as will those introducing new services or tariffs in response to lower FTRs. For example, two CPs - [X] and [Y] - have already indicated that they intend to launch new services as a result of our consultation proposal to cap FTRs at LRIC from 1 October 2013.

- 11.17 In Annex 6 we explain that in previous NCCs, administrative costs have been recovered via BT's separate Product Management, Policy and Planning (PPP) per minute charge. We also explain that in this NCC we have decided to recover administrative costs through wholesale call origination rates (with the exception of some specific PPP costs that have been identified as incremental to call termination and will therefore be included in the FTR).
- 11.18 During the period 1 October 2013 to 31 December 2013, wholesale call origination rates, FTRs and PPP rates will continue to be separately controlled. Therefore, we have decided that during this period the rate for each service in the PPP basket should be no higher than the rate prevailing on 30 September 2013.⁶²¹

Charge control design

Proposals in the February 2013 consultation

- 11.19 In the February 2013 consultation we made a number of proposals relating to charge control design, namely:
- **Basket design** - We proposed to create separate baskets for the charge controls for wholesale call origination, wholesale call termination and interconnect circuits, due to differences in competitive conditions relating to wholesale call origination and wholesale call termination and due to differences in the structure of charges for interconnect circuits (connections and rentals as opposed to per minute charges). As outlined in Section 5, we also proposed to set a cap on the NTS retail uplift as a separate basket and maintain the current separate control on the PRS Bad Debt surcharge as part of NTS transitional arrangements and until the new NTS regime is implemented.
 - **Time-of-day pricing** – We proposed to maintain a weighted average cap on wholesale call origination and wholesale call termination, taking into account differences in charges at different times of day (the 'network tariff gradient').⁶²² We explained that we believed this was preferable to a flat rate cap because it would allow BT to manage voice traffic on its network by applying peak load pricing. We acknowledged that a flat-rate cap would potentially simplify compliance, but we did not consider that this was a strong enough reason for depriving BT of some ability to manage network usage. We also explained that our proposed changes to the way in which price changes were treated in the charge control would avoid there being abuse of the weighted average cap.
 - **Wholesale call origination with and without operator assistance (OA)** – We proposed to include wholesale call origination with OA within the wider call origination basket, as we found that the competitive conditions of wholesale call origination with OA were not substantively different from those for the service excluding OA.

⁶²¹ In reaching this conclusion we have considered the following: first, cost analysis suggests that PPP costs have been reducing since 2010 and that prices are close to or the same as unit FAC; second, given the short time frame, this is a straightforward and proportionate approach; third, it is consistent with our approach used for FTRs and wholesale call origination rates from 1 October 2013 to 31 December 2013.

⁶²² BT Wholesale, *BT's Network Tariff Gradient*,
<https://www.btwholesale.com/shared/document/CPL/RHS/timeofday.doc>

- **Sub-caps for interconnect circuits** – We proposed to use sub-caps, rather than cost orientation remedies for the interconnect circuit basket in order to protect interconnecting CPs from the risk of significant price increases on individual services. Our approach took into account three factors: (i) the current level of charges, (ii) regulatory certainty and (iii) our approach in similar charge controls.
- **Prior year revenue weights** – We proposed to adopt prior year revenue weights when testing compliance with the charge control, as opposed to current year revenue weights, since this would make BT's task of complying with the charge control less complex and we did not consider that there was a material risk of abuse.
- **Multiple price changes during a year** – We proposed to modify certain technical aspects of the charge control formula that was used for the 2009 NCC and which relate to the treatment of price changes during a particular year in order to provide further clarity regarding how compliance would be assessed and to make the charge control more robust against potential gaming.
- **Carry-over provisions** – We proposed to continue to apply symmetric carry-over provisions, so that a given percentage over-charge relative to the cap is treated the same as the corresponding percentage pricing below the cap.
- **Inflation index** – We proposed to use the RPI All Items index (rounded to 1 decimal place) as the relevant inflation index within the charge control formula, as this was consistent with the inflation index used for deflating the nominal costs in the charge control model.
- **Rounding** – We proposed to round charges to three decimal places for wholesale call origination, wholesale call termination and the NTS retail uplift, since this is the extent of rounding reported in the RFS and also the number of decimal places we proposed to use for rounding our cost model outputs. For interconnect circuits we proposed rounding charges to the nearest penny, since prices are charged to the nearest penny. We proposed that values of X should be specified to 1 decimal place, which would be consistent with the definition of the percentage change in RPI as reported by the ONS.
- **External charges and revenues** – We proposed that the charge control should only be measured in relation to external charges and revenues, since the aim of the NCC was to mitigate the risks of BT engaging in overcharging other CPs seeking access to BT's network.

Stakeholder responses to the February 2013 consultation

Basket design

- 11.20 We did not receive any objections to our proposal to establish separate baskets for wholesale call termination; wholesale call origination; and interconnect services.
- 11.21 Stakeholder responses to our proposals to set a cap on the NTS retail uplift and maintain the current cap on the PRS Bad Debt surcharge until the new NTS regime is implemented are provided in Section 5 (paragraphs 5.272 - 5.274).

Time-of-day pricing

- 11.22 Of the six stakeholders that responded to our proposals on time-of-day pricing, three supported our proposals and three opposed them.
- 11.23 [X]⁶²³ stated that it had no substantive comment to make, but noted that it preferred the regulatory certainty brought by consistency and continuity.
- 11.24 BT supported our proposals to retain a weighted average cap for time of day pricing. It argued that it remains desirable to reduce peak loads on the voice network. It also believed that the elimination of time of day rates would disrupt business models and call packages that had developed around the different calling patterns of business users (predominantly day time rates) and consumers (evening and weekend rates) and would lead to unnecessary transition costs. With regard to “flip-flopping”, it noted that this had not been an issue for fixed termination rates and did not believe that it would be a risk in the future either, due to notice period requirements and complex billing systems, which would make frequent price changes impractical.⁶²⁴
- 11.25 TalkTalk stated that it did not have any specific comments, but believed the proposals were reasonable, assuming that they did not allow for any gaming by BT that might create competitive distortions in other markets.⁶²⁵
- 11.26 EE⁶²⁶ and H3G⁶²⁷ argued that it would be simpler and would ensure consistency between the mobile and fixed sectors if a flat rate cap was used to regulate FTRs, similar to the approach adopted for regulating MTRs.
- 11.27 Verizon⁶²⁸ also suggested that a flat rate cap would ensure consistency with the approach adopted for regulating MTRs. It also argued that moving to a flat rate cap would address any potential for discrimination against business only CPs and the business sector in general.
- 11.28 Vodafone also opposed our proposals to allow a weighted average cap according to time of day pricing. It argued that the network tariff gradient is, de facto, linked to BT Retail’s pricing, consequently that one of Vodafone’s main cost items is driven by a competitor’s retail pricing policy. It saw this as damaging to competition.
- 11.29 Vodafone stated that the network tariff gradient had not varied in over a decade, whereas in its view it was inconceivable that the split of daytime, evening and weekend traffic had not varied over this time. It also suggested that it was “suspicious”, despite Ofcom audits, about whether BT was on average recovering more than the 24 hour regulated rate on call termination.
- 11.30 Vodafone stated that it (and its acquired CPs) had been disadvantaged by the current regime. It estimated that it paid [X] per year more in FTRs than it would do under a 24 hour regime (i.e. a flat rate cap). In addition, it estimated that it paid [X] more for call origination than it would do under a 24 hour regime (i.e. flat cap rate).

⁶²³ [X] response to February 2013 consultation, question 11.3

⁶²⁴ BT response to February 2013 consultation, paragraph 11.87

⁶²⁵ TalkTalk response to February 2013 consultation, question 11.3

⁶²⁶ EE response to February 2013 consultation, page 14

⁶²⁷ H3G response to February 2013 consultation, page 13

⁶²⁸ Verizon response to February 2013 consultation, page 1

- 11.31 Vodafone also considered the differences between the time-of-day rates are so small that these are unlikely to influence customers' calling decisions when reflected in retail charges.
- 11.32 Vodafone also argued that our modelling, based on data we obtained through our formal powers, suggests that an efficient network would have a network busy hour which falls in the evening period, even if it was true that the voice network busy hour falls during the daytime.
- 11.33 Vodafone argued that if time-of-day pricing was to continue, it believed that more rigorous tests were needed to ensure compliance with the price control. It called for us to review the BT network tariff gradient to check that it meets the objectives of the NCC and then audit its application on an annual basis, with the results being published.⁶²⁹

Wholesale call origination with and without Operator Assistance (OA)

- 11.34 We did not receive any objections to our proposals to include wholesale call origination with OA within the wider call origination basket.

Sub-caps for interconnect services

- 11.35 In the February 2013 consultation, we proposed to set sub-caps of RPI+10% on services within the ISB.
- 11.36 H3G agreed with Ofcom that the use of sub-caps was "clearly preferable" to a cost orientation obligation. However, Vodafone⁶³⁰ argued that there was a continued need to maintain a cost orientation remedy where the end pricing is still derived from BT's cost base, such as in the case of interconnect specific services. It did not believe that any form of charge control or protective sub caps was an adequate substitute (for a cost orientation requirement) and urged Ofcom to retain a basis of charges condition on these services.
- 11.37 Stakeholder responses to our proposed charge controls (including sub-caps) for interconnect services are discussed further in Annex 6.

Prior year revenue weights

- 11.38 We did not receive any objections to our proposal to use prior year revenue weights for testing compliance against BT's charge control obligations.

Multiple price changes during a year

- 11.39 We did not receive any objections to the proposed modification to certain technical aspects of the charge control formula that was used for the 2009 NCC relating to the treatment of price changes during a particular year.

Carry-over provisions

- 11.40 We did not receive any objections to the proposed carry-over provisions in the NCC formula.

⁶²⁹ Vodafone response to February 2013 consultation, pages 50-52

⁶³⁰ Vodafone response to February 2013 Consultation, page 46

Inflation index

- 11.41 We did not receive any objections to our proposal to use the RPI all items index rounded to one decimal place as the inflation index in the NCC.
- 11.42 In response to the February 2013 consultation, EE agreed with our continued use of the RPI. EE believed that the index is well understood and ensures stability and regulatory consistency. EE also noted that RPI is used widely by other economic regulators. EE considered that changing the inflation index used in charge controls could have wide reaching ramifications which need to be carefully considered. EE argued that these considerations went beyond the scope of a single charge control.⁶³¹
- 11.43 [X] noted that it had previously discussed the use of the RPI and CPI with Ofcom. However, it had no substantive comment on our proposal in the February 2013 consultation, it instead preferred the regulatory certainty that consistency and continuity brings.⁶³²

Rounding

- 11.44 BT argued that call origination and termination prices should continue to be rounded to four decimal places on a ppm basis. This is because an additional decimal place is needed to ensure price changes can be made with sufficient precision to closely match the price change required by the charge control.
- 11.45 BT considered that it would be difficult to implement with sufficient accuracy the required percentage change to prices if prices are rounded to three decimal places.⁶³³
- 11.46 BT noted that the ppm prices are multiplied by very large numbers (hundreds of millions of minutes if not billions of minutes), therefore the value of each 0.0001ppm will be significant in terms of the overall charges. It is therefore reasonable that the rounding of wholesale call origination and termination should continue to be to four decimal places.
- 11.47 BT agreed with Ofcom's proposal that interconnect circuit prices should be rounded to the nearest penny.

External charges and revenues

- 11.48 We did not receive any objections to the proposal that the charge control should be measured in relation to external charges and revenues only.

⁶³¹ EE response to the February 2013 consultation, page 22

⁶³² [X] response to the February 2013 consultation, pages 22 to 23

⁶³³ BT explained that this is because the minimum price change would become 0.001ppm and this figure is a high percentage of the base price level. For call origination with a price level of 0.25ppm the minimum price change of 0.001ppm is worth 0.4%. From 2013/14 the proposed call termination price of 0.04ppm means the minimum price increment would be worth 2.5%. A four decimal place rounding would make the minimum price change a factor of ten times smaller, giving increments of 0.04% and 0.25%. This will make compliance with the charge control to the nearest 0.1% significantly more practical to implement when setting prices.

Our analysis and conclusions

Basket design

- 11.49 In general if services face different competitive constraints and they are included in the same charge control basket, there is a risk that the SMP operator would have an incentive to concentrate price cuts on the most competitive services and offset these by price increases for the least competitive services, which could adversely affect retail competition.
- 11.50 Although both wholesale call termination and wholesale call origination services use similar network elements, we consider that they face different competitive conditions and therefore should be in separate charge control baskets. Moreover, we have concluded that wholesale call termination should be regulated on the basis of LRIC and wholesale call origination on the basis of LRIC+ and therefore separate baskets for wholesale call termination and wholesale call origination are necessary.
- 11.51 While the competitive conditions relating to wholesale call origination and wholesale call termination will shape the nature of competition for interconnect circuits (since interconnect circuits are tied to the purchase of wholesale call origination and/or termination from the supplying CP), the same physical circuit can, and often is, used to support both call origination and call termination. Moreover, interconnect circuits are charged for on the basis of connections and rentals, whereas wholesale call origination and wholesale call termination are charged for on a per minute basis. Therefore, we have decided not to cap interconnect circuits in either the call origination or the call termination baskets, but instead to maintain a separate basket.
- 11.52 As discussed in Section 5 (paragraphs 5.428 - 5.440), we have decided to set an RPI cap on the NTS retail uplift as a separate basket and maintain the current control on the PRS Bad Debt surcharge as part of NTS transitional arrangements and until the new NTS regime is implemented.

Time-of-day pricing

- 11.53 We acknowledge the point made by EE and H3G that a charge control based on a flat rate cap, as used in relation to MTRs, would be simpler than that based on time-of-day pricing. However, as explained in the February 2013 consultation, although a flat rate cap would mean that measuring compliance would be simplified, we do not consider that this is a strong enough reason for depriving BT of the ability to manage network usage, through the network tariff gradient.
- 11.54 EE and H3G argued that a flat rate cap would also ensure consistency with the charge control for MTRs. We acknowledge this point. However, in relation to MTRs, the flat rate cap was imposed to mitigate the risk of 'flip-flopping' that had been prevalent. In relation to wholesale call termination and wholesale call origination, there has not been evidence of 'flip-flopping' under the existing controls and therefore we do not consider the imposition of a flat rate cap is necessary. In addition, our basket design which now explicitly allows for multiple price changes, is such that the risks of 'flip-flopping' of the form experienced in the previous caps on MTRs will be avoided. In the light of this, we do not consider that this difference between the design of the control for MTRs and fixed wholesale call charges should be an over-riding concern.
- 11.55 Vodafone raised concerns about the network tariff gradient being linked to BT's Retail pricing. An aim of BT's network tariff gradient is to act as a proxy for peak-load

pricing and aims to reflect the demand placed on its network. Therefore, at times of (relatively) high network demand the gradient serves to increase the wholesale price which, in turn, flows through to retail prices. We see this pricing flexibility as a reasonable way to achieve efficient network usage and we consider that BT is likely to be better placed than us to set prices to manage efficient network usage (subject to meeting the overall cap).

- 11.56 Vodafone is correct that BT's network tariff gradient is derived from BT's retail volumes and prices. Although we recognise that BT's retail traffic volumes will be less than 100% of BT's wholesale call volumes, BT's retail traffic volumes will have a significant influence on BT's network usage.⁶³⁴ In principle, if BT's retail pricing profile is used to shape its wholesale charging profile, this also ensure that CPs wishing to compete against BT's downstream prices will be able to earn a comparable margin in competing against those downstream prices. However, where retail prices are increasingly sold on a bundled basis (or at least aggregated across different day/evening/weekend periods), we recognise that mapping a retail tariff gradient to wholesale charges levied on a per minute basis across different periods is more complicated. Nevertheless, while there may be limitations in the way the network tariff gradient is currently applied, we consider that the principles behind it remain valid. Therefore, the controls we have put in place allow pricing flexibility in order to achieve efficient network usage (subject to BT not charging more than the cap across all charging periods in the baskets), but we are not prescribing the precise means by which this is implemented, preferring to leave this to BT to determine (subject to its SMP obligations and compliance with competition law).
- 11.57 Vodafone makes reference to the negative financial impact it suffers as a result of the network tariff gradient. Verizon make similar claims regarding the potential discrimination against business only CPs from the application of the network tariff gradient. However, we consider that the financial impact on Vodafone (and similarly to Verizon, to the extent that it may suffer a financial impact) is a result of its particular traffic patterns across the time of day and had we imposed a 24 hour flat-cap, other CPs would have been likely to have raised concerns regarding the financial impact as a result of their individual traffic profiles.
- 11.58 Vodafone questioned whether the small differences between wholesale call charges at different times of the day could actually influence customers' calling decisions. We acknowledge that wholesale call charges will often make up a small proportion of retail prices (particularly when FTRs are set at LRIC). However, these charges will matter more for wholesale end-to-end calls. Moreover, in so far as FTRs do contribute to downstream prices, they will influence calling decisions at the margin and play some role in affecting traffic on the network and hence capacity utilisation.
- 11.59 Vodafone highlights that the network busy hour in Ofcom's NGN model is in the evening period and suggests that this should mean that wholesale rates are highest at this time. Our cost model is based on a hypothetical NGN operator supplying voice and data services over a single network and the busy hour is driven by the data traffic. However, there are voice specific elements in the network (such as call servers) where costs are not driven by data traffic, and the busy hour for these elements will be different to the network busy hour (because the peak hour for voice

⁶³⁴ For example, in the financial year to March 2013, BT's internal sales across call origination and call termination were 57% of total sales (derived from Section 8.1 of BT's Regulatory Financial Statements):
<http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2013/CurrentCostFinancialStatements2013.pdf>

traffic does not occur at the same time as the overall network busy hour). In addition, BT maintains separate networks for voice and data services. Therefore, the network busy hour in our model will not be the same as the network busy hour for BT's voice network and therefore the appropriate gradient of wholesale call charges, to manage voice traffic, is likely to be different.

11.60 Vodafone was concerned that BT might have been able to charge above what was allowed by the call termination charge control as a result of its time of day pricing. Ofcom monitors compliance annually using data submitted by BT for that purpose. Ofcom has no evidence that BT has over-charged in relation to wholesale call termination. We will continue to measure compliance with the charge controls to ensure it is not the case in the future. However, we do not propose specific rules restricting how BT sets its network tariff gradient, other than by the constraint imposed by the basket level cap on call termination.

11.61 In summary, we have decided to maintain the current flexibility and permit time of day pricing in relation to the wholesale call termination and wholesale call origination baskets.

Wholesale call origination with and without Operator Assistance (OA)

11.62 We have concluded that the competitive conditions of wholesale call origination with OA are not substantively different from those for the service excluding OA. Therefore we will include wholesale call origination with operator assistance within the wider call origination basket.

Sub-caps for interconnect circuits

11.63 Our analysis supporting our conclusions for sub caps is covered in Annex 6. We have decided to slightly change the sub-cap proposed in the February 2013 consultation. Rather than allowing individual charges to rise by up to 10% in real terms (i.e. RPI+10%), we now propose a cap on individual charges of 10% in nominal terms.

Prior year revenue weights

11.64 We have generally preferred to adopt prior year revenue weighting within charge controls and we adopted this approach for the 2009 NCC. Since prior year weighting relies on information that is already known, this makes BT's task of complying with the charge control less complex since it is always able to calculate compliance *ex-ante* (i.e. at the time of setting new rates it can in principle consider the implications for compliance with certainty).⁶³⁵

11.65 We will use prior financial year revenue weights when testing compliance with the charge control. This maintains the approach used in the 2009 NCC formula and is consistent with our approach in other charge controls.

⁶³⁵ The risk of using prior year weightings in a basket is when the relative volumes of services within a basket changes substantially and in a predictable way. This would potentially allow BT to game the control and earn additional revenue. However, we do not consider that this is a material risk within our NCC baskets, since each basket does not contain a large variety of different types of service and, in the case of interconnect circuits we are imposing sub-caps.

Multiple price changes during a year

11.66 We consider that BT should have the flexibility to make multiple price changes in respect of a particular service (subject to meeting its other regulatory obligations). We have decided to modify certain technical aspects of the charge control formula that was used for the 2009 NCC. These are intended to provide further clarity regarding how compliance with the control will be measured and make the control more robust against potential gaming that could have arisen under the existing formula.

11.67 Therefore, as proposed in the February 2013 consultation⁶³⁶, we have decided to:

- Weight service prices to reflect the proportion of the year during which they were in effect. A similar approach is applicable under the current NCC formula, although we have sought to clarify how multiple price changes would be aggregated.
- Evaluate price changes for each service in relation to the weighted average charge that applied during the prior year for that service, rather than based on the price on the last day of the prior control year.

11.68 During the first control year (October 2013 to September 2014) each of the FTR and call origination rate caps will be set by reference to two different levels each corresponding to different periods in that year (see paragraphs 11.15 to 11.18).

11.69 We have decided that compliance for the period from 1 October 2013 to 31 December 2013 for wholesale call origination, wholesale call termination should be based on ensuring that prices do not exceed current levels. We have decided to define the cap and monitor compliance for the rest of the year (from 1 January 2014 to 30 September 2014) on a standalone basis. That is, we will not aggregate charges from the first part of the year with those in the second part of the year. For all subsequent years, the charge control is defined (and compliance thereto will be monitored) using the full control year.

Carry-over provisions

11.70 We believe that symmetrical (i.e. symmetrical with respect to whether the control is exceeded or whether BT charges below the cap) carry-forward provisions remain appropriate.

11.71 We have decided to modify the carry forward provision used in the current NCC to remove an interpretation risk that could have allowed greater price increases than intended under the control.

11.72 Although the carry-over provision proposed in our February 2013 consultation would return charges in the relevant period to the compliant level determined by the charge control (in the event that BT charged in excess of the cap in the prior year), it would not recover the excess revenue earned by BT from charging in excess of the cap in a prior year. This raises a potential risk that BT could earn excess revenues over the course of the next charge control period and that other CPs (and ultimately consumers) face higher prices than intended under the NCC. We consider that this risk should be addressed.

⁶³⁶ February 2013 consultation, paragraph 11.105 to 11.108

11.73 Therefore, we have decided to require BT to make repayments to other affected CPs (as soon as is reasonably practicable), in the event that it charges in excess of the cap in any given year.⁶³⁷ We have therefore included this provision in the charge control condition.⁶³⁸

Inflation index

11.74 In the February 2013 consultation, we proposed to use percentage changes in the RPI (all items) (rounded to 1 decimal place) in both the specification of the NCC formula and the NCC model. We preferred to use RPI due to the regulatory precedence and familiarity for CPs.

11.75 We noted that the ONS had recently made announcements on the way RPI is calculated and had decided that it would start calculating a new measure of inflation to be known as RPIJ.

11.76 Since the publication of the February 2013 consultation, Ofcom has published the consultation for the next WLR/LLU charge control (the July 2013 WLR/LLU consultation).⁶³⁹ In light of the ONS's findings, this consultation has considered in detail which inflation index should be used for indexing those charge controls. The July 2013 WLR/LLU consultation has proposed to use the Consumer Price Index (CPI) for the indexation of those controls.

11.77 We have considered whether we should also switch to using the CPI for the NCC rather than the RPI. We note that the proposals for the WLR/LLU charge control are subject to consultation only and no final decision has yet been made on which inflation index to use. We also note that the July 2013 WLR/LLU consultation found that switching between RPI and CPI for indexing the controls made no difference to the expected end of period charges.⁶⁴⁰ We also note that in response to the February 2013 consultation, no stakeholder disagreed with our use of the RPI.

11.78 In light of the above, we do not believe that it would be appropriate for us to switch from using the RPI to an alternative index.

11.79 However, we note that if we were to set the indexation of the caps to CPI, the end of period nominal charges would be the same i.e. the calculated X would be set lower in

⁶³⁷ BT could comply with this obligation by, for example, issuing credit notes.

⁶³⁸ We also considered modifying the 'carry-over' formula to recover any excess revenue earned in the prior year in the relevant year. However, we saw a number of disadvantages to this approach, so have decided not to implement it. These include: first, an overcharge in the final year would not be addressed unless a repayment clause was added in any case; second, it could result in prices charged in the relevant period being misaligned with those intended by our charge control (for example, in the case of FTRs, charges in the relevant year could be required to be below LRIC if there was an overcharge in the prior year); third, it would add further complexity to the carry-over formula; fourth, repayments would be scaled by current year volumes, not prior year volumes (unless significant additional complexity was introduced to the formula), so those purchasing less in the prior year than the current year would be compensated more than required and those purchasing less would be under-compensated).

⁶³⁹ Fixed access market reviews: Approach to setting LLU and WLR charge controls, 11 July 2013 <http://stakeholders.ofcom.org.uk/consultations/llu-wlr-cc-13/>

⁶⁴⁰ Fixed access market reviews: Approach to setting LLU and WLR charge controls, 11 July 2013 (Section 3 and Section 7) http://stakeholders.ofcom.org.uk/binaries/consultations/llu-wlr-cc-13/summary/LLU_WLR_CC_2014.pdf

absolute terms in order to offset a move to CPI (because percentage changes in CPI are forecast to be lower than forecast changes in RPI over the control period).⁶⁴¹

- 11.80 We have therefore decided to continue to use the RPI (rounded to 1 decimal place) for setting the NCC over the period to 30 September 2016.

Rounding

- 11.81 We accept BT's argument in favour of rounding the charges of wholesale call termination and wholesale call origination to four decimal places for the purposes of measuring compliance with its charge control obligations.
- 11.82 We note that BT's wholesale call charges (pence per minute) are published to four decimal places and therefore consider it appropriate that the same number of decimal places is used for measuring compliance with the charge control.^{642 643}
- 11.83 In the February 2013 consultation, we proposed to round the charges for wholesale call termination, wholesale call origination and the NTS retail uplift to three decimal places noting that this was the extent of rounding in BT's RFS and our cost modelling. However, we do not believe that the rounding of wholesale call charges used in measuring compliance with BT's charge control obligations needs to match the rounding used in our cost model (or that published in BT's RFS). Therefore, the outputs of our cost model will continue to be rounded to three decimal places.
- 11.84 We have concluded that values of X in the charge control formula are specified to one decimal place. This is consistent with the definition of the percentage change in RPI as reported by the ONS.

External charges and revenues

- 11.85 The aim of the NCC is to address the detriment from BT exploiting its SMP and over charging other CPs. Therefore, we have decided to define the baskets and measure compliance with the NCC by reference to external charges only.
- 11.86 In practical terms this doesn't represent a change from the current arrangements. This is because BT's no undue discrimination obligation means that BT's internal charges for each service within the charge control should be the same as the corresponding published external charges. Second, we have decided to continue to use total revenues (both internal and external), rather than external revenues, as the prior year weighting within the charge control formula.
- 11.87 We have continued with using total revenue weighting since BT has freedom in how it sets its prices for different services within the baskets and will do so in order to maximise its revenues given the total usage of its network, not just external usage. If

⁶⁴¹ It is possible to calculate the X (including the geometric conversion) for a CPI cap by converting the real price change imbedded in the RPI cap known as "Y" (i.e. the RPI cap X value (-87.3%) before making the geometric adjustment). The X-value for a CPI cap is given by $(RPI-CPI)+Y*(1+RPI)$. For Year 1 the Y value for wholesale call termination = -84.47%. Using this value gives a CPI X-value = $(3.3\%-2.8\%)+(-84.47\%)*(1+3.3\%)=-86.8\%$. The nominal charge in the first year will then be $=0.219*(1+3.3\%-87.3\%)=0.035\text{ppm}$ under an RPI cap and $0.219*(1+2.8\%-86.8\%)=0.035\text{ppm}$ under a CPI cap.

⁶⁴² We also consider it appropriate to round the retail NTS uplift charges (pence per minute) to four decimal places since these charges are also published to four decimal places.

⁶⁴³ We have also concluded that interconnect circuit charges should be rounded to the nearest penny for measuring compliance with the ISB charge control.

service weighting was based only on external revenues, BT could have an incentive to skew its pricing to recover more than was envisaged when the cap was set.

Summary of charge controls

11.88 A summary of the charge controls is as follows:

Table 11.1 – Values of X and maximum charges in year 1⁶⁴⁴

	2012/13 Actual Real	2013/14 ⁶⁴⁵ Forecast Real	2014/15 Forecast Real	2015/16 Forecast Real
Termination				
ppm cap	0.219	0.034	0.033	0.032
Value of X in the RPI+X formula	NA	-87.3%	-3.0%	-3.1%
Origination				
ppm cap	0.245	0.415	0.401	0.387
Value of X in the RPI+X formula	NA	71.7%	-3.5%	-3.6%
ISB⁶⁴⁶				
Cap		0% +10% subcap	0% +10% subcap	0% +10% subcap
NTS retail uplift				
Value of X in the RPI+X formula		RPI-0	RPI-0	RPI-0

⁶⁴⁴ ppm real values are in 2012/13 prices.

⁶⁴⁵ For 2013/14 these rates will apply from 1 January 2014. Prior to this date, all rates will be frozen at their current level.

⁶⁴⁶ These are the controlling percentages, i.e. the charge control formula is not index linked.

Annex 1

SMP conditions excluding charge controls

NOTIFICATION UNDER SECTIONS 48(1) AND 79(4) OF THE COMMUNICATIONS ACT 2003

Identifying markets, making market power determinations and setting SMP services conditions in relation to BT, KCOM and specified communications providers providing termination services under section 45 of the Communications Act 2003

Background

1. On 15 September 2009, Ofcom published the regulatory statements Fixed Narrowband Retail Services Markets – Identification of markets and determination of market power⁶⁴⁷ (the “2009 Retail Review Statement”), Review of the fixed narrowband services wholesale markets – Statement on the markets, market power determinations and remedies including further consultation⁶⁴⁸ (the “2009 Wholesale Review Statement”), and Review of BT’s Network Charge Controls – Explanatory Statement and Notification of decisions on charge controls in wholesale narrowband markets.⁶⁴⁹
2. On 5 February 2010, Ofcom published a further regulatory statement, Review of the fixed narrowband services wholesale markets – Further statement on wholesale transit markets and remedies in the wholesale call termination market⁶⁵⁰ (the “2010 Wholesale Review Statement”). On 20 July 2011, Ofcom published the statement Wholesale charges for Number Translation Services and Premium Rate Services – NTS Retail Uplift charge control and PRS Bad Debt Surcharge.⁶⁵¹
3. In the statements identified in paragraphs 1 and 2 (collectively referred to as the “2009 Review Statements”), Ofcom identified markets, made market power determinations and set significant market power (“SMP”) conditions in relation to certain fixed narrowband markets. Such SMP conditions included a charge control for certain services, which is due to expire on 30 September 2013.
4. In 2012, Ofcom commenced its latest review of fixed narrowband services. On 17 May 2012, Ofcom began its consultation process with stakeholders by publishing a consultation document entitled Fixed Narrowband Market Review and Network Charge Control – Call for Inputs (the “May 2012 consultation”).⁶⁵²

⁶⁴⁷ Available at

http://stakeholders.ofcom.org.uk/binaries/consultations/retail_markets/statement/statement.pdf

⁶⁴⁸ Available at

http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf

⁶⁴⁹ Available at

http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/statement/nccstatement.pdf

⁶⁵⁰ Available at

http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/statement/statement.pdf

⁶⁵¹ Available at http://stakeholders.ofcom.org.uk/binaries/consultations/nts-retail-uplift/statement/NTSRU_statement.pdf

⁶⁵² <http://stakeholders.ofcom.org.uk/binaries/consultations/narrowband-market-review-call/summary/condoc.pdf>

5. On 28 September 2012, Ofcom published a further consultation document entitled *Narrowband Market Review – Consultation on possible approaches to cost modelling for the Network Charge Control for the period 2013-2016* (the “September 2012 consultation”)⁶⁵³, which consulted on the general approach Ofcom should take to a new network charge control if Ofcom were to find SMP in any fixed narrowband services markets, and a charge control would be a necessary remedy.
6. On 5 February 2013, Ofcom published a further consultation document entitled *Review of the fixed narrowband services markets - Consultation on the proposed markets, market power determinations and remedies* (the “February 2013 consultation”)⁶⁵⁴, consulting on proposals to identify markets, make market power determinations and set SMP services conditions. At Annexes 6, 7 and 8 to that document, Ofcom published notifications under sections 48A and 80A of the Act, which notifications set out for domestic consultation its proposals for market identifications, market power determinations and SMP conditions to be applied to BT, KCOM and specified communications providers providing termination services. Ofcom invited responses by 2 April 2013.
7. A copy of the February 2013 consultation was sent to the Secretary of State in accordance with sections 48C(1) and 81(1) of the Act.
8. Ofcom received several responses to its proposals set out in the May 2012 consultation, the September 2012 consultation and the February 2013 consultation, and has considered every such representation. The Secretary of State has not notified Ofcom of any international obligation on the United Kingdom for the purposes of those proposals.
9. The proposals set out in the February 2013 consultation contained proposals of EU significance for the purposes of the Act. Therefore, after making such modifications to the proposals that appeared to Ofcom to be appropriate following domestic consultation, Ofcom sent a copy of them, and a draft of the Statement accompanying the notification setting out the reasons for them, to the European Commission, BEREC and the regulatory authorities of every other Member State for EU consultation, in accordance with sections 48B(2) and 80B(2) of the Act.
10. Ofcom received comments from the European Commission on its proposals on 20 September 2013, and has made such modifications to this Notification and the Statement accompanying this Notification as it considers appropriate.

Markets not affected by this review

11. The existing market definitions, market power determinations and conditions in relation to the following markets defined and reviewed in the 2009 Review Statements are not considered in this Notification and will remain in force until further notice:⁶⁵⁵
 - (a) For the United Kingdom, excluding the Hull Area
 - (i) Wholesale analogue exchange line services;

⁶⁵³ <http://stakeholders.ofcom.org.uk/binaries/consultations/narrow-band-market-review/summary/condoc.pdf>

⁶⁵⁴ http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/summary/NMR_Consultation.pdf

⁶⁵⁵ Proposals in relation to these markets were made in the consultation *Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30* published on 3 July 2013 and available at <http://stakeholders.ofcom.org.uk/binaries/consultations/fixed-access-market-reviews/summary/fixed-access-markets.pdf>

- (ii) Wholesale ISDN2 exchange line services
- (iii) Residential Fixed Narrowband Analogue Access;
- (iv) Business Fixed Narrowband Analogue Access; and
- (v) ISDN2 Access.

(b) For the Hull Area

- (i) Wholesale analogue exchange line services;
- (ii) Wholesale ISDN2 exchange line services;
- (iii) Residential Fixed Narrowband Analogue Access;
- (iv) Business Fixed Narrowband Analogue Access; and
- (v) ISDN2 Access.

Determinations in relation to the United Kingdom excluding the Hull Area

12. Ofcom has identified “Wholesale call origination on a fixed narrowband network in the United Kingdom outside the Hull Area” as a relevant market for the purpose of considering a market power determination, has determined that BT has significant market power in relation to such market, and has set the SMP services conditions set out in Schedule 1 to this Notification in relation to such market to the extent set out in such Schedule.

Determinations in relation to the Hull Area

13. Ofcom has identified “Wholesale call origination on a fixed narrowband network in the Hull Area” as a relevant market for the purpose of considering a market power determination, has determined that KCOM has significant market power in relation to such market, and has set the SMP services conditions set out in Schedule 2 to this Notification in relation to such market to the extent set out in such Schedule.

Determinations in relation to the United Kingdom

14. Ofcom has identified 172 separate markets in the United Kingdom for the purpose of considering market power determinations.
15. These are the markets for wholesale call termination services which are provided by BT and each of the 171 communications providers (CP) listed in Annex A to Schedule 3 to this Notification to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that CP.
16. Ofcom has determined that BT and each of the persons listed in Annex A to Schedule 3 to this Notification have significant market power in relation to the relevant market in which that person operates and has set the following SMP conditions:

- (a) On BT, the conditions set out in Schedule 1 to this Notification to the extent set out in such Schedule; and
- (b) On each of the persons listed in Annex A to Schedule 3 to this Notification, the conditions set out in Schedule 3 to this Notification.

Determinations in relation to Interconnect Circuits

- 17. As a result of the significant market power determinations in relation to BT as set out at paragraphs 12 and 16 above and in relation to KCOM as set out at paragraph 13 above, Ofcom has set the SMP services conditions in relation to Interconnect Circuits as set out in Schedule 1 to this Notification (in relation to BT) to the extent set out in such Schedule and in Schedule 2 to this Notification (in relation to KCOM) to the extent set out in such Schedule.

Determinations in relation to regulatory financial reporting

- 18. Ofcom has applied to BT, in relation to the markets identified in paragraphs 12 and 15 in relation to which Ofcom has determined that BT has SMP, and in relation to Interconnect Circuits provided by BT, the SMP Conditions set out in Schedule 2 of Annex 2 of the document entitled The regulatory financial reporting obligations on BT and Kingston Communications – Final statement and notification dated 22 July 2004 (as amended) (the “July 2004 Statement”), excluding conditions OA29 to OA31 and OA34. To that effect, Ofcom has made the following amendments to Annex 2 of the July 2004 Statement:

- (a) In paragraph 4(a)(i), by removing “7, 9,”;
- (b) In Part 1 of Schedule 1, by removing the reference at paragraph 6, second column, to “As above” and replacing it with “26.09.13”;
- (c) In Part 1 of Schedule 1, by removing the reference at paragraph 7, first column, to “Local-tandem conveyance and transit on fixed public telephone networks in the United Kingdom excluding the Hull Area (SMP conditions in Schedule 2 to be revoked from 31.07.10 for this market)” and at paragraph 7, second column, of “18.08.05”;
- (d) In Part 1 of Schedule 1, by removing the reference at paragraph 9, first column, to “Single transit on fixed public narrowband networks in the United Kingdom excluding the Hull Area” and at paragraph 9, second column, of “5.02.10”;
- (e) In Part 1 of Schedule 1, by removing the reference at paragraph 10, first column, to “Wholesale fixed geographic call termination on each individual network provided by BT” and replacing it with “call termination services that are provided by BT to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by BT” and at paragraph 10, second column, to “15.09.09” and replacing it with “26.09.13”;
- (f) In Part 1 of Schedule 2, by removing the reference at paragraph 1 to “and to the following technical areas: Interconnection Circuits and Interconnection Services”;

- (g) In Part 1 of Schedule 2, by adding a new paragraph 1a which is to read “These conditions, excluding conditions OA29 to OA31 and condition OA34, shall apply to Interconnect Circuits.”; and
 - (h) In Part 1 of Schedule 2, by removing the definition at paragraph 2 for “Interconnection Services” and amending the definition for “Interconnection Circuits” to read “‘Interconnect Circuits’ shall have the meaning attributed to it for the purposes of the SMP conditions set out in the notification under sections 48(1) and 79(4) of the Communications Act 2003 of 26 September 2013 imposing SMP Conditions in relation to Interconnect Circuits”.
19. Ofcom has applied to KCOM, in relation to the market identified in paragraph 13 in relation to which Ofcom has determined that KCOM has SMP, the SMP conditions set out in Schedule 2 of Annex 3 of the July 2004 Statement, excluding paragraphs (a) to (c) and (f) of condition OB23, conditions OB28 to OB30 and condition OB33. To that effect, Ofcom has made the following amendments to Annex 3 of the July 2004 Statement:
- (a) In paragraph 4(a)(i), by removing “numbered 1, 4, 6 and 7” and replacing it with “numbered 1 and 4”;
 - (b) In paragraph 4(a)(iii), by adding “, 6” after “numbered 5”;
 - (c) In Part 1 of Schedule 1, by removing the reference at paragraph 6, second column, to “As above” and replacing it with “26.09.13”; and
 - (d) In Part 1 of Schedule 1, by removing the reference at paragraph 7, first column, to “Wholesale fixed geographic call termination on each individual network provided by KCOM” and at paragraph 7, second column, to “15.9.09”;
 - (e) In Part 1 of Schedule 2, by removing the reference at paragraph 1 to “and to the following technical areas: Interconnection Circuits and Interconnection Services”.

Application of SMP services conditions

20. Except where stated otherwise, Ofcom has set the SMP services conditions referred to in paragraphs 12, 13 and 16 to 19 from the date of this Notification until the publication of a notification under sections 48(1) and 79(4) of the Act revoking such conditions.
21. In relation to SMP service condition 9 set out in Schedule 1 to this Notification (Requirement to provide NTS Call Origination), Ofcom has applied the condition from the date of this Notification until the NTS Effective Date.

Revocation of SMP service conditions

22. Ofcom has revoked the conditions set out in Schedules 1, 2 and 3 of Annex 7 of the 2009 Wholesale Review Statement, the conditions set out at Annex 1 of the 2009 Retail Review Statement and the conditions set out at Annex 1 of the 2010 Wholesale Review Statement insofar as those conditions apply to Interconnect Circuits or any of the following markets:
- (a) In the United Kingdom excluding the Hull Area
 - (i) Wholesale call origination on a fixed narrowband network;

(b) In the Hull Area

(i) Wholesale call origination on a fixed narrowband network;

(c) In the United Kingdom

(i) Wholesale fixed geographic call termination on each individual network.

23. Subject to paragraphs 24 and 25 below, the revocations in paragraph 22 will take effect on the date of publication of this Notification.

24. The revocation of Condition AAA8 of Schedule 1 of Annex 7 of the 2009 Wholesale Review Statement (Requirement to provide Carrier Pre-selection imposed on BT), will take effect on the date which is one (1) year after the publication of this Notification insofar as related to the provision of Carrier Pre-Selection to Subscribers who are provided with or have requested to be provided with such services on a date which is before the date of this Notification.

25. The revocation of Condition AAA9 of Schedule 1, and Condition AAB7 of Schedule 2 of Annex 7 of the 2009 Wholesale Review Statement (Requirement to provide Indirect Access imposed on BT and KCOM respectively), will take effect on the date which is one (1) year after the publication of this Notification.

Ofcom's duties and legal tests

26. The effect of, and Ofcom's reasons for making the determinations in this Notification are set out in the Statement accompanying this Notification.

27. In identifying and analysing the markets referred to in paragraphs 12, 13 and 15 above, and in considering whether to make the determinations set out in this Notification, Ofcom has, in accordance with section 79 of the Act, taken due account of all applicable guidelines and recommendations which have been issued or made by the European Commission in pursuance of an EU instrument, and which relate to market identification and analysis or the determination of what constitutes SMP. In so doing, pursuant to Article 3(3) of Regulation (EC) No 1211/2009, Ofcom has also taken the utmost account of any relevant opinion, recommendation, guidelines, advice or regulatory practice adopted by BEREC.

28. Ofcom considers that the SMP conditions referred to in paragraphs 12, 13 and 16 to 19 above comply with the requirements of sections 45 to 47, 87 and 88 of the Act, as appropriate and relevant to each such SMP condition.

29. In making all of the determinations referred to in this Notification, Ofcom has considered and acted in accordance with its general duties set out in section 3 of the Act and the six Community requirements in section 4 of the Act.

Interpretation

30. Except as otherwise defined in paragraph 31 of this Notification, words or expressions used shall have the same meaning as they have been ascribed in the Act.

31. In this Notification:

- (a) "Act" means the Communications Act 2003 (c. 21);
- (b) "BT" means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- (c) "Carrier Pre-selection" means a facility which allows a Subscriber to access the services of a provider of Publicly Available Telephone Services by means of pre-selection;
- (d) "Hull Area" means the area defined as 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 Kingston Communication (Hull) plc.
- (e) "KCOM" means KCOM Group plc, whose registered company number is 2150618, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- (f) "NTS Effective Date" means the Effective Date as defined in the Notifications under Section 48(1) of the Act setting general conditions introducing an unbundled tariff structure for 084, 087, 090, 091, 098 and 118 numbers and setting access-related conditions in relation to the purchase of origination services for calls to 080 and 116 numbers;
- (g) "Subscriber" means any natural person or legal entity who or which is party to a contract with the provider of publicly available electronic communications services for the supply of such services; and
- (h) "United Kingdom" has the meaning given to it in the Interpretation Act 1978 (1978 c30).

32. The Schedules to this Notification shall form part of this Notification.

Signed



Andrea Coscelli
Economics Director, Ofcom

**A person duly authorised in accordance with paragraph 18 of the Schedule to the
Office of Communications Act 2002
26 September 2013**

SCHEDULE 1

Conditions imposed on BT

Part 1: Application

The SMP conditions in Part 3 of this Schedule 1 shall, except where specified otherwise, apply to the Dominant Provider in each of the relevant markets and the area listed in Column 1 of Table 1 below to the extent specified in Column 2 of Table 1.

Table 1: Relevant markets and area for the purposes of this Schedule 1

Column 1: Relevant market or area	Column 2: Applicable SMP condition as set out in Part 3 of this Schedule 1
Wholesale call origination on a fixed narrowband network in the United Kingdom excluding the Hull Area	1 to 8 inclusive
Call termination services that are provided by the Dominant Provider to another communications provider, for the termination of voice calls to United Kingdom geographic numbers which the Dominant Provider has been allocated by Ofcom in the area served by the Dominant Provider	1 and 3 to 6 inclusive
Interconnect Circuits in the United Kingdom excluding the Hull Area	1 to 7, excluding SMP condition 5.5(e)

Part 2: Definitions and Interpretation

1. In this Schedule 1 –

- (a) “Access Agreement” means an agreement entered into between the Dominant Provider and a Third Party for the provision of network access in accordance with Condition 1;
- (b) “Access Charge Change” means any amendment to the charges, terms and conditions on which the Dominant Provider provides network access or in relation to any charges for new network access;
- (c) “Access Charge Change Notice” means a notice given by the Dominant Provider of an Access Charge Change;
- (d) “Act” means the Communications Act 2003 (c. 21);
- (e) “CSI” means customer sited interconnection;

- (f) “Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- (g) “IEC” means interconnection extension circuits;
- (h) “Interconnect Circuits” mean any and all of the following specific services provided by the Dominant Provider in accordance with Condition 1:
 - (i) standard CSI connection;
 - (ii) standard CSI rental – fixed;
 - (iii) standard CSI rental – per km;
 - (iv) high performance CSI connection;
 - (v) high performance CSI rental – fixed;
 - (vi) high performance CSI rental – per km;
 - (vii) ISI connection;
 - (viii) ISI rental per 100m;
 - (ix) IEC connection;
 - (x) IEC rental – fixed;
 - (xi) IEC rental per km;
 - (xii) intra-building circuits connection;
 - (xiii) intra-building circuits rental;
 - (xiv) rearrangements;
 - (xv) path protection connection per 34Mbit/s;
 - (xvi) path protection connection per 140Mbit/s;
 - (xvii) path protection rental per 34Mbit/s; and
 - (xviii) path protection rental per 140Mbit/s;
- (i) “ISI” means in-span interconnection links;
- (j) “Net Retail Call Revenue” means the retail revenue for calls, excluding VAT and after any applicable discounts;
- (k) “NTS” means number translation services;
- (l) “NTS Calls” means a call to a number starting with 0500, 080, 082, 084, 0871, 0872, 0873 and 09;

- (m) “NTS Call Origination” means the origination of NTS Calls and the retailing of those NTS Calls to an end-user on behalf of a Third Party who has requested such service;
- (n) “NTS Retail Uplift” means the charge for retailing NTS Calls to an end-user;
- (o) “Premium Rate Service” means a service provided on a number starting with 09;
- (p) “Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Agreement;
- (q) “Third Party” means a person providing a public electronic communications network or a person providing a public electronic communications service;

2. For the purpose of interpreting the SMP conditions in this Schedule:

- (a) except in so far as the context otherwise requires, words or expressions shall have the meaning assigned to them in paragraph 1 of this Part above and otherwise any word or expression shall have the same meaning as it has in the Act;
- (b) the Interpretation Act 1978 (c. 30) shall apply as if this Schedule were an Act of Parliament; and
- (c) headings and titles shall be disregarded.

Part 3: Conditions (BT)

Condition 1 – Network access on reasonable request

- 1.1 The Dominant Provider must provide network access to a Third Party where that Third Party, in writing, reasonably requests it.
- 1.2 The provision of network access by the Dominant Provider in accordance with this Condition must:
 - (a) take place as soon as reasonably practicable after receiving the request from a Third Party;
 - (b) be on fair and reasonable terms and conditions (excluding charges); and
 - (c) be on such terms and conditions (excluding charges) as Ofcom may from time to time direct.
- 1.3 The Dominant Provider must comply with any direction Ofcom may make from time to time under this Condition.

Condition 2 - Requests for new forms of network access

- 2.1 The Dominant Provider shall, for the purposes of transparency, publish guidelines, in relation to requests for new forms of network access made to it. Such guidelines must set out:
 - (a) the form in which such a request should be made;
 - (b) the information that the Dominant Provider requires in order to consider a request for a new form of network access;
 - (c) the timescales in which such requests will be handled by the Dominant Provider; and
 - (d) any provisions directed by Ofcom.
- 2.2 The guidelines must meet the following principles:
 - (a) the process for consideration of requests shall be documented end-to-end;
 - (b) the timescales for each stage of the process shall be reasonable;
 - (c) the criteria by which requests will be assessed shall be clearly identified; and
 - (d) any changes to the guidelines shall be agreed between BT and other communications providers in an appropriate manner.
- 2.3 The Dominant Provider shall, upon reasonable request from a Third Party considering making a request for a new form of network access, provide that Third Party with such information as may be reasonably required to enable that Third Party to make a request for a new form of network access. Such information shall be provided within a reasonable period.

- 2.4 On receipt of a written request for a new form of network access, the Dominant Provider shall deal with the request in accordance with the guidelines described at paragraph 2.1 above. A modification of a request for a new form of network access which has previously been submitted to the Dominant Provider, and rejected by the Dominant Provider, shall be considered as a new request.
- 2.5 The Dominant Provider shall comply with any direction made by Ofcom under this Condition requiring amendments to the guidelines.

Condition 3 – No undue discrimination

- 3.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons in relation to the provision of network access in accordance with Condition 1.
- 3.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place one or more Third Parties at a competitive disadvantage in relation to activities carried on by the Dominant Provider.

Condition 4 – Publication of a Reference Offer

- 4.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer.
- 4.2 Subject to Condition 4.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of network access includes, where applicable, at least the following:
- (a) a description of the network access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of network access);
 - (b) the locations at which network access will be provided;
 - (c) any relevant technical standards for network access (including any usage restrictions and other security issues);
 - (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);
 - (e) any ordering and provisioning procedures;
 - (f) relevant charges, terms of payment and billing procedures;
 - (g) details of interoperability tests;
 - (h) details of traffic and network management;
 - (i) details of maintenance and quality as follows:

- (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
 - (iv) a definition and limitation of liability and indemnity; and
 - (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (j) details of measures to ensure compliance with requirements for network integrity;
 - (k) details of any relevant intellectual property rights;
 - (l) a dispute resolution procedure to be used between the parties;
 - (m) details of duration and renegotiation of agreements;
 - (n) provisions regarding confidentiality of the agreements;
 - (o) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);
 - (p) the standard terms and conditions for the provision of network access;
 - (q) such provisions as Ofcom may from time to time direct.

4.3 To the extent that the Dominant Provider provides to itself network access that:

- (a) is the same, similar or equivalent to that provided to any other Third Party; or
- (b) may be used for a purpose that is the same, similar or equivalent to that provided to any other Third Party,

in a manner that differs from that detailed in a Reference Offer in relation to network access provided to any other Third Party, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the network access that it provides to itself which includes, where relevant, at least those matters detailed in Conditions 4.2(a)-(q).

4.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any network access that it is providing as at the date that this Condition enters into force.

4.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further network access provided after the date that this Condition enters into force.

- 4.6 Publication referred to above shall be effected by placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider.
- 4.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts as have been requested).
- 4.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.
- 4.9 The Dominant Provider shall provide network access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.
- 4.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition 5 – Requirement to notify charges

- 5.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges and act in the manner set out below.
- 5.2 Where it proposes an Access Charge Change, the Dominant Provider shall send to every person with which it has entered into an Access Agreement pursuant to Condition 1, an Access Charge Change Notice.
- 5.3 The obligation in Condition 5.2 will not apply where the Access Charge Change is directed or determined by Ofcom or required by a notification or enforcement notification issued by Ofcom under sections 96A or 96C of the Act.
- 5.4 An Access Charge Change Notice must be sent not less than 56 days before any such amendment comes into effect.
- 5.5 The Dominant Provider shall ensure that an Access Charge Change Notice includes:
 - (a) a description of the network access in question;
 - (b) a reference to the location in the Dominant Provider's current Reference Offer of the terms and conditions associated with the provision of that network access;
 - (c) the date on which, or the period for which, the Access Charge Change will take effect (the "effective date");
 - (d) the current and proposed new charge; and
 - (e) the relevant network tariff gradient (save in respect of Interconnect Circuits).
- 5.6 The Dominant Provider shall not apply any Access Charge Change identified in an Access Charge Change Notice before the effective date.

5.7 To the extent that the Dominant Provider provides to itself network access that:

- (a) is the same, similar or equivalent to that provided to any other person; or
- (b) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to network access provided to any other person the Dominant Provider shall ensure that it sends to Ofcom a notice in relation to the network access that it provides to itself which includes, where relevant, at least those matters detailed in Conditions 5.5(a) to (e) and, where the Dominant Provider amends the charges on which it provides itself with network access, it shall ensure it sends to Ofcom a notice equivalent to an Access Charge Change Notice.

Condition 6 – Requirement to notify technical information

6.1 Save where Ofcom consents otherwise, where the Dominant Provider provides network access pursuant to Condition 1 and proposes new or amended terms and conditions relating to the following:

- (a) technical characteristics (including information on network configuration where necessary to make effective use of the network access provided);
- (b) the locations at which network access will be provided; or
- (c) the technical standards (including any usage restrictions and other security issues),

the Dominant Provider shall publish a written notice (the “Notice”) of the new or amended terms and conditions, not less than 90 days before either the Dominant Provider enters into an Access Agreement to provide the new network access or the amended terms and conditions of the existing Access Agreement come into effect.

6.2 The obligation in Condition 6.1 will not apply where the new or amended terms and conditions are directed or determined by Ofcom or are required by a notification or enforcement notification issued by Ofcom under sections 96A or 96C of the Act.

6.3 The Dominant Provider shall ensure that the Notice includes:

- (a) a description of the network access in question;
- (b) a reference to the location in the Dominant Provider’s Reference Offer of the relevant terms and conditions;
- (c) the date on which or the period for which the Dominant Provider may enter into an Access Agreement to provide the new network access or any amendments to the relevant terms and conditions will take effect (the “effective date”).

6.4 The Dominant Provider shall not enter into an Access Agreement containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.

- 6.5 Publication referred to in Condition 6.1 shall be effected by:
- (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider; and
 - (b) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Agreement pursuant to Condition 1. The provision of such a copy of the Notice by the Dominant Provider may be subject to a reasonable charge.

Condition 7 – Transparency as to quality of service

- 7.1 The Dominant Provider shall publish all such information for the purposes of securing transparency as to the quality of service in relation to network access provided by the Dominant Provider, in such manner and form as Ofcom may from time to time direct.
- 7.2 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this condition.

Condition 8 – Requirement to provide NTS Call Origination

- 8.1 The Dominant Provider shall provide NTS Call Origination as soon as it is reasonably practicable to every Third Party who reasonably requests it in writing.
- 8.2 Without prejudice to paragraphs 8.3 and 8.4 below and where a request is covered by paragraph 8.1 above, the Dominant Provider shall provide NTS Call Origination on fair and reasonable terms and conditions (excluding charges) and on such terms, conditions and charges as Ofcom may from time to time direct.
- 8.3 The Dominant Provider shall pass the Net Retail Call Revenue to the Third Party that is purchasing the NTS Call Origination, less the charges referred to in Condition 8.4 below.
- 8.4 The Dominant Provider shall make no charges for providing NTS Call Origination covered by paragraph 8.1 except for:
- (a) a charge for the call origination service used to originate the NTS Call;
 - (b) a charge for the NTS Retail Uplift; and
 - (c) a charge for bad debt relating to the retailing by the Dominant Provider of Premium Rate Service calls.
- 8.5 For the charge referred to in Condition 8.4(c) above, the Dominant Provider shall charge the Third Party no more than 5.2 per cent of the Net Retail Call Revenue for that Premium Rate Service call.
- 8.6 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition 8.

- 8.7 This Condition 8 is without prejudice to the generality of the provisions in Conditions 1 to 7 above.

SCHEDULE 2

Conditions imposed on KCOM

Part 1: Application

The SMP conditions in Part 3 of this Schedule 2 shall, except where specified otherwise, apply to the Dominant Provider in the relevant market and the area listed in Column 1 of Table 1 below to the extent specified in Column 2 of Table 1.

Table 1: Relevant markets and area for the purposes of this Schedule 2

Column 1: Relevant market or area	Column 2: Applicable SMP condition as set out in Part 3 of this Schedule 2
Wholesale call origination on a fixed narrowband network in the Hull Area	1 to 5 inclusive
Interconnect Circuits in the Hull Area	1 to 5, excluding SMP condition 4.5(e)

Part 2: Definitions and Interpretation

1. In this Schedule 1 –

- (a) “Access Agreement” means an agreement entered into between the Dominant Provider and a Third Party for the provision of network access in accordance with Condition 1;
- (b) “Access Charge Change” means any amendment to the charges, terms and conditions on which the Dominant Provider provides network access or in relation to any charges for new network access;
- (c) “Access Charge Change Notice” means a notice given by the Dominant Provider of an Access Charge Change
- (d) “Act” means the Communications Act 2003 (c. 21);
- (e) “CSI” means customer sited Interconnection;
- (f) “Dominant Provider” means KCOM Group plc, whose registered company number is 2150618, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- (g) “IEC” means Interconnection extension circuits;

- (h) “Interconnect Circuits” mean any and all of the following specific services provided by the Dominant Provider and covered by Condition 1:
 - (i) ISI connection;
 - (ii) ISI rental per 100m;
 - (iii) IEC connection;
 - (iv) IEC rental – fixed;
 - (v) IEC rental per km;
 - (vi) intra-building circuits connection;
 - (vii) intra-building circuits rental; and
 - (viii) rearrangements.
- (i) “ISI” means in-span Interconnection links;
- (j) “Reference Offer” means the terms and conditions on which the Dominant Provider is willing to enter into an Access Agreement;
- (k) “Third Party” means either a person providing a public electronic communications network or a person providing a public electronic communications service;

2. For the purpose of interpreting this Schedule :

- (a) except in so far as the context otherwise requires, words or expressions shall have the meaning assigned to them in paragraph 1 of this Part above and otherwise any word or expression shall have the same meaning as it has in the Act;
- (b) the Interpretation Act 1978 (c. 30) shall apply as if this Schedule were an Act of Parliament; and
- (c) headings and titles shall be disregarded.

Part 3: Conditions (KCOM)

Condition 1 – Network access on reasonable request

- 1.1 The Dominant Provider must provide network access to a Third Party where that Third Party, in writing, reasonably requests it.
- 1.2 The provision of network access by the Dominant Provider in accordance with this Condition must:
 - (a) take place as soon as reasonably practicable after receiving the request from a Third Party;
 - (b) be on fair and reasonable terms, conditions and charges; and
 - (c) be on such terms, conditions and charges as Ofcom may from time to time direct.
- 1.3 The Dominant Provider must comply with any direction Ofcom may make from time to time under this Condition.

Condition 2 – No undue discrimination

- 2.1 The Dominant Provider shall not unduly discriminate against particular persons or against a particular description of persons in relation to the provision of network access in accordance with Condition 1.
- 2.2 In this Condition, the Dominant Provider may be deemed to have shown undue discrimination if it unfairly favours to a material extent an activity carried on by it so as to place Third Parties at a competitive disadvantage in relation to activities carried on by the Dominant Provider.

Condition 3 – Publication of a Reference Offer

- 3.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish a Reference Offer.
- 3.2 Subject to Condition 3.8 below, the Dominant Provider shall ensure that a Reference Offer in relation to the provision of network access includes, where applicable, at least the following:
 - (a) a description of the network access to be provided, including technical characteristics (which shall include information on network configuration where necessary to make effective use of network access);
 - (b) the locations at which network access will be provided;
 - (c) any relevant technical standards for network access (including any usage restrictions and other security issues);
 - (d) the conditions for access to ancillary, supplementary and advanced services (including operational support systems, information systems or databases)

for pre-ordering, provisioning, ordering, maintenance and repair requests and billing);

- (e) any ordering and provisioning procedures;
- (f) relevant charges, terms of payment and billing procedures;
- (g) details of interoperability tests;
- (h) details of traffic and network management;
- (i) details of maintenance and quality as follows:
 - (i) specific time scales for the acceptance or refusal of a request for supply and for completion, testing and hand-over or delivery of services and facilities, for provision of support services (such as fault handling and repair);
 - (ii) service level commitments, namely the quality standards that each party must meet when performing its contractual obligations;
 - (iii) the amount of compensation payable by one party to another for failure to perform contractual commitments;
 - (iv) a definition and limitation of liability and indemnity; and
 - (v) procedures in the event of alterations being proposed to the service offerings, for example, launch of new services, changes to existing services or change to prices;
- (j) details of measures to ensure compliance with requirements for network integrity;
- (k) details of any relevant intellectual property rights;
- (l) a dispute resolution procedure to be used between the parties;
- (m) details of duration and renegotiation of agreements;
- (n) provisions regarding confidentiality of the agreements;
- (o) rules of allocation between the parties when supply is limited (for example, for the purpose of co-location or location of masts);
- (p) the standard terms and conditions for the provision of network access;
- (q) such provisions as Ofcom may from time to time direct.

3.3 To the extent that the Dominant Provider provides to itself network access that:

- (a) is the same, similar or equivalent to that provided to any other Third Party; or
- (b) may be used for a purpose that is the same, similar or equivalent to that provided to any other Third Party,

in a manner that differs from that detailed in a Reference Offer in relation to network access provided to any other Third Party, the Dominant Provider shall ensure that it publishes a Reference Offer in relation to the network access that it provides to itself which includes, where relevant, at least those matters detailed in Conditions 3.2(a)-(q).

- 3.4 The Dominant Provider shall, within one month of the date that this Condition enters into force, publish a Reference Offer in relation to any network access that it is providing as at the date that this Condition enters into force.
- 3.5 The Dominant Provider shall update and publish the Reference Offer in relation to any amendments or in relation to any further network access provided after the date that this Condition enters into force.
- 3.6 Publication referred to above shall be effected by placing a copy of the Reference Offer on any relevant website operated or controlled by the Dominant Provider.
- 3.7 The Dominant Provider shall send a copy of the current version of the Reference Offer to any person at that person's written request (or such parts as have been requested).
- 3.8 The Dominant Provider shall make such modifications to the Reference Offer as Ofcom may direct from time to time.
- 3.9 The Dominant Provider shall provide network access at the charges, terms and conditions in the relevant Reference Offer and shall not depart therefrom either directly or indirectly.
- 3.10 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

Condition 4 – Requirement to notify charges

- 4.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges and act in the manner set out below.
- 4.2 Where it proposes an Access Charge Change, the Dominant Provider shall send to every person with which it has entered into an Access Agreement pursuant to Condition 1, an Access Charge Change Notice.
- 4.3 The obligation in Condition 4.2 will not apply where the Access Charge Change is directed or determined by Ofcom or required by a notification or enforcement notification issued by Ofcom under sections 96A or 96C of the Act.
- 4.4 An Access Charge Change Notice must be sent not less than 56 days before any such amendment comes into effect.
- 4.5 The Dominant Provider shall ensure that an Access Charge Change Notice includes:
 - (a) a description of the network access in question;

- (b) a reference to the location in the Dominant Provider's current Reference Offer of the terms and conditions associated with the provision of that network access;
 - (c) the date on which, or the period for which, the Access Charge Change will take effect (the "effective date");
 - (d) the current and proposed new charge; and
 - (e) the relevant network tariff gradient (save in respect of Interconnect Circuits).
- 4.6 The Dominant Provider shall not apply any Access Charge Change identified in an Access Charge Change Notice before the effective date.
- 4.7 To the extent that the Dominant Provider provides to itself network access that:
- (a) is the same, similar or equivalent to that provided to any other person; or
 - (b) may be used for a purpose that is the same, similar or equivalent to that provided to any other person,

in a manner that differs from that detailed in an Access Charge Change Notice in relation to network access provided to any other person the Dominant Provider shall ensure that it sends to Ofcom a notice in relation to the network access that it provides to itself which includes, where relevant, at least those matters detailed in Conditions 4.5(a) to (e) and, where the Dominant Provider amends the charges on which it provides itself with network access, it shall ensure it sends to Ofcom a notice equivalent to an Access Charge Change Notice.

Condition 5 – Requirement to notify technical information

- 5.1 Save where Ofcom consents otherwise, where the Dominant Provider provides network access pursuant to Condition 1 and proposes new or amended terms and conditions relating to the following:
- (a) technical characteristics (including information on network configuration where necessary to make effective use of the network access provided);
 - (b) the locations at which network access will be provided; or
 - (c) the technical standards (including any usage restrictions and other security issues),

the Dominant Provider shall publish a written notice (the "Notice") of the new or amended terms and conditions, not less than 90 days before either the Dominant Provider enters into an Access Agreement to provide the new network access or the amended terms and conditions of the existing Access Agreement come into effect.

- 5.2 The obligation in Condition 5.1 will not apply where the new or amended terms and conditions are directed or determined by Ofcom or are required by a notification or enforcement notification issued by Ofcom under sections 96A or 96C of the Act.
- 5.3 The Dominant Provider shall ensure that the Notice includes:

- (a) a description of the network access in question;
 - (b) a reference to the location in the Dominant Provider's Reference Offer of the relevant terms and conditions; and
 - (c) the date on which or the period for which the Dominant Provider may enter into an Access Agreement to provide the new network access or any amendments to the relevant terms and conditions will take effect (the "effective date").
- 5.4 The Dominant Provider shall not enter into an Access Agreement containing the terms and conditions identified in the Notice or apply any new relevant terms and conditions identified in the Notice before the effective date.
- 5.5 Publication referred to in Condition 5.1 shall be effected by:
 - (a) placing a copy of the Notice on any relevant website operated or controlled by the Dominant Provider; and
 - (b) sending a copy of the Notice to any person at that person's written request, and where the Notice identifies a modification to existing relevant terms and conditions, to every person with which the Dominant Provider has entered into an Access Agreement pursuant to Condition 1. The provision of such a copy of the Notice by the Dominant Provider may be subject to a reasonable charge.

SCHEDULE 3

Conditions imposed on each of the persons listed in Annex A to this Schedule 3

Part 1: Application

The SMP conditions in Part 3 of this Schedule 3 shall apply to each of the Dominant Providers listed in Annex A to this Schedule 3, in relation to the market for call termination services which are provided by that Dominant Provider to another communications provider, for the termination of voice calls to United Kingdom geographic numbers in the area served by that Dominant Provider.

Part 2: Definitions and Interpretation

1. In this Schedule 3 –

- (a) “Access Charge Change” means any amendment to the charges, terms and conditions on which the Dominant Provider provides network access or in relation to any charges for new network access;
- (b) “Access Charge Change Notice” means a notice given by the Dominant Provider of an Access Charge Change;
- (c) “Act” means the Communications Act 2003 (c. 21);
- (d) “Dominant Provider” means, in relation to each market identified in paragraph 14 of this Notification, the person identified in Annex A to this Schedule 3 insofar as it operates on that market; and
- (e) “Third Party” means either a person providing a public electronic communications network or a person providing a public electronic communications service.

2. For the purpose of interpreting the SMP conditions in this Schedule:

- (a) except in so far as the context otherwise requires, words or expressions shall have the meaning assigned to them in paragraph 2 of this Part above and otherwise any word or expression shall have the same meaning as it has in the Act;
- (b) the Interpretation Act 1978 (c. 30) shall apply as if this Schedule were an Act of Parliament; and
- (c) headings and titles shall be disregarded.

Part 3: Conditions (Communications Providers listed at Annex A to this Schedule 3)

Condition 1 – Network access on reasonable request

- 1.1 The Dominant Provider must provide network access to a Third Party where that Third Party, in writing, reasonably requests it.
- 1.2 The provision of network access by the Dominant Provider in accordance with this Condition must:
 - (a) take place as soon as reasonably practicable after receiving the request from a Third Party;
 - (b) be on fair and reasonable terms, conditions and charges; and
 - (c) be on such terms, conditions and charges as Ofcom may from time to time direct.
- 1.3 The Dominant Provider must comply with any direction Ofcom may make from time to time under this Condition.

Condition 2 – Requirement to notify charges

- 2.1 Except in so far as Ofcom may otherwise consent in writing, the Dominant Provider shall publish charges and act in the manner set out below.
- 2.2 Where the Dominant Provider proposes an Access Charge Change, it must publish an Access Charge Change Notice on an appropriate publicly accessible website.
- 2.3 An Access Charge Change Notice must be published on or before the day on which the Access Charge Change comes into effect.
- 2.4 The Dominant Provider must ensure that any Access Charge Change Notice includes the date on which, or period for which, the Access Charge Change will take effect.

Annex A to Schedule 3 (List of Dominant Providers for the purpose of Schedule 3)

1. (AQ) Limited whose registered company number is 03663860, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
2. 10Act Limited whose registered company number is 05617099, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
3. 24 Seven Communications Limited whose registered company number is 04468566, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
4. 3C Limited whose registered company number is 06041466, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
5. 4D Interactive Ltd whose registered company number is 02676756, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
6. Ace Call Limited whose registered company number is 06729339, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
7. Affiniti Integrated Solutions Ltd whose registered company number is 02817039, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
8. Alliance Technologies LLC whose registered company number is 20-4720577, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
9. Aloha Telecommunications Limited whose registered company number is 07210905, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
10. Andrews & Arnold Ltd whose registered company number is 03342760, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
11. Anycall Ltd whose registered company number is 04581373, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
12. Atomstream Limited whose registered company number is 06746855, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
13. Bicom Systems EURL whose registered company number is 07870693, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

14. Bluecom (UK) Ltd whose registered company number is 04483434 and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
15. Broadcast Telecom Ltd whose registered company number is 06996222, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
16. BSKYB LLU Assets Limited whose registered company number is 03137522, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
17. BSKYB Telecommunications Services Limited whose registered company number is 02883980, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
18. Buzz Networks Limited whose registered company number is 03260342, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
19. Cable & Wireless Worldwide PLC whose registered company number is 07029206, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
20. Callagenix Ltd whose registered company number is 03963819, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
21. Calltracks Limited whose registered company number is 06539973, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
22. Callworld UK Ltd whose registered company number is 05161797, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
23. CFL Communications Limited whose registered company number is 04419749, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
24. Cheapest International Calls LLP whose registered company number is OC356986, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
25. Cheers International Sales Limited whose registered company number is 06288825, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
26. Citrus Telecommunications Ltd whose registered company number is 03517870, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

27. Cloud9 Communications Limited whose registered company number is 07153956, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
28. Cobalt Telephone Technologies whose registered company number is 03151938, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
29. COLT Technology Services whose registered company number is 02452736, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
30. Connect Telecom UK Ltd whose registered company number is 04198443, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
31. Content Guru Ltd whose registered company number is 05653869, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
32. Coralbridge Ltd whose registered company number is 06345881, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
33. Core Telecom Limited whose registered company number is 05332008, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
34. Daisy Communications Ltd whose registered company number is 04145329, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
35. Danemere Street Creative whose registered company number is 03506479, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
36. Daotec Ltd whose registered company number is 04296038, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
37. Dark Group Limited whose registered company number is 03766500, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
38. Digital Mail Limited whose registered company number is 02661078, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
39. Digitech Solutions Global Limited whose registered company number is 05821246, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
40. DRD Communications Limited whose registered company number is 03545257, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

41. API Telecom Limited whose registered company number is 07945651, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
42. E164 Ltd whose registered company number is 06982841, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006..
43. Edge Telecom Limited whose registered company number is 03101247, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
44. Eircom UK Ltd whose registered company number is NF003670, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
45. Entanet International Ltd whose registered company number is 03274237, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
46. Eurobell (Holdings) Limited whose registered company number is 02904215, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
47. Everything Everywhere Limited whose registered company number is 02382161, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
48. The Excell Group PLC whose registered company number is 03678027, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
49. Firstsound Ltd whose registered company number is 02845928, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
50. FleXtel Limited whose registered company number is 02772380, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
51. Fluenta Ltd whose registered company number is 07940266, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
52. Frontier Systems Ltd whose registered company number is 03544845, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
53. Gage Networks LLP whose registered company number is OC304799, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

54. Gamma Telecom Holdings Ltd whose registered company number is 04287779, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
55. Gladstar Telecommunications Ltd whose registered company number is 05197421, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
56. GlemNet Ltd whose registered company number is 04308716, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
57. Global One Communications Holding Ltd whose registered company number is 01416834, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
58. Griffin Information Systems Ltd whose registered company number is 03676297, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
59. Group 3 Technology Limited whose registered company number is 04127747, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
60. Hello Telecom (UK) plc whose registered company number is 04489059, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
61. Icron Network Limited whose registered company number is 05445235, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
62. iHub UK Ltd whose registered company number is SC213090, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
63. In Call Solutions Limited whose registered company number is 05799390, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
64. i-Net Communications Group plc whose registered company number is 04036526, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
65. Instant Communication Limited whose registered company number is 07435377, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
66. InTouch Communication Services Limited whose registered company number is 03606467, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
67. Invoco Ltd whose registered company number is 04465219, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

68. Invomo Ltd whose registered company number is 06267056, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
69. IP Base Ltd whose registered company number is 05607201, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
70. Jimati UK Ltd whose registered company number is 07702856, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
71. KCOM Group plc whose registered company number is 02150618, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
72. Known Communications Limited whose registered company number is 07629174, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
73. Known Future Limited whose registered company number is 04555918, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
74. Lanonyx Telecom Limited whose registered company number is 07658086, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
75. Level 3 Communications Ltd whose registered company number is 02495998, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
76. Linear Telecoms Limited whose registered company number is 06917811, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
77. Localphone Limited whose registered company number is 06085990, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
78. LTT plc whose registered company number is 04260920, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
79. Magnetic North Software Limited whose registered company number is 03637644, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
80. Magrathea Telecommunications Ltd whose registered company number is 04260485, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

81. Mars Communications Limited whose registered company number is 06478834, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
82. MDNX Enterprise Services Limited whose registered company number is 04287100, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
83. Media Telecom Ltd whose registered company number is 07126854, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
84. Microtalk UK Ltd whose registered company number is 06477169, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
85. Minotaur IT Ltd whose registered company number is 05392223, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
86. Mundio Mobile Limited whose registered company number is 04553934, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
87. Nationwide Telephone Assistance Ltd whose registered company number is 04315226, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
88. Need More Time Ltd Ltd whose registered company number is 03925530, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
89. Net Solutions Europe Limited whose registered company number is 03203624, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
90. Net-Work Internet Ltd whose registered company number is 03900685, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
91. NewVoiceMedia Limited whose registered company number is 03602868, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
92. Nexbridge Communications Limited whose registered company number is 07179973, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
93. Nexus Telecommunications Limited whose registered company number is 03895766, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

94. NG Network Consultancy Ltd whose registered company number is 06920255, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
95. Nodemax Limited whose registered company number is 06127089, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
96. O-Bit Telecom Limited whose registered company number is 04365519, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
97. Orbis Telecom whose registered company number is 05402754, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
98. Orbtalk Limited whose registered company number is 05382664, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
99. Ossian Telecom Limited whose registered company number is SC347950, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
100. Outsourcery Limited whose registered company number is 05861138, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
101. OVH Limited whose registered company number is 05519821, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
102. Oxygen8 Communications UK Limited whose registered company number is 03383285, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
103. Phone Co-Op Numbering Limited whose registered company number is 07432108, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
104. Planet Numbers Ltd whose registered company number is 03823269, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
105. Plus Telecom Limited whose registered company number is 04052436, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
106. Primus Telecommunications Ltd whose registered company number is 02937312, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
107. Prodigy Internet Ltd whose registered company number is 03828160, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

108. Promotions4All Ltd whose registered company number is 07046038, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
109. Pulsant (Scotland) Limited whose registered company number is SC236128, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
110. QX Telecom Ltd whose registered company number is 03820728, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
111. Reading Telecom Ltd whose registered company number is 07677135, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
112. Reality Network Services Limited whose registered company number is 04267969, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
113. Red Matter Limited whose registered company number is 06968219, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
114. Redstone Communications Ltd whose registered company number is 04145329, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
115. Relax Telecom plc whose registered company number is 06777698, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
116. Resilient Networks plc whose registered company number is 01403177, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
117. Rutland Telecom Ltd whose registered company number is 04320627, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
118. Six Degrees Unified Comms Limited whose registered company number is 04335920, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
119. Skycom Ltd whose registered company number is 04101655, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
120. Skymaker Limited whose registered company number is 03101247, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

121. Smallworld Cable Limited whose registered company number is 05679836, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
122. Solutios Limited whose registered company number is 03977874, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
123. Spacetel UK Ltd whose registered company number is 03036383, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
124. Spitfire Network Services Ltd whose registered company number is 02657590, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
125. Starcomm Ltd whose registered company number is 02830288, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
126. Storacall Technology Ltd whose registered company number is 02578478, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
127. Stream Live Ltd whose registered company number is 03487227, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
128. Swiftnet Ltd whose registered company number is 02469394, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
129. Synety Limited whose registered company number is 05557457, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
130. Syntec Telecom Ltd whose registered company number is 03871988, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
131. TalkTalk Limited whose registered company number is 01599423, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
132. Telappliant Ltd whose registered company number is 04632756, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
133. Telecom2 Ltd whose registered company number is 06926334, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
134. Telecoms World Direct Ltd whose registered company number is 05861680, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

135. Telecoms World plc whose registered company number is 03576847, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
136. Teledesign Ltd whose registered company number is 03254784, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
137. TeleMagic Ltd whose registered company number is 07390681, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
138. Telephone Box Limited whose registered company number is 07198723, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
139. Telephony Services Limited whose registered company number is 05134355, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
140. TeleSurf Limited whose registered company number is 06427905, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
141. TeleWare plc whose registered company number is 04756742, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
142. TelNG Limited whose registered company number is 05503631, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
143. TelXL Ltd whose registered company number is 04249562, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
144. TeslaOne Limited whose registered company number is 06814714, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
145. TG Support Limited whose registered company number is 05370731, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
146. Titanium Limited whose registered company number is 06952284, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
147. TRA (UK) LTD whose registered company number is 04222478, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

148. Truphone Ltd whose registered company number is 04187081, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
149. Tuxtel Ltd whose registered company number is 06774113, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
150. United Connect Ltd whose registered company number is 03204967, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
151. Unitel Global Communications Ltd whose registered company number is 04797153, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
152. UPA Telecom Ltd whose registered company number is 06447901, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
153. Verizon UK Ltd whose registered company number is 02776038, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
154. Vertical Systems Limited whose registered company number is 01741340, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
155. Via-Vox Limited whose registered company number is 04646978, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
156. Vibe Communications UK Ltd whose registered company number is 05742367, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
157. Virgin Media Limited whose registered company number is 02591237, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
158. Virgin Media Wholesale Limited whose registered company number is 02514287, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
159. Vital Phone Limited whose registered company number is 04203630, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
160. VoiceHost Limited whose registered company number is 05851537, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
161. Voicenet Solutions Ltd whose registered company number is 05083841, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

162. Voicetec Systems Ltd whose registered company number is 03948745, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
163. VoIP-Un Limited whose registered company number is 05225497, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
164. Voxalis Ltd whose registered company number is 05630233, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
165. Voxbone SA whose registered company number is BE 0478.928.788, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
166. Wavecrest (UK) Ltd whose registered company number is 03042254, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
167. Wightfibre Ltd whose registered company number is 05470659, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
168. Wizaner Limited whose registered company number is 02530183, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
169. ZAF Telecom Ltd whose registered company number is 04347883, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
170. Zamir Telecom Limited whose registered company number is 05286517, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.
171. Zimo Communications Limited whose registered company number is 05374218, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006.

Annex 2

Charge controls for call origination, call termination, interconnect circuits, and project management, policy and planning

NOTIFICATION UNDER SECTION 48(1) OF THE COMMUNICATIONS ACT 2003

SMP services conditions in relation to BT under section 45 of the Communications Act 2003

Background

1. On 5 February 2013, Ofcom published a consultation document entitled Review of the fixed narrowband services markets - Consultation on the proposed markets, market power determinations and remedies (the "February 2013 consultation").
2. Annex 6 of the February 2013 consultation set out the Notification under sections 48A and 80A of the Act, in which Ofcom proposed to identify certain markets, make market power determinations and set significant market power ("SMP") services conditions.
3. At Annex 7 of the February 2013 consultation, Ofcom proposed to impose SMP conditions setting certain price controls.
4. A copy of the February 2013 consultation was sent to the Secretary of State in accordance with sections 48C(1) and 81(1) of the Act.
5. Ofcom received several responses to its proposals set out in the February 2013 consultation, and has considered every such representation. The Secretary of State has not notified Ofcom of any international obligation on the United Kingdom for the purposes of those proposals.
6. The proposals set out in the February 2013 consultation, and Annex 7 of that consultation in particular, contained proposals of EU significance for the purposes of the Act. Therefore, after making such modifications to the proposals that appeared to Ofcom to be appropriate following domestic consultation, Ofcom sent a copy of them, and a draft of the Statement accompanying the notification setting out the reasons for them, to the European Commission, BEREC and the regulatory authorities of every other Member State for EU consultation, in accordance with sections 48B(2) of the Act.
7. Ofcom received comments from the European Commission on its proposals on 20 September 2013, and has made such modifications to this Notification and the Statement accompanying this Notification as it considers appropriate.

Determinations set out in the Market Power Notification

8. Annex 1 of the Statement sets out the Notification under sections 48(1) and 79(4) of the Act, in which Ofcom has identified certain markets, made market power determinations and set SMP services conditions (the "Market Power Notification").
9. In the Market Power Notification, Ofcom has identified, amongst others, the following markets:

- (a) Wholesale call origination on a fixed narrowband network in the United Kingdom excluding the Hull Area; and
 - (b) Call termination services which are provided by BT to another communications provider, for the termination of voice calls to geographic numbers in the area served by BT.
10. In the Market Power Notification, Ofcom has determined that BT has significant market power and has imposed SMP services conditions in relation to both markets identified in paragraph 9 above. As a result of BT's significant market power in relation to call origination and call termination, Ofcom has also imposed certain SMP services conditions in relation to interconnect circuits and project management, policy and planning.

Determinations

11. In this Notification, with reference to the market power determinations referred to in the Market Power Notification, Ofcom has set the following SMP conditions:
- (a) In relation to the market listed in paragraph 9(a) above, SMP Condition 9 as set out in Schedule 1 to this Notification;
 - (b) In relation to the market listed in paragraph 9(b) above, SMP Condition 10 as set out in Schedule 2 to this Notification;
 - (c) As a result of BT's significant market power in relation to the market listed in paragraph 9(a) and 9(b) above, in relation to interconnect circuits, SMP Condition 11 as set out in Schedule 3 to this Notification; and
 - (d) As a result of BT's significant market power in relation to the market listed in paragraph 9(a) and 9(b) above, in relation to project management, policy and planning, SMP Condition 12 as set out in Schedule 4 to this Notification.
12. The effect of, and Ofcom's reasons for setting the SMP conditions set out in Schedules 1, 2, 3, and 4 to this Notification are set out in the Statement accompanying this Notification, and in particular Sections 5, 6, 10 and 11.

Ofcom's duties and legal tests

13. In setting the SMP conditions referred to in paragraph 11 above, Ofcom has taken due account of all applicable recommendations issued by the European Commission in accordance with Section 4A of the Act. Pursuant to Article 3(3) of Regulation (EC) No 1211/2009, Ofcom has also taken the utmost account of any relevant opinion, recommendation, guidelines, advice or regulatory practice adopted by BEREC.
14. Ofcom considers that the SMP conditions referred to in paragraph 11 above comply with the requirements of sections 45 to 47, 87 and 88 of the Act, as appropriate and relevant to each such SMP condition.
15. In setting the SMP conditions referred to in paragraph 11 above, Ofcom has considered and acted in accordance with its general duties set out in section 3 of the Act and the six Community requirements set out in section 4 of the Act.

Interpretation

16. Except as otherwise defined in paragraph 17 of this Notification, words or expressions used shall have the same meaning as they have been ascribed in the Act.

17. In this Notification:

- (a) "Act" means the Communications Act 2003 (c. 21);
- (b) "BT" means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- (c) "Hull Area" means the area defined as 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 Kingston Communication (Hull) plc; and
- (d) "United Kingdom" has the meaning given to it in the Interpretation Act 1978 (1978 c30).

Signed

A handwritten signature in black ink, appearing to read 'A. Coscelli', is written over a light blue horizontal line.

Andrea Coscelli
Economics Director, Ofcom

**A person duly authorised in accordance with paragraph 18 of the Schedule to the
Office of Communications Act 2002**

26 September 2013

SCHEDULE 1

Condition 9: Charge control – call origination

- (a) During the period beginning on 1 October 2013 and ending on 31 December 2013, the Dominant Provider shall take all reasonable steps to secure that the Charge for each of the services listed in the Annex to this Schedule 1 does not exceed the Charge for that same service which is in effect at 30 September 2013.
- (b) The Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Period, the Percentage Change, C_t , (as determined in accordance with paragraph (c)) in the aggregate of Charges for all of the services listed in the Annex to this Schedule 1 (all such services together referred to as the “Basket”) is not more than the Controlling Percentage, CP_t , (as determined in accordance with paragraph (d), or paragraph (g) if the circumstances in paragraphs (e) or (f) prevail,).
- (c) The Percentage Change for the purpose of the Basket specified in paragraph (b) shall be calculated by employing the following formula:

$$C_t = \frac{\sum_{i=1}^n \left[R_i \frac{(\bar{p}_{i,t} - \bar{p}_{i,t-1})}{\bar{p}_{i,t-1}} \right]}{\sum_{i=1}^n R_i}$$

Where:

C_t is the Percentage Change in the aggregate of Charges for the services in the Basket during the Relevant Period, t ;

n is the number of services in the Basket;

i is a service numbered from 1 to n for each of the n services in the Basket;

R_i is the Total Revenue accrued during the Prior Financial Year in respect of service, i ;

t refers to the Relevant Period;

$t-1$ refers to the Prior Period;

$\bar{p}_{i,t}$ is the Relevant Period Weighted Average Charge made by the Dominant Provider for service, i ;

Where such Relevant Period Weighted Average Charge shall be calculated by employing the following formula:

$$\bar{p}_{i,t} = \sum_{j=1}^m (w_{i,j,t} p_{i,j,t})$$

Where:

m is the number of time periods for which there are distinct Charges during the Relevant Period;

j is a number from 1 to m for each of the m time periods during which a Charge is in effect;

$w_{i,j,t}$ is the proportion of the Relevant Period in which each Charge, $p_{i,j,t}$, is in effect, calculated by the number of days during which the Charge is in effect and dividing

- (1) for the First Relevant Period, by 273
- (2) for the Second Relevant Period, by 365; and
- (3) for the Third Relevant Period, by 366.

$p_{i,j,t}$ is the Charge for the specified time period, j , during the Relevant Period, t , for the specific service, i ;

$\bar{p}_{i,t-1}$ is the Prior Period Weighted Average Charge made by the Dominant Provider for service, i :

Where such Prior Period Weighted Average Charge shall be calculated by employing the following formula:

$$\bar{p}_{i,t-1} = \sum_{j=1}^m (w_{i,j,t-1} p_{i,j,t-1})$$

Where:

m is the number of time periods for which there are distinct Charges during the Prior Period;

j is a number from 1 to m for each of the m time periods during which a Charge is in effect;

$w_{i,j,t-1}$ is the proportion of the Prior Period in which each Charge, $p_{i,j,t-1}$, is in effect, calculated by the number of days during which the Charge is in effect and dividing;

- (1) for the First Prior Period, by 365
- (2) for the Second Prior Period, by 273; and
- (3) for the Third Prior Period, by 365.

$p_{i,j,t-1}$ is the Charge for the specified time period, j , during the Prior Period, $t-1$, for the specific service, i ;

(d) Subject to paragraphs **(e)** **(f)** and **(g)**, the Controlling Percentage in relation to any Relevant Period shall be calculated by employing the following formula:

$$CP_t = RPI + X$$

Where:

CP_t is the Controlling Percentage for the Relevant Period, rounded to one decimal place;

RPI is the change in the Retail Prices Index in the period of 12 months ending on 30 June immediately before the beginning of the Relevant Period expressed as a percentage, rounded to one decimal place;

X is:

- (1) for the First Relevant Period, 71.7%
- (2) for the Second Relevant Period, -3.5%
- (3) for the Third Relevant Period, -3.6%

- (e) Where the Percentage Change in either the First Relevant Period or the Second Relevant Period is less than the Controlling Percentage (the “Deficiency”), then the Controlling Percentage for the following Relevant Period shall be determined in accordance with paragraph (g).
- (f) Where the Percentage Change in either the First Relevant Period or the Second Relevant Period is more than the Controlling Percentage (the “Excess”), then the Controlling Percentage for the following Relevant Period shall also be determined in accordance with paragraph (g).
- (g) In the case of Deficiency (defined in (e) above) or Excess (defined in (f) above), the Controlling Percentage will be calculated by employing the following formula:

$$CP_t = [(100\% + RPI + X)(100\% + CP_{t-1}) / (100\% + C_{t-1})] - 100\%$$

Where:

CP_t is the Controlling Percentage for the Second Relevant Period (in case of Deficiency or Excess in the First Relevant Period) or for the Third Relevant Period (in case of Deficiency or Excess in the Second Relevant Period);

CP_{t-1} is the Controlling Percentage for the First Relevant Period (in case of Deficiency or Excess in the First Relevant Period) or for the Second Relevant Period (in case of Deficiency or Excess in the Second Relevant Period);

C_{t-1} is the Percentage Change in the aggregate of Charges for the services in the Basket during the First Relevant Period (in case of Deficiency or Excess in the First Relevant Period) or for the Second Relevant Period (in case of Deficiency or Excess in the Second Relevant Period), calculated in accordance with the formula for C_t set out in paragraph (c);

X is as set out in paragraph (d) above; and

RPI is as set out in paragraph (d) above.

- (h) Where the Percentage Change in any Relevant Period is more than the Controlling Percentage, the Dominant Provider shall, to the extent reasonably possible, and as soon as reasonably practicable, repay the Relevant Excess Revenue to every Affected Communications Provider.
- (i) Where

- (1) the Dominant Provider makes a material change (other than to a Charge) to any service which is subject to this Condition 9;
- (2) the Dominant Provider makes a change to the date on which its financial year ends; or
- (3) there is a material change in the basis of the Retail Prices Index,

paragraphs **(a)** to **(h)** shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances.

For the purposes of this paragraph, a material change to any service which is subject to this Condition 9 includes the introduction of a new service wholly or substantially in substitution for that existing service.

(j) The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than 31 March 2014 and, thereafter, no later than three months after the end of each Relevant Period, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control. The data shall include, as relevant:

- i. pursuant to paragraph **(c)**, the calculated Percentage Change relating to the aggregate of Charges for all of the services in the Basket;
- ii. all relevant data the Dominant Provider used in the calculation of the Percentage Change, including for each specific service;
- iii. all Charges published by the Dominant Provider from time to time during the period beginning on 1 October 2013 and ending on 31 December 2013, or the Relevant Period as well as the Prior Period, including the dates and time periods during which they were in force;
- iv. the Relevant Period Weighted Average Charges and the Prior Period Weighted Average Charges for all of the services in the Basket and calculations thereof;
- v. other data necessary for monitoring compliance with the charge control; and
- vi. such data as Ofcom may from time to time direct.

All relevant revenues in respect of a specific service in the Basket are to be provided to at least the nearest £1,000.

(k) The Dominant Provider must take such steps as Ofcom may from time to time direct to comply with its obligations under this Condition 9.

(l) Paragraphs **(a)** to **(k)** shall not apply to such extent as Ofcom may direct.

(m) In this Condition:

- i. Affected Communications Provider means each communications provider to whom the Dominant Provider has provided any of the services listed in the Annex to this Schedule 1 during the Relevant Period;
- ii. Basket has the meaning as described in paragraph **(b)**;

- iii. Charge means the published pence per minute charge rounded to four decimal places (being the amount offered or charged by the Dominant Provider, excluding any discounts), to a communications provider for a unit of any of the services subject to this Condition 9;
- iv. Controlling Percentage is to be determined in accordance with paragraph **(d)**;
- v. Dominant Provider means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- vi. Excess Revenue means the difference between the revenue which the Dominant Provider earned in the Relevant Period from providing the services listed in the Annex to this Schedule and the revenue the Dominant Provider would have earned in the Relevant Period from providing the services listed in the Annex to this Schedule if it had complied with paragraph **(b)** of this Schedule 1;
- vii. External Revenue means revenue from communications providers, other than the Dominant Provider, in relation to the services subject to this Condition 9;
- viii. Internal Revenue means revenue from the Dominant Provider in relation to call origination services, equivalent to the services listed in the Annex to this Schedule 1, provided to itself;
- ix. Ofcom means the Office of Communications;
- x. Percentage Change is to be determined in accordance with paragraph **(c)**;
- xi. Prior Financial Year means the period of 12 months ending on 31 March immediately preceding the Relevant Period in question;
- xii. Prior Period means each of the following three periods:
 - (1) In relation to the First Relevant Period, the period beginning 1 October 2012 and ending 30 September 2013 (the “First Prior Period”);
 - (2) In relation to the Second Relevant Period, the period beginning 1 January 2014 and ending 30 September 2014 (the “Second Prior Period”); and
 - (3) In relation to the Third Relevant Period, the period beginning 1 October 2014 and ending 30 September 2015 (the “Third Prior Period”).
- xiii. Prior Period Weighted Average Charge is to be determined in accordance with the relevant formula in paragraph **(c)**;
- xiv. Relevant Excess Revenue means the Excess Revenue earned from charging the Affected Communications Provider;
- xv. Relevant Period means each of the following three periods:
 - (1) The nine-month period beginning on 1 January 2014 and ending on 30 September 2014 (the “First Relevant Period”);

- (2) The twelve-month period beginning on 1 October 2014 and ending on 30 September 2015 (the “Second Relevant Period”); and
 - (3) The twelve-month period beginning on 1 October 2015 and ending on 30 September 2016 (the “Third Relevant Period”).
- xvi. Relevant Period Weighted Average Charge is to be determined in accordance with the relevant formula in paragraph **(c)**;
- xvii. Retail Prices Index or “RPI” means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office of National Statistics at the time of publication of this Notification) from time to time in respect of all items; and
- xviii. Total Revenue means the sum of External Revenue and Internal Revenue.

Annex to Schedule 1 – Services subject to the charge control (call origination)

- i) External Wholesale call originating local exchange segment PSTN and ISDN (excl Operator Assistance ("OA")) Day
- ii) External Wholesale call originating local exchange segment PSTN and ISDN (excl OA) Evening
- iii) External Wholesale call originating local exchange segment PSTN and ISDN (excl OA) Weekend
- iv) External Wholesale call originating local exchange segment (incl OA) Day
- v) External Wholesale call originating local exchange segment (incl OA) Evening
- vi) External Wholesale call originating local exchange segment (incl OA) Weekend
- vii) External Wholesale call originating local exchange segment (ISDN) (incl OA) Day
- viii) External Wholesale call originating local exchange segment (ISDN) (incl OA) Evening
- ix) External Wholesale call originating local exchange segment (ISDN) (incl OA) Weekend
- x) External Wholesale call origination local exchange stick Day
- xi) External Wholesale call origination local exchange stick Evening
- xii) External Wholesale call origination local exchange stick Weekend
- xiii) External Wholesale call origination local exchange stick (ISDN) Day
- xiv) External Wholesale call origination local exchange stick (ISDN) Evening
- xv) External Wholesale call origination local exchange stick (ISDN) Weekend

SCHEDULE 2

Condition 10: Charge control – call termination

- (a) During the period beginning on 1 October 2013 and ending on 31 December 2013, the Dominant Provider shall take all reasonable steps to secure that the Charge for each of the services listed in the Annex to this Schedule 2 does not exceed the Charge for that same service which is in effect at 30 September 2013.
- (b) The Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Period, the Percentage Change, C_t , (as determined in accordance with paragraph (c)) in the aggregate of Charges for all of the services listed in the Annex to this Schedule 2 (all such services together referred to as the “Basket”) is not more than the Controlling Percentage, CP_t , (as determined in accordance with paragraph (d), or paragraph (g) if the circumstances in paragraphs (e) or (f) prevail).
- (c) The Percentage Change for the purpose of the Basket specified in paragraph (b) shall be calculated by employing the following formula:

$$C_t = \frac{\sum_{i=1}^n \left[R_i \frac{(\bar{p}_{i,t} - \bar{p}_{i,t-1})}{\bar{p}_{i,t-1}} \right]}{\sum_{i=1}^n R_i}$$

Where:

C_t is the Percentage Change in the aggregate of Charges for the services in the Basket during the Relevant Period, t ;

n is the number of services in the Basket;

i is a service numbered from 1 to n for each of the n services in the Basket;

R_i is the Total Revenue accrued during the Prior Financial Year in respect of service, i ;

t refers to the Relevant Period;

$t-1$ refers to the Prior Period;

$\bar{p}_{i,t}$ is the Relevant Period Weighted Average Charge made by the Dominant Provider for service, i ;

Where such Relevant Period Weighted Average Charge shall be calculated by employing the following formula:

$$\bar{p}_{i,t} = \sum_{j=1}^m (w_{i,j,t} p_{i,j,t})$$

Where:

m is the number of time periods for which there are distinct Charges during the Relevant Period;

j is a number from 1 to m for each of the m time periods during which a Charge is in effect;

$w_{i,j,t}$ is the proportion of the Relevant Period in which each Charge, $p_{i,j,t}$, is in effect, calculated by the number of days during which the Charge is in effect and dividing

- (1) for the First Relevant Period, by 273;
- (2) for the Second Relevant Period, by 365; and
- (3) for the Third Relevant Period, by 366.

$p_{i,j,t}$ is the Charge for the specified time period, j , during the Relevant Period, t , for the specific service, i ;

$\bar{p}_{i,t-1}$ is the Prior Period Weighted Average Charge made by the Dominant Provider for service, i :

Where such Prior Period Weighted Average Charge shall be calculated by employing the following formula:

$$\bar{p}_{i,t-1} = \sum_{j=1}^m (w_{i,j,t-1} p_{i,j,t-1})$$

Where:

m is the number of time periods for which there are distinct Charges during the Prior Period;

j is a number from 1 to m for each of the m time periods during which a Charge is in effect;

$w_{i,j,t-1}$ is the proportion of the Prior Period in which each Charge, $p_{i,j,t-1}$, is in effect, calculated by the number of days during which the Charge is in effect and dividing;

- (1) for the First Prior Period, by 365;
- (2) for the Second Prior Period, by 273; and
- (3) for the Third Prior Period, by 365.

$p_{i,j,t-1}$ is the Charge for the specified time period, j , during the Prior Period, $t-1$, for the specific service, i ;

- (d) Subject to paragraphs (e) (f) and (g), the Controlling Percentage in relation to any Relevant Period shall be calculated by employing the following formula:

$$CP_t = RPI + X$$

Where:

CP_t is the Controlling Percentage for the Relevant Period, rounded to one decimal place;

RPI is the change in the Retail Prices Index in the period of 12 months ending on 30 June immediately before the beginning of the Relevant Period expressed as a percentage, rounded to one decimal place;

X is:

- (1) for the First Relevant Period, -87.3%
- (2) for the Second Relevant Period, -3.0%
- (3) for the Third Relevant Period, -3.1%

- (e) Where the Percentage Change in either the First Relevant Period or the Second Relevant Period is less than the Controlling Percentage (the “Deficiency”), then the Controlling Percentage for the following Relevant Period shall be determined in accordance with paragraph (g).
- (f) Where the Percentage Change in either the First Relevant Period or the Second Relevant Period is more than the Controlling Percentage (the “Excess”), then the Controlling Percentage for the following Relevant Period shall also be determined in accordance with paragraph (g).
- (g) In the case of Deficiency (defined in (e) above) or Excess (defined in (f) above), the Controlling Percentage will be calculated by employing the following formula:

$$CP_t = [(100\% + RPI + X)(100\% + CP_{t-1}) / (100\% + C_{t-1})] - 100\%$$

Where:

CP_t is the Controlling Percentage for the Second Relevant Period (in case of Deficiency or Excess in the First Relevant Period) or for the Third Relevant Period (in case of Deficiency or Excess in the Second Relevant Period);

CP_{t-1} is the Controlling Percentage for the First Relevant Period (in case of Deficiency or Excess in the First Relevant Period) or for the Second Relevant Period (in case of Deficiency or Excess in the Second Relevant Period);

C_{t-1} is the Percentage Change in the aggregate of Charges for the services in the Basket during the First Relevant Period (in case of Deficiency or Excess in the First Relevant Period) or for the Second Relevant Period (in case of Deficiency or Excess in the Second Relevant Period), calculated in accordance with the formula for C_t set out in paragraph (c);

X is as set out in paragraph (d) above; and

RPI is as set out in paragraph (d) above.

- (h) Where the Percentage Change in any Relevant Period is more than the Controlling Percentage, the Dominant Provider shall, to the extent reasonably possible, and as soon as reasonably practicable, repay the Relevant Excess Revenue to every Affected Communications Provider.
- (i) Where

- (1) the Dominant Provider makes a material change (other than to a Charge) to any service which is subject to this Condition 10;
- (2) the Dominant Provider makes a change to the date on which its financial year ends; or
- (3) there is a material change in the basis of the Retail Prices Index,

paragraphs **(a)** to **(h)** shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances.

For the purposes of this paragraph, a material change to any service which is subject to this Condition 10 includes the introduction of a new service wholly or substantially in substitution for that existing service.

(j) The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than 31 March 2014 and, thereafter, no later than three months after the end of each Relevant Period, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control. The data shall include, as relevant:

- i. pursuant to paragraph **(c)**, the calculated Percentage Change relating to the aggregate of Charges for all of the services in the Basket;
- ii. all relevant data the Dominant Provider used in the calculation of the Percentage Change including for each specific service;
- iii. all Charges published by the Dominant Provider from time to time during the period beginning on 1 October 2013 and ending on 31 December 2013, or the Relevant Period as well as the Prior Period, including the dates and time periods during which they were in force;
- iv. the Relevant Period Weighted Average Charges and the Prior Period Weighted Average Charges for all of the services in the Basket and calculations thereof;
- v. other data necessary for monitoring compliance with the charge control; and
- vi. such data as Ofcom may from time to time direct.

All relevant revenues in respect of a specific service in the Basket are to be provided to at least the nearest £1,000.

(k) The Dominant Provider must take such steps as Ofcom may from time to time direct to comply with its obligations under this Condition 10.

(l) Paragraphs **(a)** to **(k)** shall not apply to such extent as Ofcom may direct.

(m) In this Condition:

- i. Affected Communications Provider means each communications provider to whom the Dominant Provider has provided any of the services listed in the Annex to this Schedule 2 during the Relevant Period;
- ii. Basket has the meaning as described in paragraph **(b)**;

- iii. Charge means, the published pence per minute charge rounded to four decimal places (being the amount offered or charged by the Dominant Provider, excluding any discounts), to a communications provider for a unit of any of the services subject to this Condition 10;
- iv. Controlling Percentage is to be determined in accordance with paragraph **(d)**;
- v. Dominant Provider means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- vi. Excess Revenue means the difference between the revenue which the Dominant Provider earned in the Relevant Period from providing the services listed in the Annex to this Schedule and the revenue the Dominant Provider would have earned in the Relevant Period from providing the services listed in the Annex to this Schedule if it had complied with paragraph **(b)** of this Schedule 2;
- vii. External Revenue means revenue from communications providers, other than the Dominant Provider, in relation to the services subject to this Condition 10;
- viii. Internal Revenue means revenue from the Dominant Provider in relation to call termination services, equivalent to the services listed in the Annex to this Schedule 2, provided to itself;
- ix. Ofcom means the Office of Communications;
- x. Percentage Change is to be determined in accordance with paragraph **(c)**;
- xi. Prior Financial Year means the period of 12 months ending on 31 March immediately preceding the Relevant Period in question;
- xii. Prior Period means each of the following three periods:
 - (1) In relation to the First Relevant Period, the period beginning 1 October 2012 and ending 30 September 2013 (the "First Prior Period");
 - (2) In relation to the Second Relevant Period, the period beginning 1 January 2014 and ending 30 September 2014 (the "Second Prior Period"); and
 - (3) In relation to the Third Relevant Period, the period beginning 1 October 2014 and ending 30 September 2015 (the "Third Prior Period")
- xiii. Prior Period Weighted Average Charge is to be determined in accordance with the relevant formula in paragraph **(c)**;
- xiv. Relevant Excess Revenue means the Excess Revenue earned from charging the Affected Communications Provider;
- xv. Relevant Period means each of the following three periods:
 - (1) The nine-month period beginning on 1 January 2014 and ending on 30 September 2014 (the "First Relevant Period");

- (2) The twelve-month period beginning on 1 October 2014 and ending on 30 September 2015 (the “Second Relevant Period”); and
 - (3) The twelve-month period beginning on 1 October 2015 and ending on 30 September 2016 (the “Third Relevant Period”)
- xvi. Relevant Period Weighted Average Charge is to be determined in accordance with the relevant formula in paragraph **(c)**;
- xvii. Retail Prices Index or “RPI” means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office of National Statistics at the time of publication of this Notification) from time to time in respect of all items; and
- xviii. Total Revenue means the sum of External Revenue and Internal Revenue.

Annex to Schedule 2 – Services subject to the charge control (call termination)

- i) External Wholesale call termination local exchange segment - Day
- ii) External Wholesale call termination local exchange segment - Evening
- iii) External Wholesale call termination local exchange segment – Weekend
- iv) External Wholesale call termination local exchange segment (ISDN) – Day
- v) External Wholesale call termination local exchange segment (ISDN) – Evening
- vi) External Wholesale call termination local exchange segment (ISDN) – Weekend
- vii) External Wholesale call termination local exchange stick – Day
- viii) External Wholesale call termination local exchange stick – Evening
- ix) External Wholesale call termination local exchange stick – Weekend
- x) External Wholesale call termination local exchange stick (ISDN) – Day
- xi) External Wholesale call termination local exchange stick (ISDN) – Evening
- xii) External Wholesale call termination local exchange stick (ISDN) – Weekend

SCHEDULE 3

Condition 11: Charge control – interconnect circuits

- (a) The Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change, C_t , (as determined in accordance with paragraph (b)) in the aggregate of Charges for all of the services listed in the Annex to this Schedule 3 (all such services together referred to as the “Basket”) is not more than the Controlling Percentage, CP_t , (as determined in accordance with paragraph (c), or paragraph (g) if the circumstances in paragraphs (e) or (f) prevail.).
- (b) The Percentage Change for the purpose of the Basket specified in paragraph (a) shall be calculated by employing the following formula:

$$C_t = \frac{\sum_{i=1}^n \left[R_i \frac{(\bar{p}_{i,t} - \bar{p}_{i,t-1})}{\bar{p}_{i,t-1}} \right]}{\sum_{i=1}^n R_i}$$

Where:

C_t is the Percentage Change in the aggregate of Charges for the services in the Basket during the Relevant Year, t ;

n is the number of services in the Basket;

i is a service numbered from 1 to n for each of the n services in the Basket;

R_i is the Total Revenue accrued during the Prior Financial Year in respect of service, i ;

t , refers to the Relevant Year;

$t-1$ refers to the Prior Year;

$\bar{p}_{i,t}$ is the Relevant Year Weighted Average Charge made by the Dominant Provider for service, i ;

Where such Relevant Year Weighted Average Charge shall be calculated by employing the following formula:

$$\bar{p}_{i,t} = \sum_{j=1}^m (w_{i,j,t} p_{i,j,t})$$

Where:

m is the number of time periods for which there are distinct Charges during the Relevant Year;

j is a number from 1 to m for each of the m time periods during which a Charge is in effect;

$w_{i,j,t}$ is the proportion of the Relevant Year in which each Charge, $p_{i,j,t}$, is in effect, calculated by the number of days during which the Charge is in effect and dividing

- (1) for the First Relevant Year, by 365;
- (2) for the Second Relevant Year, by 365; and
- (3) for the Third Relevant Year, by 366.

$p_{i,j,t}$ is the Charge for the specified time period, j , during the Relevant Year, t , for the specific service, i ;

$\bar{p}_{i,t-1}$ is the Prior Year Weighted Average Charge made by the Dominant Provider for service, i .

Where such Prior Year Weighted Average Charge shall be calculated by employing the following formula:

$$\bar{p}_{i,t-1} = \sum_{j=1}^m (w_{i,j,t-1} p_{i,j,t-1})$$

Where:

m is the number of time periods for which there are distinct Charges during the Prior Year;

j is a number from 1 to m for each of the m time periods during which a Charge is in effect;

$w_{i,j,t-1}$ is the proportion of the Prior Year in which each Charge, $p_{i,j,t-1}$, is in effect, calculated by the number of days during which the Charge is in effect and dividing by 365; and

$p_{i,j,t-1}$ is the Charge for the specified time period, j , during the Prior Year, $t-1$, for the specific service, i ;

- (c) Subject to paragraphs (d) (e) and (f), the Controlling Percentage, CP_t , in relation to any Relevant Year is zero ("0")
- (d) Where the Percentage Change in either the First Relevant Year or the Second Relevant Year is less than the Controlling Percentage (the "Deficiency"), then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph (f).
- (e) Where the Percentage Change in either the First Relevant Year or the Second Relevant Year is more than the Controlling Percentage (the "Excess"), then the Controlling Percentage for the following Relevant Year shall also be determined in accordance with paragraph (f).
- (f) In the case of Deficiency (defined in (d) above) or Excess (defined in (e) above), the Controlling Percentage will be calculated by employing the following formula:

$$CP_t = [100\% / (100\% + C_{t-1})] - 100\%$$

Where:

CP_t is the Controlling Percentage for the Second Relevant Year (in case of Deficiency or Excess in the First Relevant Year) or for the Third Relevant Year (in case of Deficiency or Excess in the Second Relevant Year);

C_{t-1} is the Percentage Change in the aggregate of Charges for the services in the Basket during the First Relevant Year (in case of Deficiency or Excess in the First Relevant Year) or for the Second Relevant Year (in case of Deficiency or Excess in the Second Relevant Year), calculated in accordance with the formula for C_t set out in paragraph (b).

- (g) Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, the Dominant Provider shall, to the extent reasonably possible, and as soon as reasonably practicable, repay the Relevant Excess Revenue to every Affected Communications Provider.
- (h) The Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in the Charge for each and every service listed in the Annex to this Schedule 3 is not more than +10%.

For the purpose of this paragraph (h), the Percentage Change shall be calculated by employing the following formula:

$$C_i = \frac{(\bar{p}_{i,t} - \bar{p}_{i,t-1})}{\bar{p}_{i,t-1}}$$

Where

C_i is the Percentage Change for the Relevant Year for each service, i ; and

$\bar{p}_{i,t}$ and $\bar{p}_{i,t-1}$ are as defined in paragraph (b) above.

- (i) Where
 - (1) the Dominant Provider makes a material change (other than to a Charge) to any service which is subject to this Condition 11;
 - (2) the Dominant Provider makes a change to the date on which its financial year ends; or
 - (3) there is a material change in the basis of the Retail Prices Index,

paragraphs (a) to (h) shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances.

For the purposes of this paragraph, a material change to any service which is subject to this Condition 11 includes the introduction of a new service wholly or substantially in substitution for that existing service.

- (j) The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data

necessary for Ofcom to monitor compliance of the Dominant Provider with the price control. The data shall include:

- i. pursuant to paragraph **(b)**, the calculated Percentage Change relating to the aggregate of Charges for all of the services in the Basket;
- ii. all relevant data the Dominant Provider used in the calculation of the Percentage Change including for each specific service;
- iii. all Charges published by the Dominant Provider from time to time during the Relevant Year and the Prior Year, including the dates and time periods during which they were in force;
- iv. the Relevant Year Weighted Average Charges and the Prior Year Weighted Average Charges for all of the services in the Basket and calculations thereof;
- v. other data necessary for monitoring compliance with the charge control; and
- vi. such data as Ofcom may from time to time direct.

All relevant revenues in respect of a specific service in the Basket are to be provided to at least the nearest £1,000.

(k) The Dominant Provider must take such steps as Ofcom may from time to time direct to comply with its obligations under this Condition 11.

(l) Paragraphs **(a)** to **(k)** shall not apply to such extent as Ofcom may direct.

(m) In this Condition:

- i. Affected Communications Provider means each communications provider to whom the Dominant Provider has provided any of the services listed in the Annex to this Schedule 3 during the Relevant Year;
- ii. Basket has the meaning as described in paragraph **(a)**;
- iii. Charge means, the published charge rounded to the nearest penny (being the amount offered or charged by the Dominant Provider, excluding any discounts), to a communications provider for a unit of any of the services subject to this Condition 11;
- iv. Controlling Percentage is to be determined in accordance with paragraph **(c)**;
- v. Dominant Provider means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- vi. Excess Revenue means the difference between the revenue which the Dominant Provider earned in the Relevant Year from providing the services listed in the Annex to this Schedule and the revenue the Dominant Provider would have earned in the Relevant Year from providing the services listed in the Annex to this Schedule if it had complied with paragraph **(a)** of this Schedule 3;

- vii. External Revenue means revenue from communications providers, other than the Dominant Provider, in relation to the services subject to this Condition 11;
- viii. Internal Revenue means revenue from the Dominant Provider in relation to interconnect circuits, equivalent to the services listed in the Annex to this Schedule 3, provided to itself;
- ix. Ofcom means the Office of Communications;
- x. Percentage Change is to be determined in accordance with paragraph **(b)**;
- xi. Prior Financial Year means the period of 12 months ending on 31 March immediately preceding the Relevant Year in question;
- xii. Prior Year means each of the following three years:
 - (1) In relation to the First Relevant Year, the period beginning 1 October 2012 and ending 30 September 2013 (the “First Prior Year”);
 - (2) In relation to the Second Relevant Year, the period beginning 1 October 2013 and ending 30 September 2014 (the “Second Prior Year”); and
 - (3) In relation to the Third Relevant Year, the period beginning 1 October 2014 and ending 30 September 2015 (the “Third Prior Year”);
- xiii. Prior Year Weighted Average Charge is to be determined in accordance with the relevant formula in paragraph **(b)**;
- xiv. Relevant Excess Revenue means the Excess Revenue earned from charging the Affected Communications Provider;
- xv. Relevant Year means each of the following three years:
 - (1) The period beginning on 1 October 2013 and ending on 30 September 2014 (the “First Relevant Year”);
 - (2) The period beginning on 1 October 2014 and ending on 30 September 2015 (the “Second Relevant Year”); and
 - (3) The period beginning on 1 October 2015 and ending on 30 September 2016 (the “Third Relevant Year”);
- xvi. Relevant Year Weighted Average Charge is to be determined in accordance with the relevant formula in paragraph **(b)**; and
- xvii. Total Revenue means the sum of External Revenue and Internal Revenue.

Annex to Schedule 3 – Services subject to the charge control (interconnect circuits)

- i) External wholesale standard Customer-Sited Interconnect connections;
- ii) External wholesale standard Customer-Sited Interconnect rentals – fixed;
- iii) External wholesale standard Customer-Sited Interconnect rentals - per km;
- iv) External wholesale interconnection extension circuits connections;
- v) External wholesale interconnection extension circuits rentals – fixed;
- vi) External wholesale interconnection extension circuits rentals - per km;
- vii) External wholesale intra-building circuits connections;
- viii) External wholesale intra-building circuits rentals;
- ix) External wholesale in-span interconnection links rentals;
- x) External nominated in-span interconnection links - per km; and
- xi) External wholesale rearrangements.

SCHEDULE 4

Condition 12: Charge control – product management, policy and planning

- (a)** During the period beginning on 1 October 2013 and ending on 31 December 2013, the Dominant Provider shall take all reasonable steps to secure that the Charge for each of the services listed in the Annex to this Schedule 4 does not exceed the Charge for that same service in effect at 30 September 2013.
- (b)** The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than 31 March 2014, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control.
- (c)** The Dominant Provider must take such steps as Ofcom may from time to time direct to comply with its obligations under this Condition 12.
- (d)** Paragraphs **(a)** to **(c)** shall not apply to such extent as Ofcom may direct.
- (e)** In this Condition:
 - i. Charge means, the published charge (being the amount offered or charged by the Dominant Provider, excluding any discounts), to a communications provider for a unit of external product management, policy and planning subject to this Condition 12;
 - ii. Dominant Provider means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
 - iii. Implementation Period means the three-month period beginning on 1 October 2013 and ending on 31 December 2013; and
 - iv. Ofcom means the Office of Communications.

Annex to Schedule 4 – Services subject to the charge control (product management, policy and planning)

- i) External product management, policy and planning – Day
- ii) External product management, policy and planning – Evening
- iii) External product management, policy and planning – Weekend

Annex 3

NTS retail uplift

NOTIFICATION UNDER SECTION 48(1) OF THE COMMUNICATIONS ACT 2003

SMP services conditions in relation to BT under section 45 of the Communications Act 2003

Background

1. On 5 February 2013, Ofcom published a consultation document entitled Review of the fixed narrowband services markets - Consultation on the proposed markets, market power determinations and remedies (the “February 2013 consultation”).
2. Annex 6 of the February 2013 consultation set out the Notification under sections 48A and 80A of the Communications Act 2003, in which Ofcom proposed to identify certain markets, make market power determinations and set SMP services conditions.
3. Annex 8 of the February 2013 consultation set out the Notification under section 48A of the Communications Act 2003, in which Ofcom proposed to set the charge for the NTS Retail Uplift.
4. A copy of the February 2013 consultation was sent to the Secretary of State in accordance with sections 48C(1) and 81(1) of the Act.
5. Ofcom received several responses to its proposals set out in the February 2013 consultation, and has considered every such representation. The Secretary of State has not notified Ofcom of any international obligation on the United Kingdom for the purposes of those proposals.
6. The proposals set out in the February 2013 consultation, and Annex 8 of that consultation in particular, contained proposals of EU significance for the purposes of the Act. Therefore, after making such modifications to the proposals that appeared to Ofcom to be appropriate following domestic consultation, Ofcom sent a copy of them, and a draft of the Statement accompanying the notification setting out the reasons for them, to the European Commission, BEREC and the regulatory authorities of every other Member State for EU consultation, in accordance with sections 48B(2) of the Act.
7. Ofcom received comments from the European Commission on its proposals on 20 September 2013, and has made such modifications to this Notification and the Statement accompanying this Notification as it considers appropriate.

Determinations set out in the Market Power Notification

8. Annex 1 of the Statement sets out the Notification under sections 48(1) and 79(4) of the Act, in which Ofcom has identified certain markets, made market power determinations and set SMP services conditions (the “Market Power Notification”).
9. In the Market Power Notification, Ofcom has identified, amongst others, the market for wholesale call origination on a fixed narrowband network in the United Kingdom excluding the Hull area, has determined that BT has significant market power in relation to this market and has set SMP services conditions.

10. At Condition 8 of Schedule 1 of the Market Power Notification, Ofcom has determined that BT be required to provide NTS Call Origination and that it shall make no charges for doing so, except for a charge for the call origination service used to originate the NTS Call; a charge for the NTS Retail Uplift; and a charge for bad debt relating to the retailing by the Dominant Provider of Premium Rate Service calls.

Determinations

11. In this Notification, and with reference to the market power determination referred to in the Market Power Notification, and Condition 9 of Schedule 1 of the Market Power Notification, Ofcom has set the charge for the NTS Retail Uplift.
12. Ofcom has set SMP condition 13 in relation to the market listed in paragraph 9 above, as set out in the Schedule to this Notification.
13. Ofcom has applied SMP condition 13 as set out in the Schedule to this Notification from the date of this Notification until the NTS Effective Date.
14. The effect of, and Ofcom's reasons for setting the SMP condition set out in the Schedule to this Notification are set out in the Statement accompanying this Notification, and in particular Section 5.

Ofcom's duties and legal tests

15. In setting the SMP condition referred to in paragraph 12, Ofcom has taken due account of all applicable recommendations issued by the European Commission in accordance with Section 4A of the Act. Pursuant to Article 3(3) of Regulation (EC) No 1211/2009, Ofcom has also taken the utmost account of any relevant opinion, recommendation, guidelines, advice or regulatory practice adopted by BEREC.
16. Ofcom considers that the SMP condition referred to in paragraph 12 complies with the requirements of sections 45 to 47, 87 and 88 of the Act, as appropriate and relevant to such SMP condition.
17. In setting the SMP condition referred to in paragraph 12, Ofcom has considered and acted in accordance with its general duties set out in section 3 of the Act and the six Community requirements set out in section 4 of the Act.

Interpretation

18. Except as otherwise defined in paragraph 18 of this Notification, words or expressions used shall have the same meaning as they have been ascribed in the Act.
19. In this Notification:
- (a) "Act" means the Communications Act 2003 (c. 21);
 - (b) "BT" means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;

- (c) "Hull Area" means the area defined as 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 Kingston Communication (Hull) plc;
- (d) "NTS Effective Date" means the Effective Date as defined in the Notifications under Section 48(1) of the Act setting general conditions introducing an unbundled tariff structure for 084, 087, 090, 091, 098 and 118 numbers and setting access-related conditions in relation to the purchase of origination services for calls to 080 and 116 numbers; and
- (e) "United Kingdom" has the meaning given to it in the Interpretation Act 1978 (1978 c30).

Signed

A handwritten signature in grey ink, appearing to read 'A. Coscelli', with a horizontal line extending to the left.

Andrea Coscelli
Economics Director, Ofcom

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

26 September 2013

SCHEDULE

Condition 13: Charge control – NTS retail uplift

(a) The Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change, C_t , (as determined in accordance with paragraph (b)) in the aggregate of the NTS Retail Uplift for all of the services listed in the Annex to this Schedule (all such services together referred to as the “Basket”) is not more than the Controlling Percentage, CP_t , (as determined in accordance with paragraph (c), or paragraph (g) if the circumstances in paragraphs (e) or (f) prevail.).

(b) The Percentage Change for the purpose of the Basket specified in paragraph (a) shall be calculated by employing the following formula:

$$C_t = \frac{\sum_{i=1}^n \left[R_i \frac{(\bar{p}_{i,t} - \bar{p}_{i,t-1})}{\bar{p}_{i,t-1}} \right]}{\sum_{i=1}^n R_i}$$

Where:

C_t is the Percentage Change in the aggregate of the NTS Retail Uplift for the services in the Basket during the Relevant Year, t ;

n is the number of services in the Basket;

i is a service numbered from 1 to n for each of the n services in the Basket;

R_i is the Total Revenue accrued during the Prior Financial Year in respect of service, i ;

t , refers to the Relevant Year;

$t-1$ refers to the Prior Year;

$\bar{p}_{i,t}$ is the Relevant Year Weighted Average NTS Retail Uplift made by the Dominant Provider for service, i ;

Where such Relevant Year Weighted Average NTS Retail Uplift shall be calculated by employing the following formula:

$$\bar{p}_{i,t} = \sum_{j=1}^m (w_{i,j,t} p_{i,j,t})$$

Where:

m is the number of time periods for which there are distinct Charges during the Relevant Year;

j is a number from 1 to m for each of the m time periods during which a NTS Retail Uplift is in effect;

$w_{i,j,t}$ is the proportion of the Relevant Year in which each NTS Retail Uplift, $p_{i,j,t}$, is in effect, calculated by the number of days during which the NTS Retail Uplift is in effect and dividing

- (1) for the First Relevant Year, by 365;
- (2) for the Second Relevant Year:
 - a. where the NTS Effective Date falls after 30 September 2015, by 365; or
 - b. where the NTS Effective Date falls before 30 September 2015, by such number of days as counted in the period starting with 1 October 2014 and ending with the day before the NTS Effective Date; and
- (3) for the Third Relevant Year:
 - a. where the NTS Effective Date falls after 30 September 2016, by 366; or
 - b. where the NTS Effective Date falls before 30 September 2016, by such number of days as counted in the period starting with 1 October 2015 and ending with the day before the NTS Effective Date.

$p_{i,j,t}$ is the NTS Retail Uplift for the specified period, j , during the Relevant Year, for the specific service, i ;

$\bar{p}_{i,t-1}$ is the Prior Year Weighted Average NTS Retail Uplift made by the Dominant Provider for service, i :

Where such Prior Year Weighted Average NTS Retail Uplift shall be calculated by employing the following formula:

$$\bar{p}_{i,t-1} = \sum_{j=1}^m (w_{i,j,t-1} p_{i,j,t-1})$$

Where:

m is the number of time periods for which there are distinct Charges during the Prior Year;

j is a number from 1 to m for each of the m periods during which a NTS Retail Uplift is in effect;

$w_{i,j,t-1}$ is the proportion of the Prior Year in which each NTS Retail Uplift, $p_{i,j,t-1}$, is in effect, calculated by the number of days during which the NTS Retail Uplift is in effect and dividing by 365; and

$p_{i,j,t-1}$ is the NTS Retail Uplift for the specified time period, j , during the Prior Year, $t-1$, for the specific service, i ;

- (c) Subject to paragraphs (d) (e) and (f), the Controlling Percentage in relation to any Relevant Year shall be calculated by employing the following formula:

$$CP_t = RPI + X$$

Where:

CP_t is the Controlling Percentage for the Relevant Year, rounded to one decimal place;

RPI is the change in the Retail Prices Index in the period of 12 months ending on 30 June immediately before the beginning of the Relevant Year expressed as a percentage (rounded to one decimal place);

X is:

- (1) for the First Relevant Year, 0%
- (2) for the Second Relevant Year, 0%
- (3) for the Third Relevant Year, 0%

- (d) Where the Percentage Change in either the First Relevant Year or the Second Relevant Year is less than the Controlling Percentage (the “Deficiency”), then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph (f).
- (e) Where the Percentage Change in either the First Relevant Year or the Second Relevant Year is more than the Controlling Percentage (the “Excess”), then the Controlling Percentage for the following Relevant Year shall also be determined in accordance with paragraph (f).
- (f) In the case of Deficiency (defined in (d) above) or Excess (defined in (e) above), the Controlling Percentage will be calculated by employing the following formula:

$$CP_t = [(100\% + RPI + X)(100\% + CP_{t-1}) / (100\% + C_{t-1})] - 100\%$$

Where:

CP_t is the Controlling Percentage for the Second Relevant Year (in case of Deficiency or Excess in the First Relevant Year) or for the Third Relevant Year (in case of Deficiency or Excess in the Second Relevant Year);

CP_{t-1} is the Controlling Percentage for the First Relevant Year (in case of Deficiency or Excess in the First Relevant Year) or for the Second Relevant Year (in case of Deficiency or Excess in the Second Relevant Year);

C_{t-1} is the Percentage Change in the aggregate of the NTS Retail Uplift for the services in the Basket during the First Relevant Year (in case of Deficiency or Excess in the First Relevant Year) or for the Second Relevant Year (in case of Deficiency or Excess in the Second Relevant Year), calculated in accordance with the formula for C_t set out in paragraph (b);

X is as set out in paragraph (c) above; and

RPI is as set out in paragraph (c) above.

- (g) Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, the Dominant Provider shall, to the extent reasonably possible, and as

soon as reasonably practicable, repay the Relevant Excess Revenue to every Affected Communications Provider.

(h) Where

- (1) the Dominant Provider makes a material change (other than to a NTS Retail Uplift) to any service which is subject to this Condition 13;
- (2) the Dominant Provider makes a change to the date on which its financial year ends; or
- (3) there is a material change in the basis of the Retail Prices Index,

paragraphs **(a)** to **(g)** shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances.

For the purposes of this paragraph, a material change to any service which is subject to this Condition 13 includes the introduction of a new service wholly or substantially in substitution for that existing service.

(i) The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control. The data shall include:

- i. pursuant to paragraph **(b)**, the calculated Percentage Change relating to the aggregate of the NTS Retail Uplift for all of the services in the Basket;
- ii. all relevant data the Dominant Provider used in the calculation of the Percentage Change including for each specific service;
- iii. all NTS Retail Uplifts published by the Dominant Provider from time to time during the Relevant Year and the Prior Year, including the time periods during which they were in force;
- iv. the Relevant Year Weighted Average NTS Retail Uplifts and the Prior Year Weighted Average NTS Retail Uplifts for all of the services in the Basket and calculations thereof;
- v. other data necessary for monitoring compliance with the charge control; and
- vi. such data as Ofcom may from time to time direct.

All relevant revenues in respect of a specific service in the Basket are to be provided to the nearest £1,000.

(j) The Dominant Provider must take such steps as Ofcom may from time to time direct to comply with its obligations under this Condition 13.

(k) Paragraphs **(a)** to **(j)** shall not apply to such extent as Ofcom may direct.

(l) In this Condition:

- i. Affected Communications Provider means each communications provider to whom the Dominant Provider has provided any of the services listed in the Annex to this Schedule during the Relevant Year;

- ii. Basket has the meaning as described in paragraph **(a)**;
- iii. Charge means, the published pence per minute charge rounded to four decimal places (being the amount offered or charged by the Dominant Provider, excluding any discounts), to a communications provider for a unit of any of the services subject to this Condition 13;
- iv. “NTS Effective Date” means the Effective Date as defined in the Notifications under Section 48(1) of the Act setting general conditions introducing an unbundled tariff structure for 084, 087, 090, 091, 098 and 118 numbers and setting access-related conditions in relation to the purchase of origination services for calls to 080 and 116 numbers; and
- v. NTS Calls means a call to a number starting with 0500, 080, 082, 084, 0871, 0872, 0873 and 09;
- vi. NTS Retail Uplift means, the Charge for retailing NTS Calls to the end-user, to a communications provider for a unit of any of the services subject to this Condition 13;
- vii. Controlling Percentage is to be determined in accordance with paragraph **(c)**;
- viii. Dominant Provider means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- ix. Excess Revenue means the difference between the revenue which the Dominant Provider earned in the Relevant Year from providing the services listed in the Annex to this Schedule and the revenue the Dominant Provider would have earned in the Relevant Year from providing the services listed in the Annex to this Schedule if it had complied with paragraph **(a)** of this Schedule;
- x. External Revenue means revenue from communications providers, other than the Dominant Provider, in relation to the services subject to this Condition 13;
- xi. Internal Revenue means revenue from the Dominant Provider in relation to the services subject to this Condition 13, provided to itself;
- xii. Ofcom means the Office of Communications;
- xiii. Percentage Change is to be determined in accordance with paragraph **(b)**;
- xiv. Prior Financial Year means the period of 12 months ending on 31 March immediately preceding the Relevant Year in question;
- xv. Prior Year means each of the following three years:
 - (1) In relation to the First Relevant Year, the period beginning 1 October 2012 and ending 30 September 2013 (the “First Prior Year”);
 - (2) In relation to the Second Relevant Year, the period beginning 1 October 2013 and ending 30 September 2014 (the “Second Prior Year”); and

- (3) In relation to the Third Relevant Year, the period beginning 1 October 2014 and ending 30 September 2015 (the “Third Prior Year”);
- xvi. Prior Year Weighted Average NTS Retail Uplift is to be determined in accordance with the relevant formula in paragraph **(b)**;
- xvii. Relevant Excess Revenue means the Excess Revenue earned from charging the Affected Communications Provider;
- xviii. Relevant Year means each of the following three years:
 - (1) The period beginning on 1 October 2013 and ending on 30 September 2014 (the “First Relevant Year”);
 - (2) The period beginning on 1 October 2014 and ending on 30 September 2015 or, where the NTS Effective Date falls before 30 September 2015, the period beginning on 1 October 2014 and ending on the day before the NTS Effective Date (the “Second Relevant Year”); and
 - (3) The twelve-month period beginning on 1 October 2015 and ending on 30 September 2016 or, where the NTS Effective Date falls before 30 September 2016, the period beginning on 1 October 2015 and ending on the day before the NTS Effective Date (the “Third Relevant Year”);
- xix. Relevant Year Weighted Average NTS Retail Uplift is to be determined in accordance with the relevant formula in paragraph **(b)**; and
- xx. Retail Prices Index or “RPI” means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office of National Statistics at the time of publication of this Notification) from time to time in respect of all items; and
- xxi. Total Revenue means the sum of External Revenue and Internal Revenue.

Annex to the Schedule – Services in the Basket subject to the charge control (NTS Retail Uplift)

1. Calls to a number starting with 0500 or 080
2. Calls to a number starting with 082, 084, 0871, 0872, 0873 and 09

Annex 4

Direction to provide interconnect circuit KPIs

NOTIFICATION UNDER SECTIONS 49 AND 49A OF THE COMMUNICATIONS ACT 2003 AND SMP CONDITION 8 (TRANSPARENCY OF SERVICE) IMPOSED ON BT IN RELATION TO INTERCONNECT CIRCUITS

Background

1. On 5 February 2013, Ofcom published a consultation document entitled Review of the fixed narrowband services markets - Consultation on the proposed markets, market power determinations and remedies (the “February 2013 consultation”), consulting on proposals identifying markets, making market power determinations and setting Significant Market Power (“SMP”) services conditions. In the February 2013 consultation, Ofcom proposed to impose certain SMP conditions on BT in relation to interconnect circuits. In particular, under Condition 8, Ofcom proposed that BT be required to publish all such information for the purposes of securing transparency as to the quality of service in relation to the network access provided by BT, in such manner and form as Ofcom may require from time to time.
2. At Annex 9 of the February 2013 consultation, Ofcom published proposals to give effect to such Condition 8 by setting out the information which, if the proposal is adopted, BT would be required to publish.
3. Ofcom received several responses to its proposals set out in the February 2013 consultation, and has considered every such representation. The Secretary of State has not notified Ofcom of any international obligation on the United Kingdom for the purposes of those proposals.
4. On 26 September 2013 Ofcom published the statement entitled Review of the fixed narrowband services markets (the “Statement”) in which it identified markets, made market power determinations and set SMP services conditions. In the Statement, Ofcom imposed certain SMP conditions on BT in relation to interconnect circuits. In particular, under Condition 8, BT is required to publish all such information for the purposes of securing transparency as to the quality of service in relation to the network access provided by BT, in such manner and form as Ofcom may require from time to time.
5. This direction concerns matters to which Condition 8 relates, and in particular, sets out the information which BT is required to publish.

Direction

6. Ofcom hereby directs the Dominant Provider to act as prescribed in the Schedule to this Notification.
7. The effect of, and reasons for giving, the direction are set out in the accompanying Statement, and in particular section 10.

Proposal to withdraw direction

8. Ofcom hereby withdraws the direction set out at Annex 9 of the regulatory statement “Review of the fixed narrowband services wholesale markets – Statement on the markets, market power determinations and remedies including further consultation”⁶⁵⁶, with effect on the date of this Notification.

Ofcom’s duties and legal tests

9. Ofcom considers that the direction referred to in paragraph 6 complies with the requirements of section 49(2) of the Act.
10. Ofcom is satisfied that it has acted in accordance with its general duties set out in section 3 of the Act and the six community requirements in section 4 of the Act.

Interpretation

11. Except as otherwise defined in paragraph 12 of this Notification, words or expressions used shall have the same meaning as they have been ascribed in the Communications Act 2003.
12. In this Notification:
 - (a) “BT” means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;

Signed



Andrea Coscelli
Economics Director, Ofcom

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

26 September 2013

⁶⁵⁶ Available at http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf

SCHEDULE

Part 1: Definitions and Interpretation

1. In this Schedule and the Annex to this Schedule –

- (a) “Committed Order” means an Order for which a Contract Delivery Date has been confirmed;
- (b) “Completed Order” means an Order which has been provisioned and for which all other related work has been carried out;
- (c) “Contract Delivery Date” means the date agreed between the Dominant Provider and a Third Party for an Order to become a Completed Order;
- (d) “CSI” means customer sited interconnection links;
- (e) “Data Management Amendments” means the routing amendment which a Third Party requests the Dominant Provider to make in order to modify the way in which calls are routed both at the Digital Local Exchange and at the tandem switches;
- (f) “Dominant Provider” means British Telecommunications plc, whose registered company number is 1800000, and any of its subsidiaries or holding companies, or any subsidiary of such holding companies, all as defined by section 1159 of the Companies Act 2006;
- (g) “Fault” means a degradation or problem with Interconnection Circuits which is identified by the Dominant Provider or a Third Party and which is registered on the Dominant Provider’s operational support system;
- (h) “IEC” means interconnect extension circuits;
- (i) “Interconnect Circuits” mean any and all of the following specific services provided by the Dominant Provider:
 - (i) CSI;
 - (ii) ISI;
 - (iii) IEC;
- (j) “Interconnect Circuit KPIs” mean the KPIs set out in the Annex to this Schedule;
- (k) “ISI” means in-span interconnection links;
- (l) “KPI” means key performance indicator;
- (m) “Order” means a request for Interconnection Circuits submitted to the Dominant Provider by a Third Party;
- (n) “Reporting Period” means each of the four periods of three calendar months which make up a calendar year, the first of such periods starting on 1 October 2013 and ending on 31 December 2013 and each of the following three-month periods starting on the day after the last day of the previous period;

- (o) “Restored Service” means the point at which the Interconnect Circuit in relation to which a Fault was registered becomes available again for use by the Third Party;
- (p) “Third Party” means either:
 - (iv) a person providing a Public Electronic Communications Network; or
 - (v) a person providing a Public Electronic Communications Service;
- (q) “Working Day” means any day other than Saturdays, Sundays, public holidays or bank holidays in the United Kingdom.

2. For the purpose of interpreting this Direction:

- (a) Except insofar as the context otherwise requires, words or expressions shall have the meaning assigned to them and otherwise any word or expression shall have the same meaning as it has in the Act, or if it has no meaning there, in Part 1 of Schedule 1 to the Notification;
- (b) the Interpretation Act 1978 shall apply as if this Direction were an Act of Parliament; and
- (c) headings and titles shall be disregarded.

Part 2: Direction

- 1. The Dominant Provider shall publish the information as set out in the Annex to this Schedule.
- 2. The information required by paragraph 1 above shall be published within 14 Working Days of the last Working Day of the Reporting Period in respect of that Reporting Period.
- 3. Nothing in this Direction shall require the Dominant Provider to publish confidential information relating to its business or that of a Third Party.

Annex – Interconnect Circuit KPIs

Part 1: Indicators

1. The Dominant Provider shall publish the information required in KPIs (i) to (iii) set out in paragraph 3 below in relation to the provision of Interconnect Circuits to all Third Parties (as an aggregate figure);
2. The Dominant Provider shall publish the information required in KPI (iii) set out in paragraph 3 below in relation to the provision of Data Management Amendments to itself.
3. The KPIs referred to in paragraphs 1 and 2 above are as follows:

KPI (i) - Percentage of orders provisioned on time: the percentage of Completed Orders that were completed by the Contract Delivery Date during the Reporting Period;

KPI(ii) - Average time to restore service: the average time (in hours) during the Reporting Period for the Dominant Provider to achieve Restored Service after a Fault has been registered;

KPI(iii) - Data Management Amendments: the percentage of Data Management Amendments for new number ranges that become Completed Orders during the Reporting Period whereby they are completed within 30 Working Days of the Order becoming a Committed Order excluding any Data Management Amendments where the standard 30 Working Day lead time has not been requested.

Part 2: Volumes

4. The Dominant Provider shall publish the information required in KPIs (i) to (iii) set out in paragraph 5 below in relation to the provision of Interconnect Circuits to all Third Parties (as an aggregate figure);
5. The KPIs referred to in paragraphs 4 above are as follows:

KPI(i) - Volume of orders provisioned: the total number of Committed Orders that became Completed Orders during the Reporting Period;

KPI(ii) - Volume of faults reported: the number of Faults where the Dominant Provider subsequently achieves Restored Service during the Reporting Period;

KPI(iii) - Volume of Data Management Amendments: the total number of Data Management Amendments for new number ranges that became Completed Orders during the Reporting Period.

Annex 5

Network and technology choice for the NCC

Summary

- A5.1 This annex sets out our approach to technology choice for cost modelling in order to set efficient charges. This NCC will apply during a period of competing networks using different technologies (and with different topologies).
- A5.2 In this annex we first briefly outline our approach to network technology choice in the 2009 NCC and relevant regulatory documents published since – most notably the 2009 EC Recommendation and the 2011 F&R Guidance.
- A5.3 We then explain our framework for technology choice and how we have decided to implement regulation of wholesale call termination and wholesale call origination. We set out our February 2013 consultation proposals, stakeholder responses to those proposals and our conclusions for:
- our approach to setting efficient charges and what this means for technology choice;
 - the number of points of interconnection (Pols) modelled and the basis of regulating the physical interconnection between competing networks; and
 - how the costs of conversion between time division multiplexing (TDM) networks and next generation networks (NGNs) should be recovered.
- A5.4 Based on our proposals in the February 2013 consultation and taking account of stakeholder responses we have concluded that:
- NGNs should not be characterised as the Modern Equivalent Asset (MEA), but can be considered as an appropriate basis for establishing costs associated with providing wholesale call origination and wholesale call termination services;
 - Regulation of physical interconnection should be based on the technology and topology choices of the network providing the regulated services; and
 - The provision of conversion and recovery of the associated costs should be subject to commercial negotiation in the first instance. We have provided our views on how conversion might be undertaken and an indication of how the costs might be recovered through commercial arrangements.

Background

Technology choice in the 2009 NCC

- A5.5 In 2009 we modelled a hypothetical ongoing network based on TDM components and TDM topology, although the cost model itself was not solely based on BT's top-down costs as reported by BT. Instead the costs of the network were adjusted to reflect:

- all traffic being carried on the TDM network throughout the control period, i.e. ignoring the impact of traffic being carried on BT's NGN (21CN), if any⁶⁵⁷; and
- capital and operating costs forecast at the levels that would be expected if the network was an ongoing TDM network (i.e. not based on the heavily depreciated asset values reported in the BT Regulatory Financial Statements).⁶⁵⁸

2009 EC Recommendation

Summary of the EC's position on technology choice

A5.6 The 2009 EC Recommendation states that:

*The cost model should be based on efficient technologies available in the timeframe considered by the model. Therefore the core part of both fixed and mobile networks could in principle be Next-Generation-Network (NGN)-based.*⁶⁵⁹

A5.7 The Explanatory Note to the 2009 EC Recommendation provides further detail on technology choice as follows:

*From a forward-looking perspective, a new operator would choose a packet-switched network with all services delivered over an IP core network. Given that regulating termination rates at the level of efficient costs aims at reflecting a situation which would prevail under competitive circumstances, this implies the selection of the most efficient technologies subject to the availability of such technologies in the timeframe considered by the model. In a competitive market, a new entrant would opt for the most efficient available technology, i.e. one based on NGN, for the purposes of building a core network. Hence, a BU model built today could assume that the core network is NGN-based, to the extent that the costs of such a network can be reliably identified.*⁶⁶⁰

Approach taken by other NRAs

A5.8 Alongside our May 2012 CFI we published a report by Analysys Mason that set out the approaches taken by other NRAs in relation to the choice of cost model.⁶⁶¹

A5.9 Among the main European NRAs which started reviews of the wholesale fixed call termination market after the 2009 EC Recommendation was published, most have based their approach on an NGN modelled network. Austria, Denmark, France, Netherlands and Germany have each used NGNs as the basis for cost modelling. Ireland has included a migration from TDM to NGN by July 2015 within its model. The national consultation in Spain was based on an NGN model but, to date, the

⁶⁵⁷ BT ultimately deferred plans to migrate voice from its TDM network to its 21CN. However, BT has continued 21CN investments for other services.

⁶⁵⁸ We did this to better reflect forward looking efficient prices (which would not be based on heavily depreciated asset values). We also removed from the cost base any 21CN-specific investments.

⁶⁵⁹ Paragraph 4. 2009 EC Recommendation.

⁶⁶⁰ Section 5.1.1 EC. *Commission staff working document accompanying the 2009 Commission Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU*, 7 May 2009, http://ec.europa.eu/governance/impact/ia_carried_out/docs/ia_2009/sec_2009_0600_en.pdf.

⁶⁶¹ Analysys Mason *Report for Ofcom, Study of approaches to fixed call origination and termination charge controls*, 15 May 2012. http://stakeholders.ofcom.org.uk/binaries/consultations/narrowband-market-review-call/annexes/analysys_mason.pdf

decision has not yet been notified.⁶⁶² Italy's initial proposal was withdrawn. It has since re-notified a new proposal, setting rates for both TDM and IP based termination.⁶⁶³

- A5.10 However, as far as we are aware, none of the incumbent operators have moved their voice services wholly onto an NGN, even though some have made NGN investments.⁶⁶⁴

The 2011 F&R Guidance

- A5.11 In the 2011 F&R Guidance we outlined the basis on which we would consider the FTRs set by CPs other than BT to be fair and reasonable. Our guidance outlined that:

- symmetric rates based on the Benchmark FTR (i.e. the cap applied to BT) would be presumed fair and reasonable;
- alternative technologies, topologies or scale were unlikely to provide a justification for higher FTRs (than the Benchmark FTR);⁶⁶⁵ and
- the costs of conversion should be borne by IP operators (at least while TDM was the basis of the Benchmark FTR).⁶⁶⁶

- A5.12 Other conclusions from that guidance which bear on matters of technology, topology and conversion costs were that:

- both TDM and NGN could be efficient ways for different operators to provide fixed-line voice services and our guidance on fair and reasonable charging for termination would provide reasonably efficient signals for investment in NGNs until the next narrowband review;⁶⁶⁷
- an NGN seeking to convert its outbound traffic from IP to TDM before sending it for termination on a TDM network has commercial choices, including self-

⁶⁶² Cullen International Cross-Country Analysis May 2013. Table 13 – Fixed termination rates moving towards pure LRIC? <http://www.cullen-international.com/report/7721/t9005>

⁶⁶³ Cullen International, WE Telecom Update May 2013, http://www.cullen-international.com/report/7737/c130119#_AGCOM's_revised_proposal,

⁶⁶⁴ For example, France Telecom operates both a TDM network and an NGN, although some alternative operators in France have rolled out NGNs. ARCEP, the French NRA, considered that TDM was sub-optimal and so regulated on the basis of NGN model outputs only. In Austria, Telekom Austria is in the process of rolling out its NGN, however, RTR, the NRA, regulates on the basis of an NGN model. This was also the situation in Belgium. For the other countries surveyed, it was not clear whether the incumbent was in the process of migrating to NGN. Nevertheless, the NRAs still chose to regulate on the basis of an NGN or an NGN-TDM blended model.

⁶⁶⁵ Paragraph 3.59-3.60 (regarding topology), paragraph 3.68-3.70 (regarding scale). Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011 <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁶⁶ Paragraph 4.84. Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011 <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁶⁷ Paragraph 4.135, 2nd bullet. Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011 <http://stakeholders.ofcom.org.uk/binaries/consultations/778516/fair-reasonable-statement.pdf>

provision and the purchase of conversion services from other CPs (transit providers);⁶⁶⁸

- an NGN should seek to recover the costs of conversion from its own termination charge (set symmetrical with the Benchmark FTR);⁶⁶⁹
- originating networks should be able to make reasonable requests to interconnect at termination points using the originators' preferred technology and pay no more than the Benchmark FTR (unless the three-stage test was met⁶⁷⁰). This would include where NGNs requested an IP termination service from a TDM network, although IP standards were noted as less well developed;⁶⁷¹
- BT's migration from TDM to IP should not ordinarily cause FTRs to rise;⁶⁷² and
- we did not consider BT's IP Exchange product to be a termination service as it was available only at a few locations whereas termination for geographic calls to BT's subscribers was available deeper in the BT network (at local switches).⁶⁷³

Network technology choice and setting cost-based charges

Proposals in the February 2013 consultation

A5.13 We set out our main objectives in setting charge controls as being allocative efficiency, productive efficiency, dynamic efficiency and effective competition.⁶⁷⁴ We then discussed the different approaches we may take to achieve these objectives. We set out the anchor pricing approach, where prices are effectively anchored to the level they would be at with no changes in technology. We contrasted this with

⁶⁶⁸ Paragraph 4.135, 2nd sub-bullet. Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁶⁹ Paragraph 4.135, 4th sub-bullet. Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁷⁰ The three stages of the test were: (1) charging a FTR equal to the Benchmark FTR would deny the CP recovery of its actual costs of providing fixed geographic call termination; (2) its actual costs of providing fixed geographic call termination are efficiently incurred; and (3) charging a higher FTR than the Benchmark FTR would be offset by demonstrable consumer benefit. Paragraph 6.8 Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011,

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁷¹ Paragraph 4.135, 6th bullet. Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁷² Paragraph 4.135, 7th bullet. Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁷³ Paragraph 4.135, 8th bullet. Ofcom, *Fair and reasonable charges for fixed geographic call termination*, 27 April 2011

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

⁶⁷⁴ These economic objectives are explained more fully later in this annex.

the MEA approach, which seeks to set prices based on the costs that would be faced by an entrant if the market were contestable.⁶⁷⁵

A5.14 Taking our objectives into account, along with responses to the May 2012 CFI and September 2012 consultation, we did not propose to identify NGN as the MEA because:

- Not all voice services are yet replicated using NGNs; and
- Robust comparison of the replacement costs of TDM networks and NGNs is very difficult.

A5.15 Nevertheless, we proposed to model the costs of an NGN as the basis for setting regulated rates for wholesale call origination and wholesale call termination because:

- Setting regulated prices in recognition of contestable market principles is appropriate, even if we cannot definitively identify NGNs as the MEA;
- Repeated use of anchor pricing makes it difficult to be confident that modelled TDM cost-volume relationships will be robust; and
- Related to this, in taking utmost account of the 2009 EC Recommendation, we considered that any LRIC-model based on TDM was likely to reflect cost-volume relationships from BT's top down TDM network rather than a bottom-up approach and we considered this to be unlikely to be a satisfactory basis for evaluating the forward-looking avoidable costs of termination.

Stakeholder responses

A5.16 Stakeholders offered a range of views on our approach.

A5.17 A number of stakeholders disagreed with our proposal that NGNs should not be considered as the MEA.

A5.18 [X] *“recognise that the economic consequences of Ofcom’s analysis are equivalent, in many ways to having NGN as the MEA and can see significant merit in this result.”* However it said that it considers that now is the time to embrace NGN as the MEA as this would create the right investment incentives (or would at least remove any disincentives) for TDM networks to move to more efficient technology.⁶⁷⁶

A5.19 [X] argued that maintaining a TDM network is not the more efficient approach and said that, in its view, some CPs ([X]) had maintained TDM networks for reasons other than consideration of efficient technology choice.⁶⁷⁷ It said it was surprised that TDM network operators are considered experts on NGN technology and argued that *“[a]lmost every call scenario conceivable works on an NGN core network and across network boundaries using an IP interconnect...”* As evidence, it said it had IP interconnects with many CPs (including another national scale IP core network) and provided call scenarios it had successfully tested. It said *“we therefore*

⁶⁷⁵ Anchor pricing and the MEA approach are explained more fully later in this annex.

⁶⁷⁶ [X] response to February 2013 consultation

⁶⁷⁷ [X] response to February 2013 consultation

wholly refute the suggestions to Ofcom articulated in Paragraph A11.59 and the conclusions drawn from it.⁶⁷⁸

- A5.20 [X] also said that it considered any public suggestion by Ofcom that NGNs were not as reliable as TDM networks could impede progress to more efficient networks. It said it feared that any statement by the regulator about the lack of stability of a technology would be used by TDM networks to support their maintenance of existing networks.⁶⁷⁹ Finally, it also noted that the approach proposed meant some of the additional benefits that could arise in an all NGN environment (such as direct routing of calls to ported numbers) were missed in our assessment.⁶⁸⁰
- A5.21 TalkTalk disagreed with Ofcom's analysis in relation to the MEA. It argued that it has been running an NGN since 2005 that is capable of supporting "*all grade 5 services*"⁶⁸¹ including residential and business services, noting they may not be identical to TDM based services but that they do meet TalkTalk's customers' needs.⁶⁸²
- A5.22 TalkTalk's view was that it is not sufficient to merely base wholesale call origination and wholesale call termination rates on the costs of NGNs as a substitute for using NGNs as the MEA. It said that Ofcom's approach meant that TalkTalk needs to continue to interconnect at the BT DLEs. This, it argued, introduces inefficiency, as compared to NGN to NGN interconnection. It argued that if it sought to interconnect at the nearest TDM node to the 20 POIs of the model, because this would be at the tandem layer rather than the DLE, it would then be charged for LTC in addition to termination. It said that no CP is able to provide a competitive constraint on LTC in this regard and so BT has no incentive to set the charges as would be expected based on the LRIC of an NGN. TalkTalk argued that this meant that BT is not incentivised to migrate to efficient technology and NGNs would incur additional and unnecessary expense in operating legacy TDM infrastructure. As such, it argued that Ofcom's approach fell short of promoting efficiency.⁶⁸³
- A5.23 It also argued that Ofcom's analysis in relation to the cost comparison between the two networks was contradictory and flawed. It said that the fact that new TDM equipment was no longer available in itself demonstrated that NGNs were the MEA. It argued that the approach taken by Ofcom leads to the question of when NGNs can ever be considered the MEA, because TDM equipment will never be available for such a comparison.⁶⁸⁴
- A5.24 Sky considered that NGNs should be treated as the MEA. It argued that while the decisions by CPs to invest in TDM networks may have been an efficient investment at the time, this "*could no longer be relied upon to form the basis of regulation of narrowband markets where Ofcom has a responsibility to promote competition and efficiency*."⁶⁸⁵ It said that adopting NGN as the MEA would send the right investment signals and would incentivise CPs to make more efficient choices in relation to technology. It argued that this would be consistent with Ofcom's duty of technology neutrality. Not taking this approach would mean that TDM networks

⁶⁷⁸ [X] response to February 2013 consultation

⁶⁷⁹ [X] response to February 2013 consultation

⁶⁸⁰ [X] response to February 2013 consultation

⁶⁸¹ We take this to refer to Class 5 services, namely the services provided by local exchanges to which subscribers directly connect.

⁶⁸² Page 1, TalkTalk response to February 2013 consultation

⁶⁸³ Page 2, TalkTalk response to February 2013 consultation

⁶⁸⁴ Page 1, TalkTalk response to February 2013 consultation

⁶⁸⁵ Para 9, Sky response to February 2013 consultation

would not offer IP interconnection thereby inflating the costs faced by NGNs. It also argued that new entrants only deploy NGNs and the efficient method of interconnection is IP. The perpetuation of an approach that does not incentivise migration to NGNs is not the outcome that would be expected in a competitive market and will mean BT does not migrate, instead extending the use of its legacy network because this will allow it to earn more from its legacy network than if it migrated (Sky noted this was especially true where legacy charges are based on a pricing approach where costs are modelled using a hypothetical ongoing network approach).⁶⁸⁶

A5.25 Sky argued that we were incorrect to rely on two of our arguments in not identifying NGNs as the MEA:

- It said that it was unreasonable and disproportionate to rely on the fact that not all voice services are replicated on NGNs as a reason for not considering it to be the MEA. The services not supported, in Sky's view, are likely to be legacy services that persist only because "*TDM operators continue to be rewarded for sustaining their networks*".⁶⁸⁷
- In addition, it argued that while it is unclear why the costs of TDM networks and NGNs need to be compared in the assessment of the MEA, the fact that TDM network costs cannot be reliably ascertained due to the dearth of new build TDM networks is, in fact, a justification for considering NGNs to be the MEA.⁶⁸⁸

A5.26 On the other hand, other stakeholders (NICC, [X], Telephony Services Ltd, Vodafone and BT) made points indicating that NGNs should not be considered as the MEA.

A5.27 NICC (a technical forum that develops interoperability standards for public communications networks in the UK) said that the standards ND1017 and ND1019 provide protocol and interworking specifications for SIP(I).⁶⁸⁹ This was developed to help support like-for-like replacement of TDM services as BT moved through its proposed migration onto 21CN. To the best of NICC's knowledge, these standards have not been widely adopted. More recently NICC has focused on developing standard ND1035 – a SIP protocol that would support basic calls and UK regulatory obligations (emergency calls, CLI with privacy indication, number portability). However, this is limited in scope.⁶⁹⁰ Therefore, ND1035 would be in addition to, rather than a replacement for, TDM/C7 interconnect.⁶⁹¹ ND1035 also does not address interworking between SIP and C7. NICC will be working on this but is reliant on commitment from members to resource this work.⁶⁹²

⁶⁸⁶ Para 10 – 12, Sky response to February 2013 consultation

⁶⁸⁷ Para 13, Sky response to February 2013 consultation

⁶⁸⁸ Para 13, Sky response to February 2013 consultation

⁶⁸⁹ SIP(I) provides an interworking profile in which Integrated Services User Part (ISUP) signalling information is encapsulated within Session Initiation Protocol (SIP) messaging. ISUP is defined by NICC in the standards document ND1007 and is a signalling standard that provides call control within TDM networks. SIP is defined by the Internet Engineering Task Force in specification RFC 3261.

⁶⁹⁰ Specifically NICC cited limitations in supporting call prioritisation as required on emergency calls between the call handling agent (BT and Vodafone (the latter having taken over CWW's operations)) and the emergency services call centres and the full range of ISDN based services.

⁶⁹¹ C7 refers to the Signalling System Number 7 standards as defined by the International Telecommunications Union (ITU-T) and implemented for interconnection in the UK by NICC, for example via ND1007 (ISUP).

⁶⁹² Page 1, NICC response to February 2013 consultation

- A5.28 NICC noted that none of the above precludes IP interconnection between two networks, but rather that issues not considered in the above standards must be resolved by CPs and vendors on a bilateral basis.^{693 694}
- A5.29 [X] argued that VoIP equipment is far less resilient than TDM equipment. It also argued that standards are not in place for all services (e.g. some CLI aspects) and that it is incorrect to argue that VoIP equipment is cheaper than TDM equipment, since equipment costs “*have generally fallen through [the] floor, especially TDM equipment!*” It also argued that the overall cost of running VoIP networks is higher than TDM networks because it requires more maintenance activity. It argued that the cost to “*control, route and bill a call is generally the same regardless [of technology]*”.⁶⁹⁵
- A5.30 Telephony Services Limited said it believed it is important for CPs to build their own TDM networks so as not to rely on wholesale IP solutions which provide a “*poor quality of service in relation to directory enquiries, 999 services, numbering and other activities that require a regulated interconnect.*”⁶⁹⁶
- A5.31 Vodafone said that it concurs that IP cannot be regarded as the MEA for interconnection but believes an opportunity has been missed for developing a framework for recognising when IP will become the MEA.⁶⁹⁷
- A5.32 Vodafone argued (as per CWW’s response to the September 2012 consultation) that there are no UK industry agreed standards for IP interconnect that will meet all the regulatory obligations set out in the General Conditions. While it accepts that bilateral agreements are possible, this cannot be the basis for mass industry adoption. Vodafone reasserted certain points on technical standards also made by NICC. It also said that adoption of IP interconnection is relatively low, as a proportion of interconnection as a whole.⁶⁹⁸
- A5.33 BT agreed that a new entrant would build an NGN but it said that incumbent operators would maintain their TDM networks because this would be lower cost and because they have to maintain the range of services currently available.⁶⁹⁹ BT said that it, unlike a new entrant, was not able to provide only a subset of services and some current services could not be replicated, or could not be replicated cost effectively, on NGNs. BT noted the following examples: ring-back, operator services provided to WLR operators, services for customers with impaired hearing, dial-up internet services (which BT noted remains a part of the USO), certain regulatory services such as number portability, some ISDN services (including, for example, support of Electronic Point of Sale (EPOS) services), some business and inbound calling services to non-geographic numbers and certain billing features which have specific requirements (such as significance of origin or destination information as used for directory enquiries services). It also said that other requirements including the Government Telephony Preference scheme (GTPS) and network management

⁶⁹³ Page 2, NICC response to February 2013 consultation

⁶⁹⁴ NICC also noted that ND1016 holds much of the technical material previously included in the Oftel CLI Code of Practice, which was removed when this was transitioned to the Ofcom code of practice. NICC stated that ND1016 will require updating to take account of SIP technology and NICC requested Ofcom’s active involvement in any such dialogue, Page 2, NICC response to February 2013 consultation

⁶⁹⁵ [X] response to February 2013 consultation

⁶⁹⁶ Page 2, Telephony Services Limited response to February 2013 consultation

⁶⁹⁷ Page 4, Vodafone response to February 2013 consultation

⁶⁹⁸ Page 52 – 54, Vodafone response to February 2013 consultation

⁶⁹⁹ Para 9.9 to 9.14, BT response to February 2013 consultation

in overload conditions (for example during mass call events such as television phone-ins) are not defined in NGN standards.⁷⁰⁰

- A5.34 BT argued that the architecture of the NGN it would ultimately build is currently uncertain, and that the network modelled by Ofcom is only one option (which may restrict expected developments in the future). BT provided reports from Bell Labs in support of its arguments that the current range of services supported on its TDM network could not be fully replicated (or replicated cost effectively) on an NGN and that the architecture of the NGN that BT ultimately deploys is uncertain and not necessarily the one included in Ofcom's model. It also provided reports from Analysys Mason and Bell Labs indicating that TDM networks (particularly incumbent operators) have not migrated to NGNs internationally.⁷⁰¹
- A5.35 BT also argued that the model we used in the February 2013 consultation did not represent reality in that it started at a date when BT had clearly not commenced deployment of an NGN, did not capture all the costs that would be faced by an incumbent in providing the full range of services and included some network elements (such as 100Gb/s cards) that were not available at the start date of the model. It said it expected that inclusion of these costs and others it identified as missing would result in the bottom-up LRIC+ costs of the modelled NGN being higher than BT's costs of sustaining its TDM network.⁷⁰² We address these specific comments in Annex 6 and Annex 7.
- A5.36 On this basis, BT strongly supported Ofcom's conclusion not to identify the modelled NGN as the MEA.⁷⁰³

Our analysis and conclusions

- A5.37 Before concluding on the appropriate technology for our hypothetical network cost model, we set out the economic framework behind our approach.

Economic objectives in setting cost-based charges

- A5.38 We are interested in network technology choice because we wish to set cost-based charge controls. We are interested in network technology choice as a means to an end, not an end in itself.
- A5.39 Had we considered charge control remedies which were not based on cost modelling, then the question of technology choice would be redundant. For example, had the appropriate remedy for wholesale call origination or wholesale call termination been a safeguard cap based on constant nominal or constant real charges then detailed cost modelling would be unnecessary.
- A5.40 In setting efficient charge controls for wholesale call origination, wholesale call termination and interconnection, our main objectives are:
- Allocative efficiency – i.e. prices reflect forward looking (marginal or incremental) costs;

⁷⁰⁰ Para 10.4, BT response to February 2013 consultation

⁷⁰¹ Para 10.2 to 10.11, Annexes 4 – 8, BT response to February 2013 consultation

⁷⁰² Para 9.8 to 9.11 and para 9.32, BT response to February 2013 consultation

⁷⁰³ Para 10.1, BT response to February 2013 consultation

- Productive efficiency – i.e. BT and access seekers face incentives to minimise costs and efficient buy/build signals;
- Dynamic efficiency – i.e. the scope for increases in output possible from existing resources as techniques of production are improved and/or new services are developed. Dynamic efficiency is driven by successful investment and innovation. Delivering dynamic efficiency in regulated markets typically involves providing an opportunity for firms to recover efficiently incurred costs, although not providing a guarantee of cost recovery – consistent with what would be expected in a competitive market;
- Effective competition – i.e. that our intervention promotes competition (i.e. those able to do things more efficiently than BT can enter using their own resources and infrastructure) but does not unnecessarily restrict the ability of BT or other CPs already operating in regulated markets from competing.

A5.41 Often these objectives will be in tension:

- Pricing at marginal or incremental cost, while good for allocative efficiency, will not recover sunk costs. Regulating in a way which does not provide an opportunity to recover sunk costs is undesirable for dynamic efficiency, because it undermines incentives to invest in new assets which, once acquired, are themselves sunk.
- Setting prices on the basis of full replacement costs is likely to be good for effective competition (since access seekers face appropriate “buy/build” signals – i.e. whether to “buy” access or “build” their own infrastructure). However, prices based on full replacement costs, may not be good for allocative efficiency (since prices will depart from marginal/incremental costs if replacement costs involve sunk investments when there are already usable sunk assets in place). Moreover, if investment in competing infrastructure is not practicable or commercially viable, prices set on the basis of replacement cost may result in access seekers paying a higher price than the incumbent needs for cost recovery.

Network technology choice in the light of our objectives

- A5.42 As set out earlier in this annex, in the 2009 NCC we modelled a hypothetical ongoing TDM network. This approach was essentially one of anchor pricing, since the charges based on this hypothetical ongoing TDM network would apply irrespective of the actual technology used. That is, charges are “anchored” to be no higher than the level that would prevail if there were no technological change. In this way customers (that is, wholesale purchasers of the regulated products) and ultimately consumers would be no worse off due to technological change.
- A5.43 During a period of technology change, we could adopt an anchor pricing approach or we could adopt an alternative, such as one based on an MEA approach (to the extent we can identify the MEA).
- A5.44 An anchor pricing approach or an approach based on an MEA is only ever implemented as a means to an end – the end being to cap charges in a way most likely to secure economic efficiency (i.e. allocative, productive and dynamic) and effective competition.

- A5.45 As explained in the September 2012 consultation, setting prices on the basis of MEA costs is consistent with asset valuation under CCA, where assets are valued at their current replacement cost. This was the approach recommended in the “Byatt report” (1986).⁷⁰⁴
- A5.46 The MEA approach seeks to set regulated prices reflective of the costs faced by an entrant if the SMP market were in fact contestable. The approach is most appropriate for those services or parts of the network where assets can potentially be replicated by entrants (even if this might not be so in the short-run, in the longer-run entrants might successfully integrate upwards). The MEA approach fits well with the principle of effective competition, and fits well with dynamic and productive efficiency (because regulated rates are not based on incurred costs but modelled costs).
- A5.47 However, the MEA approach does not always fit well with allocative efficiency. This is because the MEA approach will involve placing a value on all assets in the ground, and so even sunk assets will be valued on a replacement cost basis, even if they would not be replaced during the period of assessment (i.e. the control period) or even in the foreseeable future.⁷⁰⁵
- A5.48 The MEA approach is likely to be relatively straightforward when there is a single service and where the replacement asset(s) differs on few, if any, dimensions compared with the asset(s) being replaced. But, with more than one service being produced and/or where the new assets have different functionality (and/or configuration) then valuing the assets already in place using the MEA approach is not straightforward. To illustrate in the present context:
- While the current market review is concerned with wholesale call origination and wholesale call termination, these are inputs to downstream voice call markets which involve end-to-end calls. Since network investment is driven by demand for the downstream services provided (i.e. demand for wholesale call termination and wholesale call origination is a derived demand), a more relevant comparison of network costs would be on an end-to-end call basis;
 - The combination of possible end-to-end call types is very large, comprising at least: local, regional and national calls, with a proportion of these calls being

⁷⁰⁴ The full title of the Byatt report is: *Accounting for Economic Costs and Changing Prices, A Report to HM Treasury by an Advisory Group, Volume I, HMSO 1986*, Paragraph 56 the Byatt report states: “We have concluded that the principle of CCA [current cost accounting] asset valuation is correct as a basis for measuring continuing economic costs. The principle of asset valuation for balance sheet purposes under CCA is to assess what the business would lose if deprived of its assets in a competitive market. This is the value of the assets to the business, which is not, of course, the same as the value of the business...” Paragraph 57 states: “In principle, the CCA valuation of the tangible assets to a business is based on what a competitor would be prepared to pay for them in a fully competitive market, ie the cost of an asset of equivalent productive capability – a Modern Equivalent Asset (MEA) – if the asset would be worth replacing or the recoverable amount if it would not be.”

⁷⁰⁵ What matters for economic efficiency is marginal costs, defined as the costs causally related to the output including the reduction in the productive capability of assets due to current consumption. (See Khan (1993, 5th printing), *The Economics of Regulation: Principles and Institutions*, The MIT Press, pp 71-73.) For example, if the use of TDM assets for wholesale call termination and wholesale call origination traffic during the control period (i.e. up to September 2016), or even sometime thereafter, does not affect the date at which replacement investment would be required, then the economic cost of using those assets in the control period will be very low (in the limit might only comprise the power, cooling and basic fault repair required for continued operation).

delivered end-to-end on a single network (an on-net call) with others terminating on a different network to the one on which it originated (off-net calls);

- TDM networks have a different topology to NGNs, so that a TDM network is likely to have more nodes than an NGN providing the same scale and coverage. Therefore, some of the “services” in wholesale TDM networks will not map directly onto “services” provided on an NGN. For example,
 - local-tandem conveyance/transit (LTC/LTT) involves switching and conveyance between DLE and tandem switches in a TDM network and such switches do not exist in NGNs;
 - a regional end-to-end call that requires wholesale call origination, wholesale call termination and two LTC/LTT “legs” on a TDM network may require only call origination plus call termination on an NGN, or may require wholesale call origination, wholesale call termination, plus conveyance across the NGN core.
- Voice networks are typically provided using infrastructure which is shared with data networks. While this is less so in the case of TDM networks, some of the assets (such as SDH transmission infrastructure, fibre, duct, etc.) will be shared. Therefore, an important question is whether the replacement costs of TDM networks and NGNs for voice services should be based on:
 - stand-alone costs (i.e. any common costs which might be allocated to other services such as broadband and leased lines are included in the cost stack);
 - stand-alone costs net of the value attributable to other services; or
 - the incremental voice costs only (i.e. ignore any common costs between voice and other services when comparing the cost stacks for voice calls between TDM networks and NGNs).

A5.49 Because of these differences an appropriate (like-for-like) comparison of the value of TDM networks and NGNs is difficult.

A5.50 Some stakeholders (Sky and TalkTalk) questioned the need to compare the costs of TDM networks and NGNs. They argued that the lack of new supply of TDM equipment in itself demonstrated that NGNs should be considered the MEA.

A5.51 We do not see the absence of replacement TDM equipment as demonstrating that NGNs should be considered the MEA per se. Consideration of what is the MEA involves considering at least the services which can be supported/supplied and the cost of acquiring new equipment.⁷⁰⁶ Even if it is not possible to acquire TDM network assets at any price from an equipment supplier, this does not mean that NGN is by definition the appropriate way to value existing assets –at least without making some adjustments.

A5.52 However, if we are interested in comparing assets on a replacement cost basis – as we should for MEA valuation – the absence of new build TDM equipment does make such a comparison difficult. Comparing alternative assets or technologies on

⁷⁰⁶ A number of responses to the February 2013 Consultation discussed services that could be supported on NGNs – see the responses from NICC, BT, [3X], Vodafone and TSL summarised in paragraphs A5.27 to A5.34 of this Annex. We discuss our consideration of services supported on NGNs below.

the basis of heavily depreciated asset values is likely to be misleading. We recognise that if the costs of an NGN were below the costs of a largely depreciated TDM network, this would suggest that NGN was the MEA. However, this does not appear to be the case.⁷⁰⁷ But for the reasons set out in the February 2013 consultation (paragraph A11.80) proper like for like comparison is any case difficult, due to the issues of (i) multiple services and common cost allocation (also noted above); and (ii) different topologies and technologies.

- A5.53 Some stakeholders indicated that identifying NGNs as the MEA would send out the right signals to incentivise efficient investment. However, while we seek to set charge controls that incentivise regulated entities to make efficient investment decisions, this may not be to migrate to an NGN. Instead, the efficient approach may be to continue to operate a TDM network. In the long term, we accept that it is likely to be efficient for networks to ultimately migrate away from TDM technology. However, in terms of what is profit maximising for individual CPs, we observe that a number of CPs still use TDM networks, implying that TDM must be currently profit maximising for them. Whether this is efficient for society as a whole depends on a complex set of interactions between the economic value placed on networks by different CPs and consumers, including the range of services potentially offered. While not definitive on its own, we note that some of the largest fixed CPs – not just BT, but also Virgin Media and Vodafone (previously CWW) – remain predominantly TDM operators.
- A5.54 In its response BT explained that migration away from traditional PSTN infrastructure based on TDM networks is not expected to happen in the majority of countries until 2020 or beyond.⁷⁰⁸ In addition, BT argued that the network it deploys when it migrates is open to question as technology and consumer demands develop. A conclusion that NGN is the MEA would not necessarily suggest that the services must be provided via NGN and would not incentivise BT to migrate to an NGN if it considered its costs would be lower by continuing to operate a TDM network. BT indicated that this was its view in its response to the February 2013 consultation.⁷⁰⁹
- A5.55 Another important aspect of incentives to invest is not undermining sunk investments. For example, taking the view that TDM network assets are sunk and so all that matters is investment in NGNs, would miss an important aspect of dynamic efficiency. In particular, a regulator which signals that past investments can be ignored (at least until there has been an opportunity to recover efficiently incurred expenditure) risks undermining regulatory predictability and may thus compromise future incentives to invest. This applies not only to investment made in TDM technology (for example, by BT), but also to investments made by CPs to interconnect to those TDM networks (for example, by investing in network infrastructure to support interconnection to BT's DLEs).
- A5.56 There was a difference of views from stakeholders in response to the February 2013 consultation in relation to the extent to which NGNs are able to support all the services provided by TDM networks. Sky, TalkTalk and [X] argued that it was wrong to say that NGNs should not be considered the MEA because they could not support the full range of services provided by TDM networks.

⁷⁰⁷ See Annex 6 in which we consider the outputs of our NGN model

⁷⁰⁸ BT response to February 2013 consultation, Annex 5, page 1

⁷⁰⁹ Para 9.12 to 9.13, BT response to February 2013 consultation

- A5.57 While for the majority of voice call services provided we consider that NGNs are likely to be a sufficiently good replacement for TDM networks, in line with responses from BT, Vodafone and NICC we recognise that there are some existing call services supported on TDM networks which may not be fully supported in UK standards for NGNs – particularly in relation to the interconnection of UK NGNs. Whilst new entrants can serve the majority of the UK customer base, these CPs are able to serve customers using services not fully supported on NGNs by leaving them connected to the BT network and purchasing regulated wholesale services from BT. If BT were to migrate to an NGN it would need to develop these services (which may not be practical or cost effective) or, alternatively, force consumers to migrate to replacement services.
- A5.58 BT presented reports indicating that, internationally, there have been very few instances of TDM networks migrating to NGNs.⁷¹⁰ In the UK, prior to the take-up of MPF by LLU operators, the majority of UK residential consumers were connected to the TDM networks of BT, Virgin Media or KCOM. To our knowledge, except for trials which have not progressed to full migrations, these CPs continue to support their customers on these TDM networks. In addition, each of the national mobile network operators (MNOs), continues to support voice services on TDM based core networks, including interconnection. We accept that more migration has occurred for business customers (for example, to SIP trunking solutions) but also recognise that some CPs focussed on business customers (for example Vodafone and BT) responded that NGNs should not be considered as the MEA.
- A5.59 While building an NGN may be the most efficient approach for new entrants, and migration to NGNs may be relevant for some CPs with specific customer requirements, we do not consider that the lack of migration by a number of large CPs using TDM is attributable to our regulatory approach to date. We recognise that prices in regulated markets (such as termination) and the regulation of interconnection (see next heading in this annex) will be likely to influence the technology choices made by CPs at the point of entry, but once CPs have an established network, it is the ongoing costs of operating that network and the type and quality of customer services offered that will mostly drive commercial behaviour. Therefore, we consider that identifying NGNs as the MEA and regulating on this basis is unlikely to be the decisive factor that would motivate TDM based CPs to migrate to NGN.
- A5.60 There was also a range of views on physical interconnection. Several respondents took issue with our view that interconnection via IP remains nascent.⁷¹¹ In this respect we are mindful of the response from NICC, the UK standards body, indicating that to its knowledge the SIP(I) specification has not been widely deployed and that work is still ongoing on the ND1035 standard. In considering whether NGNs can be considered the MEA our view is that NGNs should be able to provide a wide range of services used by UK consumers. In changing technology it may be that new services replace older ones, such that like-for-like replacement is not required, and we accept this may be the case in relation to the consumers currently supported by NGNs. To the extent that consumers continue to value services provided via TDM networks and/or NGN standards do not fully specify the implementation of UK regulatory obligations, a widespread industry migration to IP

⁷¹⁰ Annex 5 and 8, BT response to February 2013 consultation

⁷¹¹ IP provides the transport layer. IP Interconnection for voice services, as referred to here, relates to the protocols required to set up the call and to convey the voice services across the IP transport layer. Therefore, the IP Interconnection standards relate to call set-up/control, codec selection and packetisation delay.

interconnection may be more complex and costly, given the number of bilateral agreements that would need to be consistently implemented to deliver end to end services.

A5.61 In the light of the responses to the February 2013 consultation and our further consideration of the technology and market features at play in this review period, we conclude that it is not appropriate to identify NGNs as the MEA for wholesale call termination, wholesale call origination and interconnection for this market review for the following reasons:

- **Provision of services:** While some form of NGN is likely to be the main platform for TDM networks when they eventually migrate to a new technology, responses to the February 2013 consultation indicate that:
 - for some legacy services, a forced migration of customers to new services which may not match the current service(s) may be required, and migration to NGN may require costly development and/or deployment of new equipment including customer premises equipment (CPE); and
 - industry standards do not at present support the full set of services provided in the UK (including those based on regulatory requirements such as some of the services discussed by BT – see paragraph A5.33 above), and while these can potentially be overcome on a bilateral basis this would make an industry-wide migration more complex.
- **Cost comparison:** the complications created by the support of multiple services on NGNs (and, to a lesser extent, on TDM networks) and the different topologies used to provide these services (which result in different wholesale services being provided on TDM networks compared to NGNs) mean that comparing the costs of TDM networks to NGNs on a like for like basis is difficult, and is further complicated by the fact that TDM equipment is no longer available for new build TDM networks.

A5.62 Nevertheless, we remain of the view set out in the February 2013 consultation that a hypothetical NGN forms a reasonable basis on which to set regulated charges – at least for wholesale call termination and wholesale call origination.⁷¹²

- **Setting regulated prices in recognition of contestable market principles is appropriate, even if we cannot definitively identify NGNs as the MEA:** NGNs have been the technology of choice for recent entrants in voice calls markets and the demand for wholesale call termination and wholesale call origination is ultimately a derived demand from the retail call markets, which are competitive. Setting regulated rates for wholesale call origination and wholesale call termination based on NGNs is likely to provide a reasonably efficient outcome given our objectives outlined earlier: i.e. access seekers will face reasonably efficient buy/build price signals which in principle is good for competition. Also, regulated prices are set independently of BT's incurred costs (which provides dynamic and productive efficiency advantages).
- **Repeated use of anchor pricing makes it difficult to be confident that modelled TDM cost-volume relationships will be robust:** In both the 2005 and 2009 NCCs we built a hypothetical ongoing TDM cost model. While in the 2005

⁷¹² Our position on interconnection is explained in the following sections of this annex.

model, few adjustments to TDM costs were made⁷¹³, in the 2009 NCC the same approach as in 2005 was taken, but with the substantial addition of increasing the TDM asset lives and uplifting the asset base to be consistent with the NRC/GRC ratio from 2003/04.⁷¹⁴ Perpetuating this approach embeds the characteristics of TDM costs based on a top-down view of the network from over a decade ago.

- **2009 EC Recommendation and bottom-up LRIC modelling:** Related to the preceding point, any LRIC-model based on TDM is likely to reflect cost-volume relationships from BT's top-down TDM network, which is unlikely to provide a satisfactory basis for evaluating the forward-looking avoidable costs of termination, modelled as the final traffic increment. Taking utmost account of the 2009 EC Recommendation, we consider this supports our choice to model an NGN.

A5.63 We note that one respondent ([X]) argued that a decision where NGNs were not considered to be the MEA based on arguments around the ability of NGNs to support various services may send a message that these networks are not sufficiently robust. This is not our intention and we leave it to CPs to make their own decisions about the ability of competing technologies to provide services of sufficient functionality and quality to meet the needs of UK consumers (and meet their obligations under the General Conditions). Our view is that both TDM networks and NGNs may be efficient technologies depending on the particular circumstances of the CP in question. The discussion above is related only to determining the appropriate way to estimate the cost base from which to set cost based charge controls.

Number of points of interconnection in the model

Proposals in the February 2013 consultation

- A5.64 In the February 2013 consultation we said there was complexity in developing an NGN cost model, since the decisions on the most appropriate interconnection infrastructure that would be put in place in the real world would take account of a wide range of factors such as the total range of services being provided, the location of different networks and the volume of traffic to be exchanged between them. As such, consistent with responses to the September 2012 consultation, we said that there could be a number of different approaches including the industry agreed approach of “27+2” Pols for interconnection to BT's proposed 21CN.
- A5.65 However, we said that we had modelled a hypothetical network which seeks to model the costs that would be incurred by an efficient network operator. It is not, therefore, necessarily the case that the discussions by industry that led to “27+2” should be taken as the basis for our modelled network. We therefore modelled, as our base case, a network with 20 Pols. We also included, in Annex 14 of the February 2013 consultation the sensitivity of the costs of the services in question to

⁷¹³ 21CN related expenditure was removed, the efficiency factor assumed no 21CN investment and all traffic was assumed to be conveyed on the TDM, even if in the review period some traffic might have been conveyed on BT's 21CN. See Annex 6 of *Review of BT's network charge controls: Explanatory Statement and Notification of decisions on BT's SMP status and charge controls in narrowband wholesale markets*, 18 August 2005,

http://stakeholders.ofcom.org.uk/binaries/consultations/charge/statement/statement_ncc.pdf

⁷¹⁴ See Annex 2 of *Review of BT's Network Charge Controls: Explanatory Statement and Notification of decisions on BT's SMP status and charge controls in narrowband wholesale markets*, 15 September 2009

the number of Pol which indicated that moving the number of Pols to 30 only had a small effect on origination and termination rates in our base case.

Stakeholder responses

- A5.66 No stakeholders specifically responded to the February 2013 consultation in relation to the number of Pols to be included in the model.

Our analysis and conclusions

- A5.67 In order to model the costs incurred in providing wholesale call origination and wholesale call termination services we need to make an assumption on the number of Pols in the hypothetical network we have modelled. If BT implemented an NGN, the “27+2” Pols agreed previously by industry may continue to represent the most appropriate approach to implementing interconnection to BT, based on existing infrastructure deployed by CPs and the specific choices for the location of nodes supporting interconnection by BT.
- A5.68 However, we have modelled a hypothetical efficient network so it does not therefore follow that the discussions by industry that led to “27+2” for interconnection with BT should be taken as the basis for our modelled network.
- A5.69 In an NGN, the number and location of Pols involves a trade-off. Fewer Pols may lead to lower equipment costs but conveyance distances will be greater between each Pol and the customer’s point of connection to the network where traffic aggregation occurs (typically a Multi Service Access Node (MSAN) in an NGN). That is, more transmission will be included in providing the wholesale call origination and call termination services. NGNs offer economies of scope in conveyance due to the ability to support multiple services on a single infrastructure, and these economies of scope may offset the cost of greater conveyance distances.
- A5.70 Increased conveyance distances may also increase end-to-end transmission delay (which would reduce quality of service) although in the UK this may not be a significant factor due to the relatively short transmission distances involved. Alternatively, more Pols will reduce the conveyance distance (and so may reduce conveyance costs and/or improve quality) but may result in higher equipment costs.
- A5.71 A further consideration is the extent to which equipment can be shared by services other than interconnection of voice services, for example broadband interconnection. Therefore, the way that interconnection is provided for other services could be a factor in assessing the number of Pols to assume for voice interconnection.
- A5.72 While BT did not deploy the voice capability of 21CN, it has rolled out the broadband service that uses the 21CN – Wholesale Broadband Connect (WBC) – and interconnection to WBC is offered at 20 Pols.
- A5.73 While we accept that NGN deployments may support a different number of Pols depending on the coverage, scale and range of services provided, based on the evidence available to us, the lack of concerns with our proposal to include 20 Pols in the model in the February 2013 consultation and our sensitivity analysis in Annex 8 which shows the impact of varying the number of POIs is relatively small (particularly between 20 and 30 Pols), we have concluded that it is appropriate to have 20 Pols in our model.

Regulatory approach to physical interconnection

Proposals in the February 2013 consultation

A5.74 We considered our approach to regulating physical interconnection under the following headings:

- Uncertainty over NGN as the MEA - we said that there was some question over whether NGN is yet properly characterised as the MEA for all voice (and voice related) services.
- Technology neutrality – we said that, in our view, technology neutrality favoured an approach in which the wholesale call termination (and origination) rates set by regulation applies from the terminating (originating) node to which the called (calling) customer is actually connected. We also said we would expect to continue with this approach until it could be shown that a particular form of technology was no longer an efficient way to provide the services in question.
- Potential for arbitrage - there is a risk in requiring CPs to offer wholesale call termination to their customers connected by one technology (e.g. TDM) by means of another technology (e.g. IP). We said that this could result in TDM network operators investing in media gateways (MGWs) and presenting traffic as IP for hand-over at 20 Pol, rather than as TDM at 650 Pol. Such arbitrage would be profitable for TDM operators where the investment in MGWs was lower than the ongoing costs of TDM interconnect at 650 points on the BT network.

A5.75 In the light of these points, we proposed that the point of interconnection (and hence technology used for interconnection) would be determined by:

- for wholesale call termination, the network technology (and topology) by which the called party is physically connected; and
- for wholesale call origination, to the extent that regulated wholesale call origination services are required to be provided, the network technology (and topology) by which the calling party is physically connected.

Stakeholder responses

A5.76 Some stakeholders (TalkTalk, Sky, [X]) raised concerns in relation to the proposed regulation of physical interconnection in their responses on the technology choice discussed above. The following specific points were also made.

A5.77 [X] offered an alternative proposal where each CP should be required to provide both TDM and IP interconnection points (number and location to be of the CPs' choosing). This would allow each interconnecting party to then choose their preferred interconnect technology. This may require adjustment to allow for costs of conversion in the FTR but, it argued, this was required under Ofcom's proposal anyway.⁷¹⁵ We address this point in our discussion of the treatment of conversion costs later in this annex.

A5.78 Magrathea strongly disagreed with the proposed approach that means the DLEs remain the Pol for the provision of wholesale call termination to BT connected customers. It argued that while the EC has sought to remove asymmetry in

⁷¹⁵ [X] response to February 2013 consultation

termination rates, this proposal introduces an asymmetry given that NGNs have a higher cost of interconnection than that faced by TDM networks connecting to NGNs. In order to ensure there is no lack of reciprocity between TDM networks and NGNs, it argued that termination on BT's network should be available to NGNs at many fewer POIs than the 650 DLEs.⁷¹⁶ It said that Ofcom's current proposals promote inefficient behaviour by incentivising NGNs to interconnect at BT's DLEs and that it is perverse to consider NGNs the most efficient technology for cost modelling purposes but continue to incentivise DLE build-out.⁷¹⁷ In the absence of IP interconnection being provided by BT, Magrathea said that CPs should pay the fixed termination rate where it interconnects to 20 of BT's Next Generation Switch (NGS)⁷¹⁸ locations (with a sliding scale of increasing rates where the CP interconnects to fewer than 20 NGSs).⁷¹⁹

- A5.79 Vodafone agreed with Ofcom's proposed regulation but it flagged that some of the underlying thinking may be flawed. It considered that in theory at least, interconnect circuits for termination should be charged on a LRIC basis. However, it noted that the fact that interconnect circuits were used for multiple traffic streams, and the existence of Interconnect Extension Circuits (IECs) made it impractical to implement this. It argued that the reduction in CPS, the changes in the NGCS regime and a move towards IP interconnection would result in more straightforward reciprocal arrangements such that the next review should be based on pure LRIC IP interconnect.⁷²⁰
- A5.80 Three agreed with our proposed approach and our intention to keep the situation under review.
- A5.81 Virgin Media argued that because it is not interconnected to all of BT's DLEs it suffers a disadvantage compared to those that do interconnect with all DLEs. Similar to some NGN operators, it argued that our proposed approach incentivised CPs to interconnect to DLEs, which would be inefficient in the context of an industry migration to NGN.⁷²¹
- A5.82 BT agreed with our proposals on points of interconnection in the February 2013 consultation. It said that the efficient approach to interconnection for the foreseeable future will be a mixture of IP and TDM.⁷²²

Our analysis and conclusion

- A5.83 For ease of presentation, we explain our reasoning on physical interconnection using the same headings as in the February 2013 consultation.

⁷¹⁶ Page 2 – 3, Magrathea response to February 2013 consultation

⁷¹⁷ Magrathea said that for NGNs it would not be efficient to interconnect to all the DLEs but if they did not they would incur charges for LTC, which are based on historical LRIC+/FAC TDM rates, rather than the pure LRIC of an NGN, Page 2 – 3, Magrathea response to February 2013 consultation

⁷¹⁸ BT's NGSs provide the tandem switching layer in its network. While they support interconnect to other CPs and other nodes in BT's network via TDM/C7, they support the capability to interconnect via Asynchronous Transfer Mode (ATM) and as such were considered "next generation" by BT when deployed.

⁷¹⁹ Page 2 – 3, Magrathea response to February 2013 consultation

⁷²⁰ Page 24 – 25, Vodafone response to February 2013 consultation

⁷²¹ Page 8, Virgin Media response to February 2013 consultation

⁷²² Para 10.12, BT response to February 2013 consultation

Uncertainty over NGN as the MEA

- A5.84 A number of respondents (TalkTalk, Sky, Magrathea and [X]) argued that we should conclude that NGNs represented the MEA and this would lead to IP interconnection being offered by all networks (particularly TDM networks such as BT which currently do not offer access to regulated products such as wholesale call origination and wholesale call termination via IP interconnection). As discussed above, the MEA approach is an approach to valuing the assets used to provide the services in question. It does not necessarily follow that the regulated entity must provide the services using the technology deemed to be the MEA. Even if we considered NGNs to be the MEA, this would not mean that IP interconnect should automatically be mandated but, rather, that the costs of services provided by the regulated entity should be consistent with the costs of providing similar services via the MEA. As discussed above in paragraph A5.61, there is some question over whether NGN is yet properly characterised as the MEA for all voice (and voice related) services.
- A5.85 Nonetheless, as set out in Section 10, our aim in considering the regulation of interconnection is to ensure the effectiveness of remedies provided in the wholesale call origination and call termination markets. To the extent that a technology choice is clearly inefficient it may be appropriate to mandate interconnection to be provided via a different technology to facilitate the effectiveness of the remedies imposed in those markets. We discuss this below in relation to our views on technology neutrality.

Technology neutrality

- A5.86 We have a statutory duty (deriving from our European Community requirements) to carry out our functions in a manner, so far as practicable, which does not favour one form of network or service over another.⁷²³
- A5.87 Consistent with that principle of technology neutrality, we have defined wholesale call termination as the service that relates to the conveyance of all signals (including relevant control signals) required to terminate calls on a customer's exchange line from the point in the network closest to the end customer's point of connection to the network where those signals can be accessed by another CP. This definition is equally applicable to both TDM networks and NGNs.
- A5.88 But even though our approach to market definition and SMP is technology neutral and even though we have decided that a single (i.e. symmetric) wholesale call termination rate should be applied to all CPs, where CPs operate different network technologies and topologies, it is likely that they will prefer different Pols. Generally speaking, for a given level of traffic between two networks, a TDM network is likely to have a higher number of Pols for efficient traffic handling than an NGN.
- A5.89 While we recognise that co-existence of networks with different technologies/topologies may introduce some inefficiencies, the parallel running of competing networks is an almost inevitable corollary of infrastructure based competition. Over time, particularly as technology changes, the optimal network choice for entry is likely to change, but once the sunk costs of entry have been incurred it is likely to be more efficient for an individual operator to exploit that infrastructure, than to invest in duplicate infrastructure.

⁷²³ Act, section 4(6)

- A5.90 For example, Vodafone⁷²⁴ and the cable networks (now consolidated under the Virgin Media brand), entered voice service markets in the 1990s by directly connecting customers using TDM technology. In the period from 2005 onwards TalkTalk, and then Sky and others, entered using LLU for directly connecting customers coupled with an NGN for voice (and data) services.
- A5.91 On this basis, in recognition of the fact that the forward looking costs of TDM networks are likely to be low and because a history of infrastructure based entry is likely to result in a market with competing CPs using different technologies, we consider that technology neutrality favours an approach in which the wholesale call termination (and origination) rates set by regulation apply from the terminating (originating) node to which the called (calling) customer is actually connected.⁷²⁵
- A5.92 Clearly, different interconnection approaches will be preferred by CPs based on their own network investment decisions. CPs such as [X] and Magrathea that have deployed NGNs argued that TDM networks, particularly BT, should be required to provide IP interconnection, and that an approach based on interconnection at each of BT's DLEs would provide inefficient investment signals (which was also raised by Virgin Media).
- A5.93 However, as we have found that TDM is not inefficient, an approach of mandating a TDM network operator to provide IP interconnect would not appear to be technologically neutral. It would result in the TDM network incurring costs above those related to its own choice of technology to provide regulated services which were not recovered in the regulated charges (i.e. costs of conversion as discussed later in this annex).
- A5.94 Magrathea argued that in the absence of an IP interconnect product from BT, CPs interconnecting at 20 of BT's tandem switches should pay no more than the regulated termination rate. However, we do not agree that this would be the correct approach as it would require BT to provide a service that is additional to wholesale call termination (i.e. LTC and in some cases ITC, both of which have been found to be competitive) for no charge.
- A5.95 We would expect to continue with this approach until it could be shown that a particular form of technology was no longer an efficient way to provide the services in question. In making such an assessment we would expect to take into account the scope for the new technology to fully support existing services and the extent to which the different technologies are used by competing CPs.

Potential for arbitrage

- A5.96 Based on responses to the February 2013 consultation, we have considered the potential for arbitrage that could arise by requiring CPs to offer wholesale call termination to their customers connected by one technology (e.g. TDM) by means of another technology (e.g. IP). For example, if the wholesale call termination rate were the same for calls to BT customers whether for TDM hand-over at 650 DLEs

⁷²⁴ Previously Cable & Wireless (for example under the Mercury Communications brand)

⁷²⁵ We would not preclude the use of IP interconnection where CPs agree commercially to deploy it (including any bilateral agreement on standards to support the expected traffic types), but here we are considering what our approach should be to providing interconnection in relation to accessing the regulated wholesale call origination and wholesale call termination services.

or IP hand-over at, say, 20 Pol, originating CPs may prefer IP handover (since they could avoid the costs of interconnecting to 650 TDM Pols⁷²⁶).

- A5.97 This would allow existing NGN operators to handover traffic at 20 Pol, and would also allow TDM network operators to do this by converting traffic to IP. That is, TDM network operators could invest in MGWs and present traffic as IP for hand-over at 20 Pol, rather than as TDM at 650 Pol. Such arbitrage would be profitable for TDM operators where the investment (including ongoing costs) in MGWs was lower than the ongoing costs of TDM interconnect at 650 points on the BT network.
- A5.98 This would result in multiple conversions between TDM and IP. Multiple conversions between TDM and IP could impact voice call quality by introducing delay and coding errors.
- A5.99 If we were to require the same FTR at 20 Pols as well as at 650 Pol on the BT network, then such arbitrage might not necessarily be inefficient – unless there was a significant impact on voice call quality. Other than the voice call quality considerations, we do not see the prospect of arbitrage as a reason in itself to reject an approach that would require the same FTR to be made available at 20 Pols as well as at the current 650 DLEs for the period of this market review.
- A5.100 However, tolerance of such arbitrage would be predicated on the principle that applying the same FTR at both TDM and IP Pols, including for TDM connected customers, was appropriate. For the other reasons set out earlier in this annex, we do not consider this to be the case.

Conclusion on points of interconnection

- A5.101 Having considered further the responses to the February 2013 consultation, and in the light of our reasoning on technology choice above, we conclude that for the period to 30 September 2016 the point of interconnection (and hence technology used for interconnection) would be determined by:
- for wholesale call termination, the network technology (and topology) by which the called party is physically connected; and
 - for wholesale call origination the network technology (and topology) by which the calling party is physically connected.
- A5.102 Therefore, for interconnection to BT's TDM connected customers, the Pol would be at the DLE. We have decided not to require BT to offer IP interconnection at alternative Pols for the provision of wholesale call origination and wholesale call termination services from/to these customers.
- A5.103 Similarly, for other terminating CPs that have deployed a TDM network the Pol would be the existing switch to which the called customer is connected. We have decided not to mandate that these other TDM networks provide IP interconnection at fewer nodes than their existing TDM nodes. For NGNs, the location of Pols is decided by the specific network implementation of the CP.⁷²⁷

⁷²⁶ These costs could include purchasing conveyance to the DLEs via LTC/LTT or the cost of TDM interconnect circuits to the 650 DLEs.

⁷²⁷ This is without prejudice to the particular circumstances of any network access disputes as we might be called upon to resolve.

- A5.104 Once NGNs have matured sufficiently (in particular to address the issues discussed above in relation to IP interconnect standards and other relevant services) then we would consider again whether IP interconnection should be the basis for our regulation. Other factors we might also take into account would include if the number of TDM based CPs has markedly diminished, or that the continued use of TDM networks in co-existence with NGNs is otherwise clearly inefficient.
- A5.105 We will review the provision of IP interconnection again in the next market review to determine what the appropriate approach to interconnection should be for the period after September 2016. But this does not preclude CPs from commercially agreeing to move their interconnection onto IP in the meantime.

Regulation of charges for interconnect circuits

Proposals in the February 2013 consultation

- A5.106 We proposed that BT should be subject to a charge control for interconnect circuits. However, we proposed that because IP interconnection is less established than TDM interconnection and could be realised in a number of ways, modelling the costs of interconnection based on IP was unlikely to provide a realistic foundation for setting cost based charges.

Stakeholder responses

- A5.107 Stakeholders responded on whether BT should provide TDM or IP interconnect and on the specific proposed level of the charge control. We deal with responses related to TDM versus IP interconnect above, and responses related to the specific level of charges in Annex 6. No stakeholders specifically responded on whether we should use a TDM or NGN cost base for setting charges for BT's provision of TDM based interconnect services.

Our analysis and conclusions

- A5.108 In Section 10 we conclude that BT should be subject to a charge control for interconnect circuits.
- A5.109 Although we are setting charges for wholesale call origination and wholesale call termination by reference to an NGN, this stems from our desire to follow a costing methodology guided by contestable market principles (even if NGN is not identified as the MEA) and the concerns we have with setting (bottom-up) LRIC-based charges for wholesale call termination using a heavily depreciated TDM network (for which we have only top-down cost information).
- A5.110 As noted above, IP interconnection is less established than TDM interconnection so we do not consider that IP interconnection would provide a realistic foundation for setting cost-based charges for interconnect circuits. IP interconnection could be realised in a number of ways. Therefore our view is that IP interconnection is unlikely to provide a better basis for setting charges for interconnection circuits provided by BT.
- A5.111 As explained in Annex 6, having analysed the reported and hypothetical ongoing TDM costs of interconnect circuits against current revenues, we conclude that a nominal cap on the basket of TDM interconnect circuits (alongside sub-caps for individual services set at 10% p.a.) is the most appropriate means to control BT's interconnect circuit charges for the period of this control.

Our approach to the regulatory treatment of conversion costs

Proposals in the February 2013 consultation

- A5.112 We said that we expect that NGNs and TDM networks will co-exist for some time and, as such, the costs of conversion between NGN and TDM networks will continue to be incurred.
- A5.113 Currently, the costs of conversion are borne by the NGN, as reflected in our 2011 F&R Guidance. We explained in the February 2013 consultation that we were proposing to exclude conversion costs from the wholesale call termination cost stack.⁷²⁸ Therefore, with FTRs now proposed on the basis of the pure LRIC of an NGN, even an efficient NGN would no longer be able to recover its costs of termination, given that some calls will require TDM to IP conversion.
- A5.114 We said that if conversion could be provided only by the terminating network, there would be a strong case for including conversion costs in the wholesale call termination cost stack but that NGNs currently undertake conversion both for calls sent to and calls received from TDM networks. We proposed therefore that the provision of conversion is potentially contestable in a way which wholesale call termination is not.
- A5.115 On this basis, we proposed that the costs of conversion should be subject to commercial negotiation between interconnecting TDM networks and NGNs. In terms of how CPs may approach these negotiations, we did not propose a specific solution but said that since we considered that both NGN and TDM networks may represent efficient competing technologies, a cost-sharing approach to conversion may be preferable. For example costs could be borne by the owner of the traffic – i.e. “traffic owner pays” or costs could be shared on an equal basis (irrespective of which party owns the traffic) – a “50/50 rule”. We did not say which of these two approaches we preferred.

Stakeholder responses

- A5.116 The majority of stakeholders that responded ([X], Vodafone, EE, Three, TalkTalk) requested further guidance on our proposed approach, on the basis that without such guidance, disputes would be inevitable.
- A5.117 TalkTalk said it regretted that Ofcom had not reached a definitive view on this subject, and also said that it considered that conversion costs should include “*the whole cost incurred by an IP operator when they are required to maintain their legacy TDM network in order to interconnect with TDM operators*”.⁷²⁹ One stakeholder ([X]) argued that TDM networks should pay the full costs of conversion. Notwithstanding this, [X] welcomed our proposal to some degree since it shifted from the current practice of the NGN paying the full costs of conversion. It also suggested an alternative approach where each CP could be required to provide both TDM and IP interconnection, allowing the market to “self-select” the preferred interconnection approach. Finally, it raised a question as to how additional backhaul costs incurred in the provision of conversion should be taken into account.⁷³⁰

⁷²⁸ The reasons for which are explained later in this annex.

⁷²⁹ Page 3 TalkTalk response to February 2013 consultation

⁷³⁰ [X] to February 2013 consultation

A5.118 BT agreed with our proposal that the provision of conversion should be subject to commercial negotiation.⁷³¹

Our analysis

A5.119 Having considered responses from stakeholders and in the light of our position on technology choice and interconnection, we are maintaining our position from the February 2013 consultation to exclude the costs of conversion from the wholesale call termination cost stack.

A5.120 We consider that commercial negotiations should be the primary basis by which parties agree how the costs of conversion are recovered because we consider that conversion may be a contestable service.

A5.121 In response to the suggestion from [X] that each CP should provide both TDM and IP interconnection, we note that CPs are free to offer both TDM and IP interconnection should they choose to do so. However, as we consider that conversion may be contestable, it would not be appropriate to mandate each CP to provide services including (and excluding) conversion. Indeed, this could reduce incentives for CPs other than the terminating CP to offer conversion, so that the efficiency benefits we might expect from competition would not occur.

A5.122 We recognise that our current regulatory approach where NGNs pay the full cost of conversion means the potential for contestability hasn't been tested to date. As such, we have considered in further detail how we might expect CPs to approach these commercial discussions. This would apply generally where conversion/interworking is required, including NGN to NGN where these were not using the same protocols, as well as TDM to NGN.

A5.123 There are likely to be three main options for providing conversion:

- Each CP provides its own conversion for calls it originates. It then pays the terminating CP the regulated termination rate.
- One or both CPs routes traffic via a transit provider that provides conversion. The agreement between the originating CP and transit provider would be a commercial agreement in which the originating CP would pay a charge for the transit service plus the conversion service plus the costs of termination. The transit provider would hand the traffic over to the terminating CP using the protocol/technology used by the terminating CP and would pay only the regulated termination rate.
- The CPs connect directly to each other and one CP provides conversion for traffic in both directions. Because NGNs have previously provided this capability we think this is the most likely outcome, at least in the short term. We discuss this option in more detail below.

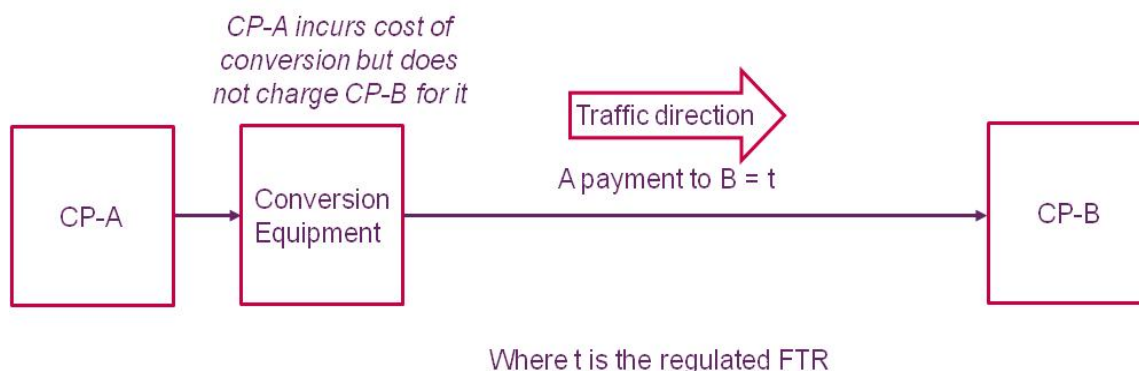
A5.124 Where two CPs interconnect (CP-A and CP-B) and CP-A provides conversion for traffic in both directions the two approaches we raised in the February 2013 consultation would be as follows.

⁷³¹ Paragraph 10.13 BT response to February 2013 consultation

Traffic owner pays:

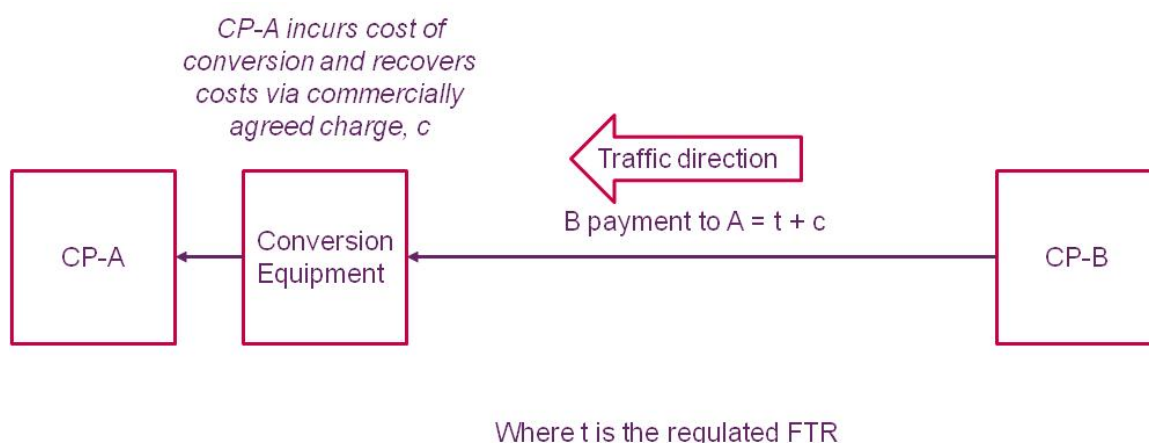
A5.125 For traffic from CP-A to CP-B, CP-A carries out the conversion and hands the traffic to CP-B at the relevant Pol where the termination service is provided. CP-A pays CP-B the regulated termination rate, CP-A incurs (and does not charge CP-B) the cost of conversion (see Figure A5.1 below).

Figure A5.1: Traffic owner pays (traffic from CP-A to CP-B)



A5.126 For traffic from CP-B to CP-A, CP-A carries out the conversion. CP-B pays the regulated termination rate plus a commercially agreed charge for the cost of conversion (see Figure A5.2 below).

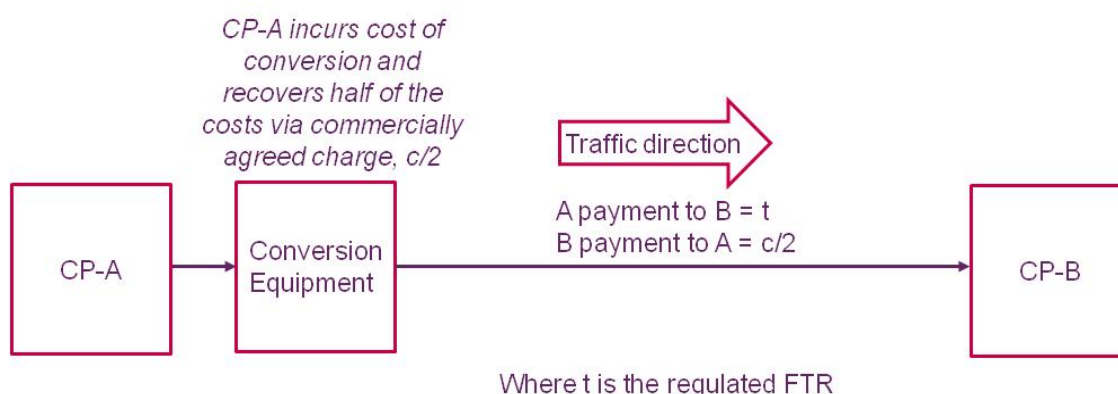
Figure A5.2: Traffic owner pays (traffic from CP-B to CP_A)



Costs shared 50/50:

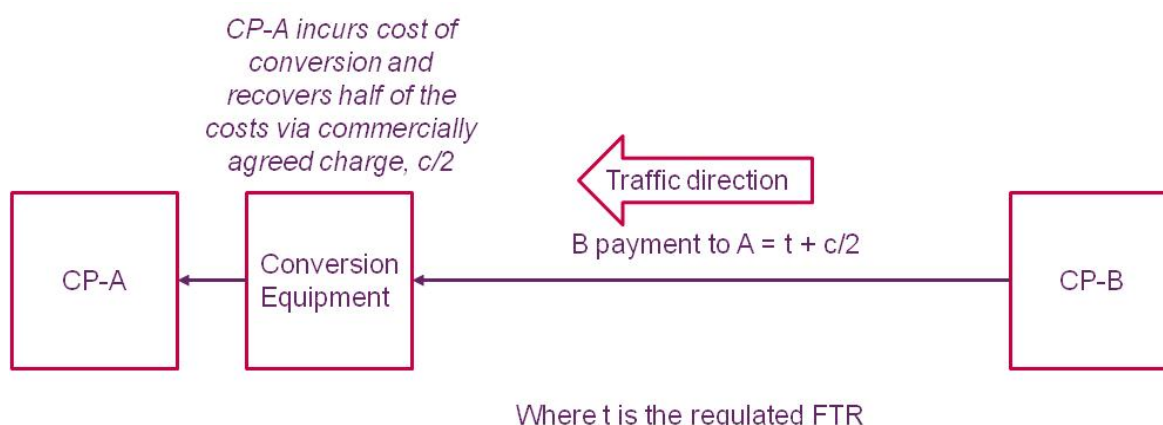
A5.127 For traffic from CP-A to CP-B, CP-A carries out the conversion and hands the traffic to CP-B at the relevant Pol where the termination service is provided. CP-A pays CP-B the regulated termination rate, but CP-B pays CP-A a commercially agreed charge equal to half the cost of providing conversion for the traffic from CP-A to CP-B. This effectively reduces the termination revenue to CP-B to $t - (c/2)$. (See Figure A5.3 below).

Figure A5.3: Example of 50/50 sharing (traffic from CP-A to CP-B)



A5.128 For traffic from CP-B to CP-A, CP-A carries out the conversion. CP-B pays the regulated termination rate plus a commercially agreed charge equal to half the cost of providing conversion for the traffic from CP-B to CP-A. (We would expect the rate for conversion applied by CP-A for traffic from CP-B to CP-A to be the same as for conversion for traffic from CP-A to CP-B.) (See Figure A5.4 below).

Figure A5.4: Example of 50/50 sharing (traffic from CP-B to CP-A)



A5.129 We consider each below, along with the potential pros and cons using the six principles of pricing and cost recovery previously used by Ofcom.⁷³²

- Distribution of benefits – costs should be recovered from the beneficiaries especially where there are externalities;

⁷³² The first application of the six principles of pricing and cost recovery was “*Telephone Number Portability*”, MMC November 1995. http://www.competition-commission.org.uk/rep_pub/reports/1995/fulltext/374c1.pdf. We have since used the six principles in various regulatory decisions since, see for example the statement on pricing for leased lines points of handover: Ofcom, *LLCC PPC Points of Handover pricing review - Final Statement on modification of SMP Conditions*, 21 September 2011, <http://stakeholders.ofcom.org.uk/binaries/consultations/revision-points-handover-pricing/statement/final-statement.pdf>

- Cost causation – costs should be recovered from those whose actions cause the costs to be incurred at the margin;
- Cost minimisation – the mechanism for cost recovery should ensure that there are strong incentives to minimise costs;
- Effective competition – the mechanism for cost recovery should not undermine or weaken the pressures for effective competition;
- Practicability – the mechanism for cost recovery needs to be practicable and relatively easy to implement; and
- Reciprocity – where services are provided reciprocally, charges should also be reciprocal.

A5.130 The six principles of pricing and cost recovery should be read together. On their own, it is possible that some of the principles may imply that a particular set of costs should be recovered in one way and other principles may imply that costs should be recovered in a different way.

A5.131 Of these pricing principles, the principles of reciprocity and practicability offer little to distinguish either an approach based on 50/50 or an approach based on traffic owner pays. Both would be expected to result in reciprocal charges (e.g. same per minute charge is paid by both CPs for conversion) although total expenditure will vary between the two, depending on the relative volume of minutes sent between the parties. In terms of practicability both seem practicable, although both suffer a monitoring problem in that where conversion and hence costs are incurred by one party, because the charge is then split (or levied based on the direction of traffic) the party not undertaking conversion is not able to precisely ascertain if the charge is cost-based.⁷³³

A5.132 Therefore, further consideration of reciprocity and practicability is omitted from the reasoning below.

Traffic owner pays

A5.133 Distribution of benefits: traffic owner pays essentially results in the calling party paying for the costs of conversion, even though the called party will also benefit from the call in most instances (with some exceptions such as nuisance calls). However, calling benefits can often be internalised between parties. For example, in repeat calling relationships, parties can take it in turn to make calls. Alternatively, where called parties have a high valuation for receiving calls, particular number ranges are available to incentivise increased inbound traffic (e.g. 0800 numbers). Therefore, traffic owner pays for conversion would not necessarily sit at odds with the distribution of benefits.

A5.134 Cost causation: typically the calling party is considered to cause the costs of a given call, and so traffic owner pays would sit well with this principle.

A5.135 Cost minimisation: except where traffic is all one-way (or nearly all one-way), then traffic owner pays is likely to result in good incentives for cost minimisation. This is

⁷³³ Except indirectly by reference to what it might be charged by other CPs or if it undertakes conversion itself in other cases

because the network undertaking conversion cannot recover all costs from the other party and so will incur some of the costs itself.

- A5.136 Effective competition: traffic owner pays is less likely to diminish incentives to bypass the terminating network if the terminating network over-charges for conversion. In terms of downstream competition, CPs which send more traffic for conversion than they receive will be disadvantaged compared to those that receive more than they send. But this is the case with all other voice call costs – since it is based on the principle that the network traffic owner pays (which follows from calling party pays (CPP) at the retail level).

50/50 rule

- A5.137 Distribution of benefits: clearly, calling parties will benefit from calls which would justify their bearing at least some of the cost. Typically called parties will also benefit which would justify them also facing some of the costs. Whether the typical split of benefits would be 50/50 is a question not easily quantified, but it seems likely that the calling party will typically value the call at least as much as the called party (since the calling party initiates the communication).
- A5.138 Cost causation: typically the calling party is considered to cause the costs of a given call which would point to the costs of conversion being entirely borne by the calling party (not just 50% of the costs). A 50/50 rule would only reflect cost causation (over a given period) if the traffic was balanced in the two directions (over that period).
- A5.139 Cost minimisation: under a 50/50 rule the charge levied by the network undertaking conversion is not fully recovered from the other network, which is likely to act as a strong incentive to minimise costs.
- A5.140 Effective competition: There are two considerations:
- First, a 50/50 rule seems likely to provide limited incentive for competition in the provision of conversion. If the conversion is provided by the terminating CP, then even if the originating CP considers these charges too high it is unlikely that a third party could provide the conversion (as a transit-type service) as it is not clear how it could compete with charges up to 50% below cost.
 - Second, in terms of competition at the downstream level, we note that a 50/50 rule would result in CPs that send more traffic than they received not facing more than 50% of the costs of conversion, although CPs which receive more traffic than they send will incur a higher contribution to conversion costs than that implied by the volume of calls they send. In general, we would see competition as better served if those parties causing more costs to be incurred faced charges reflective of such higher costs (unless there were significant offsetting benefits).

Costs of backhaul from the point of conversion to the Pol

- A5.141 A further point raised in response to the February 2013 consultation was how the costs of additional backhaul (that would be incurred if the conversion equipment and the point of termination were in different locations) should be recovered. In the traffic owner pays model, if CP-B (which does not undertake conversion in either direction) hands traffic over for conversion at a Pol different to the relevant Pol where termination is provided, the conversion charge could include the cost of backhaul between the conversion location and the location of the Pol where

termination is provided. In the other direction, CP-A covers all costs of conveyance and conversion to the relevant Pol in CP-B's network.

A5.142 Therefore, we consider that the costs of additional backhaul can be readily recovered within the overall "traffic owner pays" approach.

A5.143 However, for the 50/50 sharing approach, this could be more problematic. For traffic from CP-B to CP-A the additional backhaul costs could be identified in the same way as in the traffic owner pays approach with 50% of the costs now recovered from CP-B in this case. But, for traffic from CP-A to CP-B, it might be unclear what costs were related to additional backhaul and as such should be included in the sharing arrangement.

Other relevant costs

A5.144 TalkTalk argued that all the costs of maintaining TDM infrastructure by NGNs should be included in the costs of conversion. We do not necessarily agree that all TDM related costs incurred by a CP with an NGN would be considered as conversion costs. For example, we have set out above our approach to physical interconnection and have said that interconnection to BT to access wholesale call origination and wholesale call termination services would be at the DLE. We do not consider the costs incurred by an NGN in interconnecting via TDM to these DLEs to be conversion costs which could be recovered in the same way as costs of converting between TDM and IP standards.

A5.145 Whether such costs should be included would depend on the specific circumstances and would need to be considered within the overall commercial discussions between the two CPs.

Conclusion

A5.146 We have explained above that we do not consider conversion to be in the wholesale call termination market. Our view is that conversion is potentially a contestable service and, as such, provision of conversion should be subject to commercial negotiations between CPs. CPs are free to negotiate any such agreements based on their own commercial preference.

A5.147 We have considered how these negotiations may be undertaken and consider an approach based on cost sharing is preferable. We see some advantages of a "traffic owner pays" approach compared to a 50/50 rule.⁷³⁴ However, should interconnecting parties favour 50/50 for their bilateral arrangements (or indeed other cost sharing rules) they are free to agree such arrangements themselves.

A5.148 In the event that a dispute relating to conversion requires us to establish the mechanism for cost recovery of conversion costs, for the reasons set out above, we are likely to favour "traffic owner pays" as the starting point of any assessment, but would consider each dispute on its merits.

⁷³⁴ First, it mirrors the current approach to recovering the costs of physical interconnect capacity which is shared between two operators. Second, it seems to follow the logic of cost causation and the principle of calling party pays more closely than the 50/50 rule.

Annex 6

NCC model approach and design

Introduction

- A6.1 This annex sets out our approach to building a cost model to forecast the efficient unit costs of narrowband conveyance (i.e. wholesale call origination and wholesale call termination) during the period from 1 October 2013 to 30 September 2016 and how we will set efficient charges for interconnect circuits.
- A6.2 In this annex we first provide some background outlining both our previous approach to modelling the costs of narrowband conveyance services and the suggested approach of the 2009 EC Recommendation.
- A6.3 We then set out our February 2013 consultation proposals; stakeholder responses to those proposals; and our analysis of those responses and conclusions in relation to the following issues:
- the choice between building a bottom-up or top-down model;
 - the approach to calculating the LRIC of wholesale call termination⁷³⁵;
 - implementing our approach to cost modelling; and
 - setting efficient charges for interconnect circuits.
- A6.4 Based on our proposals in the February 2013 consultation and taking account of stakeholder responses we have:
- capped charges based on the output of a bottom-up model;
 - calculated LRIC based on a decremental approach; and
 - imposed a charge control on ISB services that is fixed in nominal terms (i.e. a 0% annual change in the basket revenues) and imposed sub-caps on each individual ISB service of a maximum 10% price change.

Background and developments since the 2009 NCC statement

- A6.5 Since the previous NCC was set in 2009, NRAs have been changing their approach to regulation, specifically shifting towards using bottom-up LRIC models to set FTRs. This approach lies at the heart of the 2009 EC Recommendation.
- A6.6 We applied a bottom-up approach to LRIC modelling for MTRs (and that approach was upheld by the Competition Commission (CC) and Competition Appeal Tribunal (CAT)).⁷³⁶ Other European NRAs have implemented LRIC for both MTRs and FTRs

⁷³⁵ The definition of LRIC is explained more fully later in this section.

⁷³⁶ Competition Appeals Tribunal (CAT) and Competition Commission (CC): 9th February 2012 http://www.competition-commission.org.uk/assets/competitioncommission/docs/appeals/telecommunications-price-control/appeals/final_determination.pdf. CAT judgment [2012] CAT 11 of 3rd May 2012 <http://www.catribunal.org.uk/238-7586/Judgment.html>

– and a summary of NRA implementation of the 2009 EC Recommendation accompanied our May 2012 CFI.⁷³⁷

- A6.7 The 2009 NCC used a top-down accounting cost model using a FAC cost standard (equivalent to LRIC plus a contribution to common costs such that, overall, common costs are fully recovered). Therefore, adopting a bottom-up LRIC model requires us to change our modelling approach.

Bottom-up and top-down modelling

- A6.8 A top-down model uses total network cost data and allocates these costs to services based on service usage factors. Typically, this top-down cost data is adjusted to make it suitable for regulatory price-setting (e.g. to take account of efficiency improvements and changes in the volume of network traffic), but this type of model will not rely on detailed assumptions about how the network is constructed. Instead, the modelled costs are calculated using cost-volume elasticities which reflect assumptions about the way the cost of high-level network components change as traffic rises or falls.
- A6.9 A bottom-up model estimates how much network equipment is needed based on the projected volumes for cost drivers such as subscribers, traffic, or other equipment installed in the network. The parameters which define these relationships between equipment quantities and the volume of cost drivers are sometimes referred to as “network build parameters”. The total cost of network equipment is then calculated (using evidence of the current cost of each piece of equipment).
- A6.10 In the 2009 NCC, we used top-down modelling because (1) BT’s accounting data was available; and (2) this approach was consistent with the use of top-down modelling in NCCs since 1997.⁷³⁸ In contrast, the use of bottom-up models to set cost-based charge controls has been established practice in the regulation of mobile termination rates (MTRs) since 2001.⁷³⁹

February 2013 consultation

- A6.11 In our February 2013 consultation, we explained that whilst bottom-up modelling is sometimes more complex, it has a number of advantages over top-down modelling:
- 6.11.1 By using network build parameters, bottom-up modelling allows us to more accurately model underlying cost/volume relationships.
- 6.11.2 Typically, it is also more transparent. The model can be published without redacting confidential information and it is more explicit how network components drive service costs.

⁷³⁷ See the 15 May 2012 Analysys Mason report at http://stakeholders.ofcom.org.uk/binaries/consultations/narrowband-market-review-call/annexes/analysys_mason.pdf

⁷³⁸ We note that in 1997 there was also some use of bottom-up modelling.

⁷³⁹ See Ofcom 2001 Review of the charge control on calls to mobiles, <http://www.ofcom.org.uk/static/archive/oftel/publications/mobile/ctm0901.htm#sum> A bottom-up approach was maintained by the CC during the subsequent inquiry (http://www.ofcom.org.uk/static/archive/oftel/publications/mobile/ctm_2003/index.htm) and a bottom-up approach has been used in all subsequent MCT cost modelling.

6.11.3 Building a bottom-up model allows us to create an efficient forward looking network, without being unduly constrained in trying to precisely mimic the network of the regulated firm(s).

A6.12 Building a bottom-up model is also consistent with the 2009 EC Recommendation, which recommends that: "...the evaluation of efficient costs is based on current cost[s] and the use of a bottom-up modelling approach..."⁷⁴⁰

A6.13 A bottom-up modelling approach is particularly appropriate for the 2013 NCC modelling exercise. We are modelling a relatively new technology for which no robust top-down data is available for a network with national coverage.

Bottom-up modelling: responses to the February 2013 consultation

A6.14 Responses to the February 2013 consultation were generally supportive of a bottom-up modelling approach. As in the September 2012 consultation, where respondents raised concerns, they related to the implementation of our modelling approach rather than the approach itself.

Ofcom's analysis and assessment of responses

A6.15 No respondents to the 2013 February consultation raised any fundamental concerns with the use of a bottom-up cost model. Consequently, we have calculated the costs used to set charges based on the output of a bottom-up model.

Calculating pure LRIC

February 2013 consultation

A6.16 In the February 2013 consultation, we consulted on a cost model that will enable us to estimate the unit costs of wholesale call termination on a LRIC and a LRIC+ basis. When recommending the use of LRIC, the 2009 EC Recommendation uses the following definitions:⁷⁴¹

- i) "incremental costs" are the costs that can be avoided when a specific traffic increment is no-longer provided; and
- ii) "traffic-related costs" are those fixed and variable costs that vary with the level of traffic.⁷⁴²

A6.17 LRIC, as defined by the 2009 EC Recommendation, represents a particular form of LRIC modelling that estimates the unit costs of termination based on the avoidable costs of carrying a given quantity of traffic (termed the 'increment'). The 2009 EC Recommendation states that the traffic increment should be treated as the final increment (i.e. the network equipment for carrying all other network traffic is present before the termination increment is added). Therefore, costs that are shared

⁷⁴⁰ 2009 EC Recommendation Recital (2).

⁷⁴¹ See 2009 EC Recommendation paragraph 5.

⁷⁴² In this context the 2009 EC Recommendation refers to "fixed" costs in the sense of service-specific (i.e. traffic-related) costs. Fixed common costs would, by definition, be excluded from the incremental costs of the traffic increment.

between wholesale call termination and other services (common costs) are excluded from the LRIC of termination.⁷⁴³

A6.18 In the recitals to the 2009 EC Recommendation, the above definition of LRIC is referred to as “pure LRIC”.⁷⁴⁴ Hereafter, we use “LRIC” to mean pure LRIC, and where the context requires otherwise we make this explicit.

A6.19 In the February 2013 consultation, we proposed a decremental approach to calculate LRIC, similar to that applied in our 2011 MCT model as supported by the CC in the 2012 CC Determination⁷⁴⁵ and upheld by the CAT.⁷⁴⁶ We proposed the same approach in the September 2012 consultation.

A6.20 The decremental approach involves four stages:

- a) Run the bottom-up model with all traffic services included and calculate the total amount of network equipment required and the costs (both capex and opex) of that equipment;
- b) Run the bottom-up model with all traffic services excluding off-net call termination and calculate the total amount of network equipment required and the costs (both capex and opex) of that equipment;
- c) Calculate the difference in network costs between the two runs of the model; and
- d) Run these costs through the economic depreciation algorithm in order to recover them over time.

A6.21 The decremental approach to calculating LRIC is appropriate if the modelled relationship between traffic and costs is correct for the final traffic increment. When the call termination traffic increment is removed, the total network cost will be reduced by the avoidable costs of that increment.⁷⁴⁷

A6.22 Assets may be used to terminate calls, but nevertheless may appear not to be incremental to wholesale call termination when we use the decremental approach. This is the case in particular where:

- the network requires only one, or a very small number, of these assets;
- the asset capacity is large enough that the addition of the wholesale call termination increment does not cause more assets to be purchased; and
- the asset cost driver is not traffic related (e.g. subscriber driven assets).

A6.23 We gave careful consideration as to whether any of the assets that fall into the above categories should be considered incremental to wholesale call termination. In

⁷⁴³ See 2009 EC Recommendation paragraph 6.

⁷⁴⁴ 2009 EC Recommendation, recital 13

⁷⁴⁵ 2012 CC Determination, paragraph 3.68.

⁷⁴⁶ Competition Appeal Tribunal 2012 MCT Judgment.

<http://www.catribunal.org.uk/239-7143/1180-3-3-11-British-Telecommunications-PLC.html>

⁷⁴⁷ When building the cost model we seek to set the cost drivers so the costs in the model correctly change as traffic volumes change. When modelling using a bottom-up LRIC+ model, using the correct cost drivers will mean that costs change correctly as the volume of network traffic changes. Likewise, using the correct cost drivers will mean that when a traffic increment is removed, costs will change appropriately.

most cases, we believe that the capacity that would be installed for broadband and other voice services would be sufficient to also carry call termination traffic. Given that we would expect most networks to use standard capacity assets (which capacity we have defined, where possible, using CP responses to our information requests), we believed that it would be unlikely that assets with lower capacities would be installed in the absence of the wholesale call termination increment.

Call server software licences (CSSLs)

- A6.24 In the February 2013 consultation, the only asset for which we believed it may be appropriate to take a different approach was CSSLs. In the February 2013 NCC model, we considered that CSSLs were subscriber-driven costs and so would not appear as incremental to termination. Based on evidence from responses to our information requests, at the time we believed that the number of subscribers was the appropriate cost driver for the deployment of CSSLs. However, we also believed that the value of the licence may change when the call termination increment was removed.
- A6.25 We argued that CSSLs were a voice specific intangible asset. Unlike tangible network assets, CSSLs were considered not to have capacity constraints such that additional voice traffic (e.g. termination) can be carried at no greater cost. CSSLs are also a network asset for which there is no substitute input that could serve as a proxy for the value or cost.
- A6.26 In the light of the above features of CSSL assets, we believed that even if CSSLs are typically priced on a per subscriber basis, we considered that the value of the CSSL should not necessarily be seen as fixed or invariant to traffic. In particular, the willingness to pay for licences is likely to be driven by the amount of voice traffic generated by subscribers. Therefore, we considered that the value of a CSSL could be thought of as the discounted stream of revenues that the licence can earn. Removing an increment of traffic would then reduce the value of a licence.
- A6.27 In the February 2013 NCC model, we captured this change in the value of the licence by assuming that all voice traffic carries equal weight and so we decreased the unit cost (both capex and opex) of the licence by the ratio of termination traffic to total voice traffic when we removed the call termination increment.
- A6.28 We recognised that the value (and so the weight) of voice traffic might not necessarily be equal for each minute of traffic, however, we considered this to be a necessary simplifying assumption to avoid the circularity that occurs from the fact that we regulate a large part of the wholesale revenues that can be earned by CSSLs and because we considered that CSSLs are voice specific assets.

Calculating pure LRIC: responses to the February 2013 consultation

- A6.29 Respondents to the September 2012 consultation and February 2013 consultation generally agreed or made no comment on our approach to calculating LRIC.
- A6.30 H3G disagreed with the treatment of CSSL costs in the February 2013 consultation, arguing that they should not be included in the LRIC of termination.⁷⁴⁸ Specifically, H3G argued that:

⁷⁴⁸ HG3 response to the February 2013 consultation, p.7.

- 6.30.1 It is incorrect to assume that the market price of CSSLs would increase with the addition of call termination by an individual operator. This is because the evidence points to CSSL costs being subscriber-driven (rather than traffic-driven), the market price for CSSLs is set globally, and because price responses depend on the shape of the supply function (i.e. in the presence of significant scale economies, the unit cost – and therefore market price – of CSSLs could actually rise by removing the call termination increment);⁷⁴⁹
- 6.30.2 Even if the price of CSSLs did increase with the addition of termination, the change in cost is a “pecuniary” cost that should be excluded from LRIC;⁷⁵⁰ and
- 6.30.3 The explicit inclusion of CSSL costs in LRIC is inconsistent with the approach to spectrum licence costs adopted by the CC in its MCT Determination.⁷⁵¹
- A6.31 H3G concluded that, as any common cost can carry additional traffic at no greater cost, Ofcom’s rationale suggests that all common cost assets would become more valuable as traffic increases and should be reflected in LRIC. This would redefine all common costs as incremental and remove the distinction between LRIC and LRIC+.⁷⁵²
- A6.32 Vodafone argued that Ofcom has not produced sufficient evidence to suggest that the cost of the call server software is traffic related, or that its long run cost varies directly with the long run volume of traffic that it serves.⁷⁵³ In particular, Vodafone believed that the proposed treatment of CSSLs is inconsistent with the approach to spectrum licences in the most recent MCT review and subsequent appeal, where Ofcom took the view that the cost of such assets would not vary in the presence or absence of termination.
- A6.33 Vodafone also suggested that the proposed approach to CSSLs would, if adopted in this review, need to be consistently incorporated within the next MCT review.⁷⁵⁴

Ofcom’s analysis and assessment of responses

- A6.34 Since the February 2013 consultation, we have further examined the cost of CSSLs and how they are purchased. In the light of the evidence we have collected and further consideration of this issue in the light of stakeholder comments, we have changed our approach to CSSLs.
- A6.35 The additional evidence we have gathered from CPs since the February 2013 consultation relating to the purchase of CSSLs suggests that the price of CSSLs is not negotiated with respect to traffic volumes but that most CPs draw up their contracts with software licence vendors on the basis of some other factor or factors (see paragraph A6.40).
- A6.36 We broadly agree with H3G’s argument that the market price of CSSLs would not increase with the addition of wholesale call termination by an individual operator. In particular, we agree that market prices for such software assets are likely to be set

⁷⁴⁹ HG3 response to the February 2013 consultation, p. 9

⁷⁵⁰ HG3 response to the February 2013 consultation, p. 10

⁷⁵¹ HG3 response to the February 2013 consultation, pp. 9-10

⁷⁵² HG3 response to the February 2013 consultation, p. 11

⁷⁵³ Vodafone response to the February 2013 consultation, pp. 30-31

⁷⁵⁴ Vodafone response to the February 2013 consultation, p. 31

on a global basis and so cannot be influenced by UK operators (though we note that some software or features may be developed specifically for the UK market).

- A6.37 However, we do not agree that removing the wholesale call termination increment might actually lead to an increase in the price of CSSLs. First, as H3G notes, this would imply that the modelled operator was able to influence global demand for CSSLs – which we do not think is likely. Second, while the presence of scale economies would mean that total unit costs are higher when volumes are low, this does not imply that a fall in demand would necessarily result in higher prices. In the case of CSSLs, once software has been developed, the fixed costs are likely to be largely sunk and the forward looking marginal cost for a given software product relatively low and very unlikely to be downward sloping. This means that the market response to a fall in demand would be lower prices for existing CSSLs – assuming the fall in demand from the modelled operator influenced the market price of CSSLs, which we do not think is likely.
- A6.38 We note the comparison made by H3G and Vodafone between the treatment of CSSLs in this review and our approach to mobile spectrum licences in the MCT review. We do not agree that CSSLs and spectrum licences are completely analogous. In particular, MCT services already incur spectrum costs at current prices because spectrum and network equipment are substitutable inputs, and therefore willingness to pay for spectrum (for additional termination traffic) should not logically exceed the cost of the substitute means to provide the capacity (i.e. investment in more network equipment).⁷⁵⁵ This argument does not apply to CSSLs because CSSLs do not have a comparable network equipment substitute. Nevertheless, in other respects CSSLs share similarities with spectrum licences, they are both intangible assets and, for the reasons we elaborate below, the “capacity” of CSSLs is linked to the capacity of the physical equipment it supports.⁷⁵⁶
- A6.39 We have concluded that the cost of a CSSL should not change when the termination increment is removed. Consequently, CSSLs do not make an explicit contribution to the LRIC of termination in the way proposed in the February 2013 consultation.

CSSL dimensioning

- A6.40 Based on the evidence that we have collected since the February 2013 consultation, we believe that the number of subscribers is a contributing factor to the way most CPs pay for their CSSLs, but it is not the only factor. The evidence we have gathered from CPs since the February 2013 consultation indicates that there are a range of ways to pay for CSSLs. More specifically, we have gathered evidence that suggests both busy hour voice traffic and subscriber numbers are used to dimension CSSLs.⁷⁵⁷ Additionally, where CPs make explicit orders for CSSLs, they place these orders in large blocks. We also have noted that in many cases CSSLs are specific to an individual call server, and CPs are required to

⁷⁵⁵ Paragraph 3.256, Competition Commission, MCT Final Determination of 9 February 2012.

⁷⁵⁶ Mobile spectrum licences are also linked to the physical equipment they support in the sense that the traffic handling capacity of a given licence depends on how the frequencies authorised for use by the licence are used by the radio network equipment. However, as noted previously, there is also a large degree of substitutability between radio network equipment and mobile licences in terms of providing capacity.

⁷⁵⁷ [X]

obtain additional CSSLs (in such blocks) when they acquire additional call servers.⁷⁵⁸

- A6.41 Given that there is no standard approach to purchasing CSSLs and CSSLs are required to run call servers, we have decided to treat CSSLs and call servers as a composite asset. Therefore, we have decided that CSSLs should no longer be modelled explicitly and that their cost should be added to that of the call server.
- A6.42 This means that CSSLs will now be an incremental cost to termination only to the extent that call servers are incremental costs. Call server capacity is generally constrained by traffic volumes (apart from a minimum deployment quantity), so it will generally vary with the call termination increment. In the September 2013 NCC model, the combined call server asset contributed 0.016ppm to the call termination LRIC (in 2012/13 prices), i.e. 48%.

Model implementation

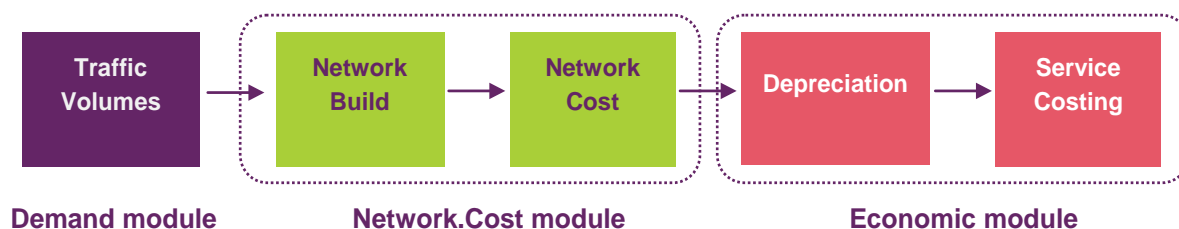
- A6.43 In the February 2013 consultation, we set out our proposal to model the costs faced by a hypothetical efficient NGN (the February 2013 NCC model). In Annex 5, this annex and Annex 7 we considered responses from stakeholders to this proposal and concluded that it is still appropriate to set charges based on the costs projected by a bottom-up hypothetical efficient NGN model.
- A6.44 In previous NCCs, we have based the cost estimates on the costs faced by BT. As BT has not yet built an NGN, these costs are unknown. We note that for most network equipment, [X]. It may also have additional costs associated with migrating from its existing TDM network to an NGN and associated with a higher market share. In summary, the costs of an efficient NGN with BT's market share and service structure (in the absence of BT having an NGN to use as a benchmark) are uncertain.
- A6.45 In contrast, there are a number of operators that have deployed NGNs. The cost and dimensioning data from these operators do reflect the costs faced by a CP using an NGN. On that basis, we believe it is more appropriate to base our modelling on the costs faced by these operators.
- A6.46 Since the February 2013 consultation, our model has gone through a number of changes as a result of points raised in response to the February 2013 consultation, new data becoming available, the collection of further data using S135 powers, and our own further consideration of the issues raised. This annex and Annex 7 explains how the model has developed since the February 2013 consultation.
- A6.47 The model is largely the same as the version published alongside the February 2013 consultation:
- 6.47.1 The model builds a hypothetical efficient NGN that can meet all the traffic volumes that are forecast to pass over it.
 - 6.47.2 The model then calculates the costs (capital and operating) of this network and how these costs should be recovered over time using an economic depreciation algorithm.

⁷⁵⁸ [X].

6.47.3 The final stage in the modelling is to allocate the yearly costs across traffic services based on how much each service uses the network.

A6.48 Figure A6.1 below shows the high level structure of the model.

Figure A6.1: NCC model structure



A6.49 The remainder of this annex describes each part of the February 2013 NCC model in turn, the responses we received in relation to the February 2013 consultation (and the February 2013 NCC model), and how we have addressed the points raised in finalising the September 2013 NCC model. Most issues relating to the network build and network equipment costs are discussed in Annex 7

Traffic forecasts

A6.50 Telecommunications networks are characterised by economies of scale: more traffic, caused by market growth or increased market share, leads to a smaller proportionate increase in total cost than in total volume. Similarly, telecommunications networks can benefit from economies of scope, that is, common costs can be recovered from a range of services which results in lower unit costs compared to a stand-alone provider of one of those services.

A6.51 In a TDM network, voice calls use dedicated circuits within the network between the calling and called parties for the duration of the call. Therefore, voice traffic volumes will tend to drive switching-related costs – that is, the cost of establishing the connections at voice exchanges (i.e. switches) to create these circuits (although other assets will be shared between voice, broadband and leased lines – e.g. duct, fibre, property and some transmission equipment).⁷⁵⁹

A6.52 However, in an NGN, because voice calls are one service among a number that are provided using a common transport medium (packets routed using IP), the equipment routing calls will, to a greater extent, be shared between voice and data services. The common transport protocol creates greater scope for sharing equipment. Given the considerable growth in packet data traffic (and expected future growth), we expect that data service volumes will be a significant cost-driver in an NGN. It is therefore necessary not only to produce forecasts for voice services but also for data services.

February 2013 consultation

A6.53 In the February 2013 consultation, we described how we modelled a range of services that pass over the hypothetical efficient NGN in order to produce traffic forecasts. We forecast the traffic carried by all fixed networks and then assigned a proportion of this traffic to our modelled network (reflecting our market share assumption – also explained later in this annex). The February 2013 NCC model

⁷⁵⁹ For example, Synchronous Digital Hierarchy (SDH) systems could be shared by multiple services.

used these traffic forecasts to calculate how much network infrastructure will be required.

A6.54 We created a range of forecasts for the following services:

- Incoming voice calls from other CPs (off-net);
- Outgoing voice calls to other CPs (off-net);
- Voice calls provided end-to-end on the same network (on-net);
- Transit; and
- Packet data (i.e. broadband services).

A6.55 In the February 2013 NCC model, we based our forecasts on extrapolated trends in the number of households and businesses, the number of active phone/broadband lines per business or household,⁷⁶⁰ and the usage per line of different traffic types.⁷⁶¹ The amount of traffic that passed over the network was determined by the average use per line.⁷⁶²

Voice traffic forecasts: Responses to the February 2013 consultation

A6.56 In its response to the consultation, BT argued that using 3 year volume trends may cause Ofcom's voice forecasts to be unduly optimistic. It claimed that Ofcom's volume forecast of residential minutes per line has a lower than 20% probability of being met based on statistical best fit projections.⁷⁶³

A6.57 BT noted that calls that originate on ISDN access lines had been included in the network traffic carried by the model. BT considered that as the model contained no provision for an ISDN service, it was inconsistent to include ISDN traffic. BT believed that either additional network elements should be included to deal with ISDN, or the ISDN traffic should be removed from the forecasts.⁷⁶⁴

A6.58 BT believed that both residential and business minutes per line forecasts were above what would be expected, based on statistical best fit projections⁷⁶⁵ using historical data (2005/06 to 2011/12). It argued that these forecasts should be lower.⁷⁶⁶

A6.59 In its response to the consultation, EE said that it believed the overall number of lines to be increasing.⁷⁶⁷ EE also stated that it is important that volume forecasts be

⁷⁶⁰ We have not included a separate forecast for featurenet lines.

⁷⁶¹ We have also cross-checked our forecasts against other sources such as: Analysys Mason: Core Forecasts 2012-2017 <http://www.analysysmason.com/en-GB/Research/Content/Forecasts/Western-Europe-core-forecasts/#01%20October%202012>

and Enders Analysis: UK fixed line market analysis

<http://www.endersanalysis.com/content/publication/uk-broadband-and-telephony-trends-june-2010>

⁷⁶² The network will also calculate transit traffic, which is calculated based on an estimate of the ratio of the transit traffic to non-transit traffic that a hypothetical network would carry.

⁷⁶³ BT response to the February 2013 consultation, Paragraph 9.82

⁷⁶⁴ BT response to the February 2013 consultation, Paragraph 9.84

⁷⁶⁵ BT calculated a forecast based on drawing a line that best fit the historical data and continuing this line into the future.

⁷⁶⁶ BT response to the February 2013 consultation, Paragraph 9.93 to 9.94

⁷⁶⁷ EE response to the February 2013 consultation, Page 21

consistent across market reviews and so the NCC forecasts should be aligned with the closely associated Fixed Access Market Reviews.⁷⁶⁸

- A6.60 EE was unclear why Ofcom was expressing voice traffic on the basis of usage per line but data on a peak bandwidth basis. EE was concerned that this inconsistency lacked transparency.⁷⁶⁹

Ofcom's analysis and assessment of responses

- A6.61 We disagree with BT that we should use more than 3 years' historic data when producing trends. The fixed telecommunications market has changed significantly over the last 10 years, which has led to decreases in volumes that we would not necessarily expect to continue. The number of residential lines increasing since 2009/10 after declines in earlier years is one such example. We believe that a 3 year period is long enough to avoid the risk of a single year distortion, but short enough not to capture out-of-date trends.
- A6.62 We disagree with BT that our forecasts of voice minutes per line are unduly optimistic. BT's forecasts are based on all historic data from 2005/06 onwards, while our forecasts are based on 3-year trends as described above. Although it is true that our forecasts sit at the upper end of BT's proposed ranges of confidence, this is due to BT capturing historic trends that appear to be slowing in recent years. We do not believe that it is appropriate to base our forecasts on these out-of-date trends.
- A6.63 BT is right to note that voice minutes originated on ISDN access lines have been included in our traffic volume forecasts. However, we disagree that this traffic should be excluded due to the model not containing provision for ISDN. We are modelling a hypothetical network and attributing a portion of the total industry traffic to this network, regardless of the technologies that these minutes are currently originated upon. It is our view that the voice call minutes currently originated on ISDN access lines would not disappear were ISDN access lines to be unavailable – rather, they would be originated on other lines instead. As such, they are relevant to the model and should remain included.
- A6.64 As discussed in Annex 5, some ISDN services are not currently replicated in UK standards for NGNs. In order to replicate these ISDN services, additional costs may need to be incurred. However, we believe that these additional ISDN services are not required to provide the call origination and call termination services we are modelling. Consequently, we would expect the additional cost of providing these services on an NGN to be recovered from charges other than the regulated call origination and call termination services.
- A6.65 We agree with EE that in the past two years, the number of total lines has been increasing. However, this is a small change over time and due to other market developments may not continue. We are forecasting lines to remain broadly flat over the forecast period.
- A6.66 We also agree with EE that maintaining consistency in forecasting across market reviews is important. We have taken steps to ensure that, as far as possible, the evidence used in the Fixed Access Market Reviews and this market review is

⁷⁶⁸ EE response to the February 2013 consultation, Page 21

⁷⁶⁹ EE response to the February 2013 consultation, Page 21

consistent. These steps include ensuring that, where appropriate, the same source data and methodologies are used by each review.

- A6.67 We do not agree with EE that it is inconsistent for us to use usage per line for voice and peak usage for data. The traffic driven assets in the NGN will be dimensioned on the peak busy hour traffic (for voice, data or a combination of the two). The voice busy hour is forecast separately and from the total voice forecast and is based on the voice busy hour proportion during the voice busy hour. Where our traffic forecast relevant for a particular asset is the total traffic (i.e. voice plus data), we use this forecast of network peak traffic to derive busy hour usage. We base our choice on whether to forecast peak usage directly or to forecast total traffic based on the quality and availability of the information.

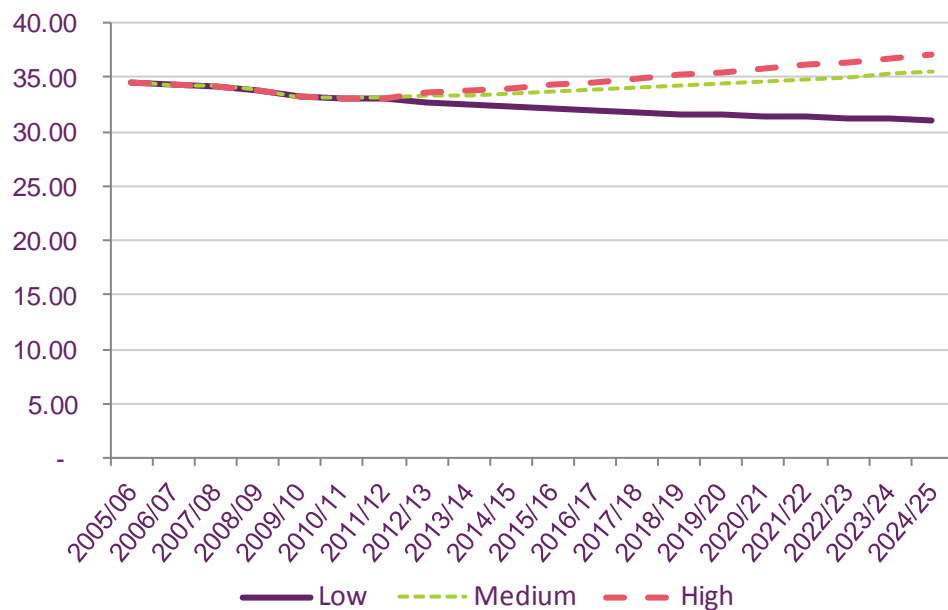
Updated voice forecasts

- A6.68 In the light of responses to the February 2013 consultation, and taking account of more recent data, we have updated our line forecasts and average usage per line forecasts.
- A6.69 Figure A6.2 below shows our high, medium and low forecasts for the total number of lines (residential + business⁷⁷⁰). The medium scenario is our base case and assumes a slight increase in the number of lines until 2024/25, after which the number of lines is held constant. The growth in the number of lines is primarily driven by two factors:
- a) Growth in the forecast number of households; and
 - b) A small increase in the number of lines per household, which is a continuation of a trend observed over the last 3 years.

⁷⁷⁰ Since the February 2013 consultation, we have removed large business sites from our forecast of total businesses, as they are likely to be using leased lines. This change has had a negligible effect on the total number of businesses, total business lines and on the outputs of the model.

Figure A6.2: Forecast for total number of lines.⁷⁷¹

Million lines

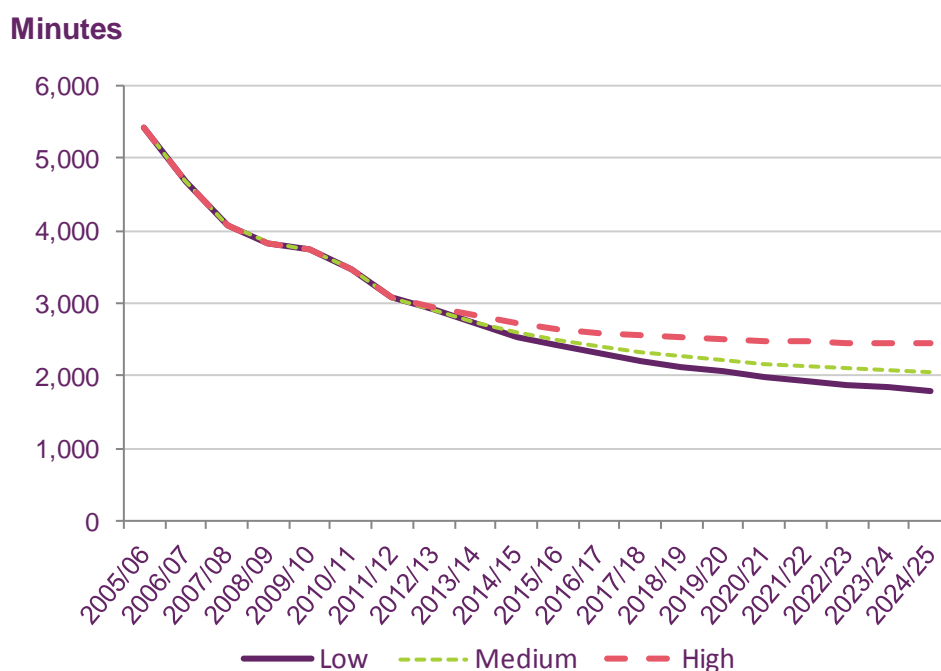


Source: Ofcom forecasts based on data collected from fixed operators

A6.70 Figures A6.3 and A6.4 below show our forecasts for the average annual outgoing voice usage per line for residential and business users respectively. The medium scenario is our base case and we have forecast a very gradual decline in voice usage per line until 2024/25 at which point we hold the forecast volume constant.

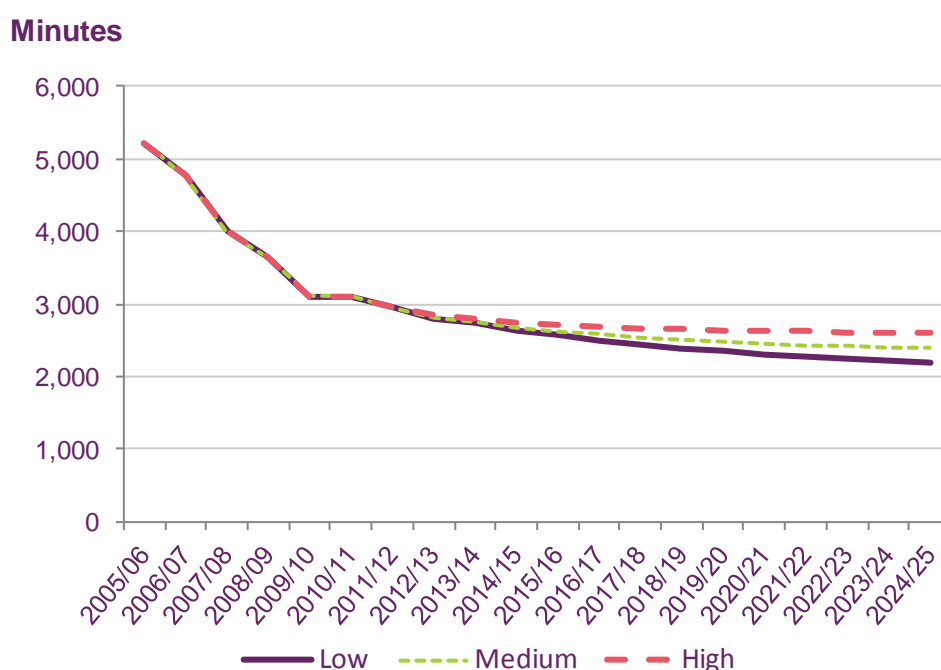
⁷⁷¹ Source: Ofcom forecasts based on data collected from fixed operators.

Figure A6.3: Forecast for annual average residential outgoing voice usage per line⁷⁷²



Source: Ofcom forecasts based on data collected from fixed operators

Figure A6.4: Forecast for annual average business outgoing voice usage per line



Source: Ofcom forecasts based on data collected from fixed operators

A6.71 We perform a sensitivity analysis on voice lines and usage in Annex 8. We find that the LRIC of wholesale call termination is relatively insensitive to changes in traffic volumes. The LRIC+ of wholesale call origination is more sensitive.

⁷⁷² Source: Ofcom forecasts based on data collected from fixed operators.

Broadband forecasts: responses to the February 2013 consultation

- A6.72 In its response to the February 2013 consultation, BT was concerned that the volume of broadband users connected to the NGN would decline as fibre-based services are rolled out. It argued that while Ofcom has accounted for a lower rate of growth in broadband usage per line, it has not accounted for the expected fall in the number of end-users served by the NGN.⁷⁷³

Ofcom's analysis and assessment of responses

- A6.73 We agree with BT that there are a number of market developments that will change the way consumers use broadband services. Both the deployment of 4G services and the roll-out of fibre-based access will impact on the use of copper-based broadband. However, we do not necessarily agree that these market developments should change the broadband growth assumptions on which we consulted.
- A6.74 4G services are currently being deployed by United Kingdom mobile network operators. The impact that 4G services will have on fixed broadband is currently uncertain and will depend on the eventual pricing, coverage and quality of 4G services. We therefore do not consider that we can accurately model the impact (if any) that the introduction of 4G will have on the demand for fixed broadband services during the period covered by this market review. Therefore, we have not sought to model the impact of 4G services on the demand for fixed broadband services.
- A6.75 The introduction of fibre-based access is a relatively recent development which will have an uncertain impact on future broadband volumes. BT suggests reducing the peak traffic on our modelled network to account for high usage users switching to fibre-based access, which would in turn increase the unit cost of fixed wholesale call origination and wholesale call termination.
- A6.76 We do not believe that the approach suggested by BT would be appropriate. The introduction of a new more efficient technology should not cause an increase in the prices of existing services. Therefore, prices of voice services in the presence of fibre-based access should be no higher than if we did not include fibre-based access in our model. On this basis, we propose to avoid capturing fibre-based access in our model. But, we must nevertheless ensure that our broadband forecasts are consistent with our exclusion of fibre-based access services (i.e. the copper-based access network technology is capable of carrying the peak traffic that we forecast to pass over it). We are confident that the terminal value peak level (i.e. the value reached in the final modelled year) of broadband traffic per line that we are forecasting can be carried by copper-based access technologies.⁷⁷⁴

Updated broadband forecasts

- A6.77 In the light of responses to the February 2013 consultation, and the availability of more up-to-date data, we have revised our forecasts of the number of broadband lines and peak usage per line. We have continued not to include leased line services in the model. Leased lines would increase the services using the common

⁷⁷³ BT response to the February 2013 consultation, Paragraph 9.83

⁷⁷⁴ To demonstrate this point, we note that BT currently achieves an average of between 8Mbits/s and 10Mbit/s per line during weekday evenings. Ofcom news release: Network upgrades boost average broadband speeds. August 15 2012, Table 2. <http://media.ofcom.org.uk/2012/08/15/network-upgrades-boost-average-broadband-speeds/>

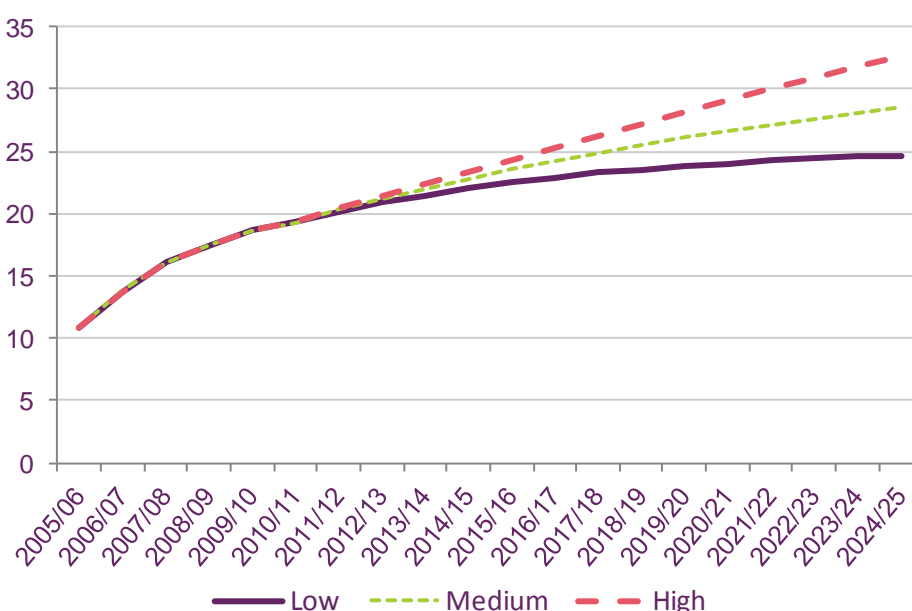
network elements, but we believe it would have only a small impact on model outputs. Given that it would add modelling complexity, we believe it would be disproportionate to include leased line services in the model.⁷⁷⁵

A6.78 Figure A6.5 below shows our low, medium and high forecasts for the total number of broadband lines. The medium scenario is our base case and we forecast a gradual increase in the number of broadband lines to a terminal value of 28.5 million.⁷⁷⁶

A6.79 Figure A6.6 below shows our low, medium and high forecast of peak bit rate per broadband line (measured in kilobits per second (Kbit/s)). We expect to see peak broadband use continue to increase for some time. However, this increase is not as steep as we were predicting in the February 2013 NCC model. The medium scenario is our base case and we assume that the growth in peak broadband use levels off and is flat from 2024/25.

Figure A6.5: Forecast number of broadband lines⁷⁷⁷

Million lines

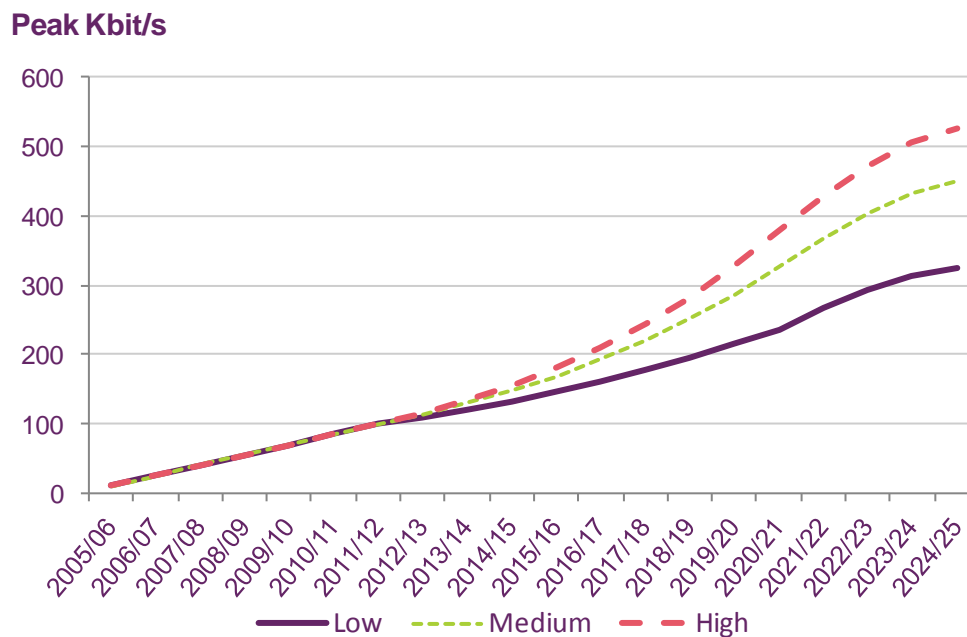


⁷⁷⁵ We tested this impact by running much higher amounts of packet data traffic over those assets that we believed would be shared between leased lines and NCC services.

⁷⁷⁶ This translates to a peak of approximately 83% broadband penetration (excluding ISDN lines).

⁷⁷⁷ Source: Ofcom forecasts based on data collected from fixed operators.

Figure A6.6: Forecast peak Kbit/s per line⁷⁷⁸



A6.80 We perform a sensitivity analysis on broadband lines and use in Annex 8. As with voice traffic, we find that the LRIC of wholesale call termination is relatively insensitive to changes in traffic volumes. The LRIC+ of wholesale call origination is more sensitive.

Market share and NGN deployment assumptions

A6.81 We have described above our approach to projecting industry-wide traffic. The quantity of traffic that is carried by the modelled network is also determined by the market share of voice and broadband lines for the hypothetical CP over time.

February 2013 consultation

A6.82 We used a base case of 50% in the February 2013 consultation, but envisaged three possible scenarios for market shares:

- A market share of 50% of wholesale fixed lines nationwide for all years in the model.
- A market share based on BT's historic market share and then a projected market share of access lines from BT's current level.
- A market share based on an even split of the market between the largest direct access operators in recent years. To date, BT, Virgin Media, Sky, and Talk Talk have accounted for the vast majority of directly connected residential customers across the country.⁷⁷⁹ An even split between these operators would suggest a 25% market share for the modelled operator.

A6.83 For all three scenarios, we assumed that the modelled operator had the same market share for all network services (i.e. voice and broadband).

⁷⁷⁸ Source: Ofcom forecasts based on data collected from fixed operators.

⁷⁷⁹ Over [X] of directly connected customers are accounted for by these operators.

- A6.84 The February 2013 consultation base case of a 50% market share was a change to the September 2012 consultation where we used a 25% market share.
- A6.85 We changed from using a 25% market share because we believed that this assumption was inconsistent with our finding of SMP in the wholesale call origination market. In Section 5 we discuss our finding of SMP in the wholesale call origination market. Although not the only factor, market share is an important consideration in our finding of SMP.
- A6.86 We noted that in building the NGN model, we were not seeking to mimic a particular network or business case. We collected cost and network dimensioning data from 7 network operators including both NGN and TDM operators. In constructing our model, we sought to create a model of a hypothetical national NGN. We did not seek to model BT's network. We said that if we were trying to model the costs of an NGN built by BT, we would have put considerably more weight on data provided by BT. However we noted this would not have represented our best view of a hypothetical efficient national NGN that we were trying to model. Accordingly, we said that we believed it would not be consistent with our approach to the rest of the modelling to base the market share assumption on BT's market share.
- A6.87 The market share assumption is only one element that determines the amount of traffic that passes over the network. Coverage (or deployment) of the network is another. Deployment of an NGN should not be assumed to be immediate; evidence from real-world network deployments suggests that an assumption that it will occur over a number of years is more reasonable (see Annex 7).

Market share: responses to the 2013 February consultation

- A6.88 BT did not believe that Ofcom had provided sufficient justification for switching to a 50% market share. BT argued that there are a number of options for the 2013 NCC model:
- An actual network (e.g. BT's network);
 - An operator with significant market power;
 - A model based on a contestable market.
- A6.89 BT suggested that within these options Ofcom should consider whether to:
- Set a steady state or adjust the share over time;
 - Base the market share on the wholesale or retail level;
 - Base the market share on voice services or both voice and data services.
- A6.90 BT argued that its market share was not an appropriate benchmark and that the use of a hypothetical network model should be based on the presumption of contestability. It believed that key modelling decisions should also be linked to the technology assumed to be the MEA in the model. Further, it did not believe that it was appropriate to use its market share just because it was consistent with previous top-down modelling. BT believed that the market share in a bottom-up model should be justified on its own terms.

- A6.91 BT noted that it could not identify anything in the 2009 EC Recommendation guidance that suggested an SMP threshold should be used to set the market share.⁷⁸⁰
- A6.92 Virgin Media disagreed with our use of a 50% market share in the base case. Virgin Media considered that using a 50% market share was not consistent with long term efficient entry into the market and believed that this went against the advice contained in the 2009 EC Recommendation. It also believed that justifying a 50% market share for call termination traffic to be consistent with the market share for call origination is flawed reasoning. It argued that it was acceptable to have a different market share for origination and termination traffic. Virgin Media was also concerned that increasing the market share caused the call termination LRIC to increase.⁷⁸¹
- A6.93 Vodafone agreed with our assumption of a 50% market share operator.⁷⁸²
- A6.94 EE agreed with a 50% market share operator for our modelled operator. EE considered that a 25% market share assumption would not be credible and could lead to cost over recovery.⁷⁸³
- A6.95 TalkTalk did not understand why the LRIC of termination was not inversely related to the market share. It believed that unit costs should go down as the market share goes up. TalkTalk was unclear whether Ofcom thought that additional assets would become incremental to termination when the market share increases.⁷⁸⁴
- A6.96 As noted in the February 2013 consultation, in response to the September 2012 consultation, Verizon, TalkTalk, H3G and Sky disagreed with the use of a 25% market share. On the other hand, [X].⁷⁸⁵

Ofcom's analysis and assessment of responses

- A6.97 Respondents to the February 2013 consultation took a range of views regarding the appropriate market share (from 25% to BT's current market share). In light of responses to the February 2013 consultation and developments in our own analysis, we now believe that using a market share of 33% is most appropriate.
- A6.98 In Section 5 we have concluded that BT has SMP in wholesale call origination, and that we should impose a charge control. However, the market shares that informed the finding of SMP are not determinative of the market share assumption that should be used in the modelling to set the charge control. Rather, the market share assumption should be seen more in tandem with the cost modelling objectives, overall modelling approach and the source of network cost information.
- A6.99 As explained in Annex 5, we have a number of economic objectives in setting cost-based charges, and in this case have concluded that setting regulated charges in recognition of contestable market principles is appropriate, and propose to do so based on an NGN. We consider the control should seek to mimic the outcomes of a contestable market into which this hypothetical network operator could enter and constrain existing firms to price at the competitive level. In these circumstances, we

⁷⁸⁰ BT response to the February 2013 consultation, pages 30 to 39

⁷⁸¹ Virgin response to the February 2013 consultation, page 16

⁷⁸² Vodafone response to the February 2013 consultation, page 27

⁷⁸³ EE response to the February 2013 consultation, page 21

⁷⁸⁴ TalkTalk response to the February 2013 consultation, page 9

⁷⁸⁵ February 2013 consultation, page 389

would only consider it appropriate to use the market share of an operator with SMP (for example, 50%) if it reflected the market share which an efficient entrant could realistically achieve across the market as a whole.

- A6.100 In order to determine the market share achieved by this hypothetical efficient entrant, we considered in the September 2012 consultation the extent to which entrant providers of voice services in the UK have deployed their own networks. In the residential sector there are four national or near national operators (BT, Sky, TalkTalk and Virgin Media) that have deployed networks.⁷⁸⁶ Based on the presence of four competing networks, in the September 2012 consultation we therefore considered that a market share of 25% could be achieved.
- A6.101 However, on further reflection, we note that only BT is present across the United Kingdom and the other network operators do not have full national coverage in that not all of these operators will be present in all geographic areas. We have therefore considered the market share which a hypothetical efficient entrant might achieve if it were to be present in all geographic areas in the United Kingdom (excluding the Hull Area), in accordance with the market definition. Current network deployment will have taken into account the ability to gain sufficient customers to recover costs in a given area and therefore provides a proxy for the number of operators that can economically serve a given area. The 2013 WBA Market Review, Table 4.1, shows the extent of deployment of near national operators as follows: Sky 90%, TalkTalk 93% and Virgin Media 45-50% (BT of course being 100%). Taking these deployments into account we calculate that, on average, there are 3.3 operators in a given area (including BT). Rounding this to the nearest whole number of operators, gives 3 operators deployed in any given area. This suggests a hypothetical operator with a national footprint would face on average two other competitors in each area and, assuming equal share, would achieve a 33% market share. We think this provides the most suitable proxy for a fully national market share assumption, informed by the evidence from entrant network deployments available to us.
- A6.102 We disagree with Virgin Media that it would be appropriate to use a different market share for wholesale call origination and termination. The NCC services are carried by the same network and in many cases share the same equipment. The market share for one service will impact on the costs that need to be recovered by the other service. Even if we were able to consistently apply a different market share to each service, we would not be able to robustly introduce a mark-up to wholesale call origination for common cost recovery that was consistent with both market shares.⁷⁸⁷
- A6.103 In response to Virgin Media's concern about the unit cost increase in LRIC as market share increases, it is possible that more asset modularity boundaries will be reached – i.e. the additional traffic requires new capacity but the modularity of that capacity means it is not fully utilised. This can mean that increasing the market share increases the LRIC of termination. This was the same phenomenon seen in the 2011 MCT modelling and is not something we consider to be unreasonable or that warrants further investigation.⁷⁸⁸

⁷⁸⁶ We note some smaller deployments have been made and other network operators are present in the business sector

⁷⁸⁷ The marking up of call origination for common costs no longer recovered from FTRs at LRIC is discussed in Section 8 and later in this annex

⁷⁸⁸ See April 2011 MCT Statement section A10.20.

A6.104 We find that the market share of the hypothetical network operator is a key parameter in calculating LRIC+. The LRIC of wholesale call termination is less sensitive to a change in market share. These results are discussed in more detail in Annex 8.

Network costs

'Scorched node' assumptions

A6.105 Our bottom-up network model is based on a 'scorched node' approach. A scorched node approach takes account of a network's existing topology. Although we are building a hypothetical NGN, we have used the location and serving area of BT's existing exchanges. In both the September 2012 consultation and February 2013 consultation, we explained why BT's existing local exchange topology provides an acceptable proxy for an efficient network and our cost model is predicated on competitive entry using LLU and NGN deployment at BT's local exchanges.

Network design choices

A6.106 The modelled NGN consists of a number of interconnected nodes. Each node includes a number of different pieces of network equipment and performs a specific function as follows:⁷⁸⁹

- **Basic access node:** The basic access node is the node closest to the end-user at which the copper access lines terminate. There are approximately 4,000 basic access nodes.
- **Remote access node:** The remote access node is a specific kind of basic access node, serving remote and/or hard-to reach locations.
- **Super access node:** The super access nodes are co-located with the basic access node and aggregate traffic from basic access nodes before passing it on to the aggregation node.
- **Aggregation node:** The aggregation node aggregates traffic from the super access nodes and passes it on to the core node or to other CP networks via the interconnect nodes (see below). There are 106 aggregation nodes.
- **Interconnect node:** The interconnect node supports voice interconnection between the modelled NGN and other CP networks on both a TDM and an IP basis. As explained in Annex 7, we propose to model a network with 20 Pols. These 20 Pols are assumed to be co-located with the core nodes described below (which in turn are co-located with aggregation nodes).
- **Core node:** The core node transports traffic between aggregation nodes. There are 20 core nodes.
- **Service node:** The service nodes house the servers providing the service functionality, such as call servers, directory servers, etc. There are 2 service nodes.

⁷⁸⁹ For a full description of the nodes see Section 3 of Annex 13

Treatment of “passive” network elements and non-network costs

February 2013 consultation

A6.107 In addition to NGN-specific assets, some assets are shared between an NGN network and other services. In the February 2013 consultation we proposed not to model these assets on a bottom-up basis, but rather use the cost of the assets that are currently allocated to NCC services. We added a mark-up to voice services based on the proportional contribution that these assets make to the unit cost of NCC services on a TDM network from BT’s RFS. The cost categories of interest here are:

6.107.1 **Duct:** The pipes, tubes and conduits through which underground cables are passed.

6.107.2 **Land and Buildings:** Including both corporate offices and network buildings.

6.107.3 **Transmission:** The core transmission (fibre only) used to link exchanges.

A6.108 In addition to network costs, other non-network costs are included (as ‘administration costs’). In previous NCCs, administration costs have been charged for as a separate service, i.e. PPP. In the February 2013 consultation, we proposed to model administration costs as a cost item within the cost stack for the modelled conveyance services (consistent with the approach used in our MCT model), rather than as a separate charge-controlled service as previously done in NCC cost models.⁷⁹⁰

A6.109 We proposed that administration costs would be recovered from the LRIC+ of origination via the usual usage factor based allocation of common costs.

A6.110 We also did not propose to include administration costs within the LRIC of the termination cost stack. An initial assessment of the evidence suggested no clear link between termination traffic volumes and the cost of administration services.

Treatment of “passive” network elements and non-network costs: responses to the February 2013 consultation

Passive assets

A6.111 BT agreed with the principle of basing the costs of passive network elements on the costs currently recovered from NCC services.

A6.112 However, BT did not believe that this was the approach that Ofcom had taken in the February 2013 consultation. BT also believed that the mark-up used for passive costs in the February 2013 NCC model recovered considerably less cost than is attributed to passive costs in BT’s RFS. BT estimated that BT’s RFS had on average allocated £140m per annum from passive asset costs to NCC services compared to £50m per annum recovered from the model. BT believed that these additional costs should be included in the model.⁷⁹¹

⁷⁹⁰ The administration costs are included in the OSS/BSS network element asset.

⁷⁹¹ BT response to the February 2013 consultation, pages 43 to 44

- A6.113 Vodafone identified that the mark-up equates to 30% of the total cost of origination (excluding the mark-up from termination).⁷⁹² Vodafone argued that there were a number of reasons to believe that the passive asset mark-up is excessive.
- A6.114 Vodafone noted that the passive asset costs taken from BT's RFS are allocated to services from a larger total passive asset cost stack. Vodafone argued that an NGN is likely to use less floor space and have a lower level of activity than TDM equipment. Vodafone believed that the cost being allocated to voice services would be lower using an NGN than a TDM.
- A6.115 Vodafone believed that the total contribution to passive asset costs should not be a constant percentage over time. Vodafone argued that as voice volumes fall and data volumes rise, the passive costs percentage allocated to voice will fall. Vodafone believed that an overall mark-up of around 30% (including the mark-up from termination) might be more realistic for the 3 years of the proposed charge control.

Non-network PPP costs

- A6.116 BT argued that there are a number of activities that contribute costs to PPP that are incremental to wholesale call termination. These activities include:
- 6.116.1 Setting prices and issuing Network Charge Change Notices (NCCNs);
 - 6.116.2 The cost of volume measurement systems to identify where calls come from;
 - 6.116.3 Maintenance of the Element Based Charging (EBC) matrix⁷⁹³;
 - 6.116.4 Maintenance of the price list and website; and
 - 6.116.5 Processing of call termination invoicing.
- A6.117 BT also argued that not enough costs were being included in the model. BT identified that £19m of cost was recovered from PPP services in 2011/12. BT considered that because PPP costs were not explicitly included in the model it will underestimate the total cost.

Ofcom's analysis and assessment of responses

Passive assets

- A6.118 We have collected additional data and carried out further analysis on the cost of passive assets. We calculated that the February 2013 model recovers approximately £40m less cost than BT recovered from NCC services in 2011/12. However, we do not necessarily believe that this means we should increase the costs that we allocate to NCC services from these assets. As we have already outlined, we are not trying to replicate BT's network. The current passive asset costs that BT recovers are not the cost of an NGN, but the costs associated with a TDM network.

⁷⁹² This is calculated on the basis of the LRIC+ origination cost including the mark-up for common costs not recovered on termination. This equates to a 43% mark-up on the origination costs.

⁷⁹³ The EBC sets out how incoming traffic is invoiced depending on the traffic destination and entry into BT's network.

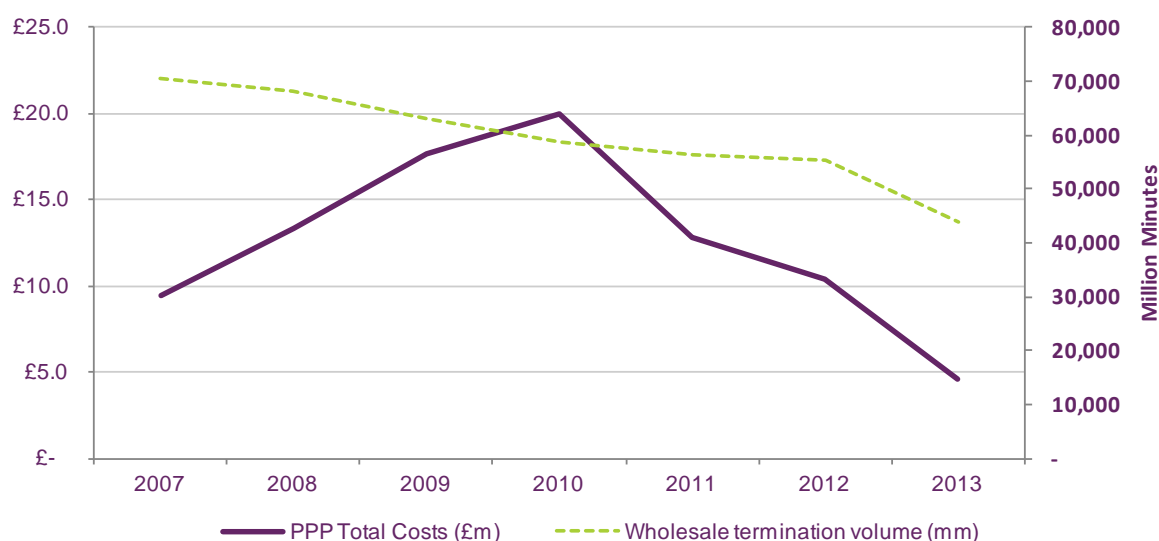
- A6.119 One of the most significant differences between the costs recovered in the model and those recovered by BT are accommodation costs. We agree with Vodafone that it would be likely that voice services would have lower costs allocated to them in an NGN than a TDM network. In a TDM network, a separate rack within the local exchange is used for voice and data services. In an NGN, the same rack would be used. It would be reasonable for the cost of this shared rack to be allocated based on traffic meaning that data would be allocated more of the accommodation cost. Information submitted by both NGN and TDM operators suggests the accommodation costs for an NGN are lower.
- A6.120 We have collected data from NGN operators and BT in order to try to better understand the costs of passive assets. From this analysis we have determined that the total mark-up for the passive assets should be 50% over other NGN LRIC+ costs.⁷⁹⁴
- A6.121 We do not agree with Vodafone that we are allocating too much cost to voice over time as data volumes grow. By including passive asset costs as a mark-up, we reflect the fact that data volume growth is forecast to be much greater than voice volume growth. By using a mark-up, the costs allocated to NCC services from passive assets are reliant on the costs allocated from other network assets which are in turn a function of both the voice traffic volumes and the data traffic volumes. By using a fixed percentage mark-up, we are able to capture the decrease in unit costs of voice that would occur as data volumes increase.
- A6.122 Given the support we have from the majority of respondents and the further reasoning summarised above, we do not propose to change our approach to passive network assets, however we have adjusted the size of the mark-up to reflect our most recent analysis.

PPP

- A6.123 Our analysis from the February 2013 consultation suggested that between 2007 and 2012, despite external wholesale call termination volumes having fallen by almost 22%, PPP total costs increased by almost 10%. Over a shorter period between 2007 and 2010 external wholesale call termination volumes fell by 17% but PPP total costs increased by over 100%. These results suggested that PPP costs were driven by factors other than the external wholesale call termination increment.
- A6.124 Figure A6.7 is an updated chart showing the changing total cost of PPP against the volume of wholesale call termination. This shows that the small increase in PPP costs over the period is now a decline, although the sharp increase up to 2010 followed by a decline each year thereafter remains and is at odds with the overall trend in wholesale call termination volumes (which fell steadily each year over the period). However, the trend in PPP costs in the last couple of years is more in keeping with the volume decline for wholesale call termination in those two years.

⁷⁹⁴ This mark-up is applied before the common cost recovery mark-up.

Figure A6.7: Comparison of PPP costs and wholesale call termination volumes



A6.125 We accept that it is possible that some parts of the activities covered by the PPP charge might be incremental to wholesale call termination but fixed over the time period and variation in traffic that are considered in our analysis. However, for these PPP-related activities to be incremental to wholesale call termination, they should not be used by any other service (since incoming wholesale call termination is modelled as the final increment). Since the February 2013 consultation, we have performed further analysis of those PPP activities identified by BT. From the list in BT's response, we do not believe that any of these activities (bar one) are specific only to wholesale call termination nor do we believe that termination would add any material cost to these other activities. The exception is the cost associated with the element-based charging matrix (EBC). Without incoming termination, the EBC could be a much simpler and cheaper system. It would not need to include all the complexity required to identify the cost of a call to each number on a CP's number range. We have examined the costs of the EBC and related systems and have concluded that each year £3.5m⁷⁹⁵ of these costs are incremental to termination.

A6.126 We have also decided to include a small contribution for administration costs in the LRIC FTR, based on our assessment of the evidence received relating to which of those administration costs are incremental to termination.

Cost of capital

February 2013 consultation

A6.127 In the February 2013 consultation we outlined our approach to estimating the weighted average cost of capital (WACC). This approach was originally developed in a statement in August 2005 covering a number of issues relating to risk and return.⁷⁹⁶ In that statement, we set out our approach to estimating disaggregated WACCs for different parts of BT to reflect variations in systematic risk between different activities. We concluded that it was appropriate to estimate a disaggregated WACC for BT's copper access business and to have another rate for 'the rest of BT'.

⁷⁹⁵ The EBC follows the same asset price trend as the OSS/BSS asset.

⁷⁹⁶ http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf

- A6.128 This disaggregated approach has since been used in a number of charge controls, including the 2005 and 2009 NCCs.
- A6.129 In the February 2013 consultation, we proposed that the WACC for the 'rest of BT' estimated in the 2011 WBA Charge Control Statement at 9.7% pre-tax nominal, 6.5% pre-tax real, remained appropriate without the need to update the estimates. However, we also noted that the Leased Lines Charge Control would determine a revised 'rest of BT' WACC in March 2013 and we would have regard to the value used there.

Cost of capital: responses to the February 2013 consultation

- A6.130 BT believed that the hypothetical nature of the model suggests a single WACC value is appropriate. BT argued that using a single WACC value reduces the need for reallocating costs from past periods to future periods. BT was also concerned that if the WACC is based on actual operator observations it will mean that factors such as the company's beta or the gearing ratio, will influence the economic depreciation calculation.⁷⁹⁷
- A6.131 In response to the September 2012 consultation, in which we also proposed a 'rest of BT' WACC, BT believed that the use of the 'rest of BT' WACC was inappropriate because we were building a model for an NGN operator with a 25% market share. BT believed that our modelled operator would find it more difficult to raise debt finance than BT due to a lower credit rating. BT also believed that the modelled operator would have a lower gearing ratio and so a higher proportion of the business would be supported by equity. BT argued that these factors would increase the WACC and a more appropriate value would be a real pre-tax rate of 8% for the entire modelling period.⁷⁹⁸
- A6.132 In response to the September 2012 consultation, Virgin Media agreed with our use of the 'rest of BT' WACC.

Ofcom's analysis and assessment of responses

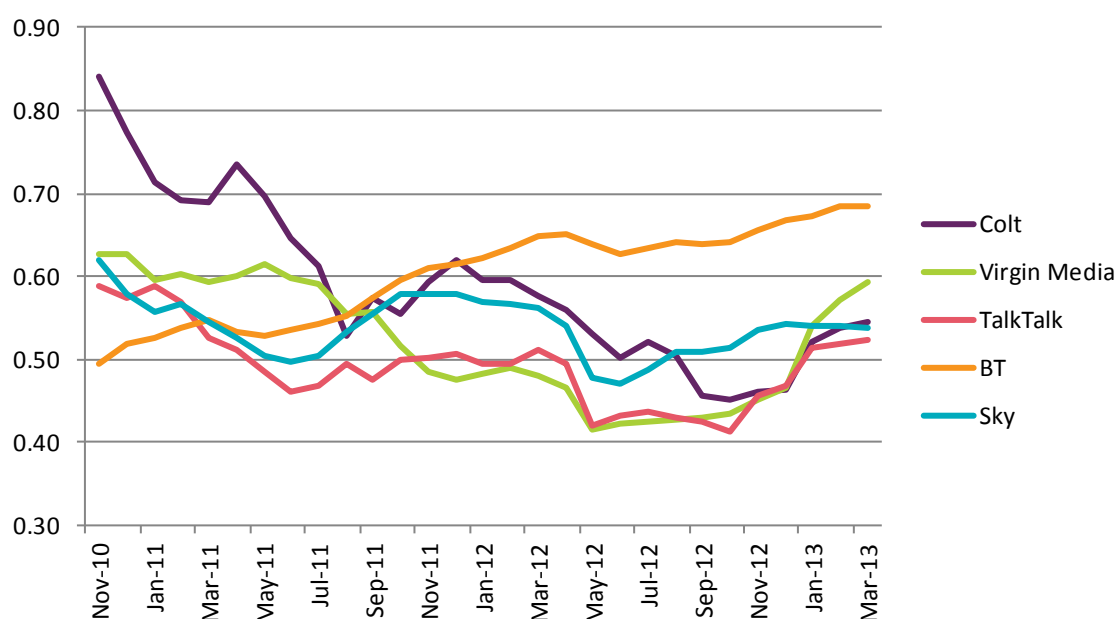
- A6.133 We disagree with BT that we should use a different WACC from the value that we have calculated for the "rest of BT". It is the nature of a bottom-up modelling exercise that the model will differ from any real world network. We do not believe that this is a reason not to use BT's WACC. Using BT's WACC in this case is consistent with our approach when building the 2011 MCT model where our beta analysis drew on asset returns for Vodafone, even though the MCT model network design and market share differs from that attributable to Vodafone.⁷⁹⁹
- A6.134 As can be seen from our analysis in the July 2013 LLU/WLR consultation, just because an operator has a smaller network, it does not necessarily mean that it will have a high WACC because of a higher beta or debt premium. Figure A15.4 of that consultation is repeated below and shows that the BT Group asset beta over 2011 was comparable to that of other major voice and broadband providers in the UK (i.e. Virgin Media, Talk Talk, Sky and Colt). From early 2012, it began to diverge from that of the other UK telecoms operators and is now somewhat above.

⁷⁹⁷ BT response to the February 2013 consultation, paragraph 9.163 to 9.165

⁷⁹⁸ BT response to the September 2012 consultation. Section 10.7

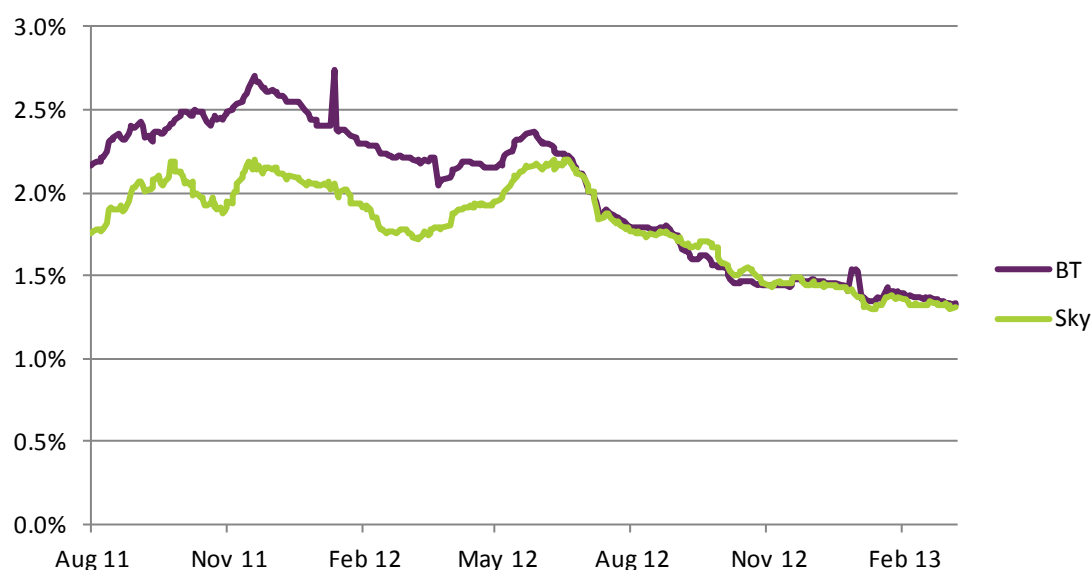
⁷⁹⁹ The beta of an asset (e.g. company) measures the variability of the returns on that asset with those of the benchmark market as a whole – e.g. as against the FTSE all share index. Beta measures the systematic risk associated with the asset in question.

Figure A6.8: Rolling asset betas of benchmarking UK telecoms operators



A6.135 Figure A15.11 from the July 2013 LLU/WLR consultation is also repeated below. It shows how the BT Group corporate bond spread over treasury yields has trended with that of Sky, with the two being extremely close since mid 2012.

Figure A6.9: BT and Sky corporate bonds spread over benchmark treasury yields (%)



A6.136 Each of the alternative operators shown has a smaller share of voice and broadband subscribers than BT and this evidence does not support BT's view that the modelled operator should have a higher cost of capital than BT (indeed BT Group let alone rest of BT which we estimate would have a slightly higher cost of capital than BT Group⁸⁰⁰).

⁸⁰⁰ See Table A15.1 of Annex 15 of the LLU/WLR 2013 consultation
http://stakeholders.ofcom.org.uk/binaries/consultations/wlr-cc/statement/LLU_WLR_CC_annexes.pdf

- A6.137 Given that our most detailed analysis of the cost of capital for a fixed line operator is for BT Group which we disaggregate into its fixed line business (Openreach) and “the rest of BT”; since the “rest of BT” is designed to capture precisely the kind of services covered by the NCC (as distinct from BT’s access line business), and because evidence on other operators active in wholesale call termination and origination does not suggest that they face a financing disadvantage vis-à-vis BT, we maintain that the ‘rest of BT’ WACC provides an appropriate estimate of the WACC for the modelled operator.
- A6.138 Even if we thought that a higher WACC was appropriate, it is by no means clear why BT’s suggestion of holding the WACC constant for the entire modelling period would be appropriate.⁸⁰¹ In particular, it would imply that the cost of equity and debt finance as well as gearing was constant over the entire modelling period from 2005/06 to 2045/46. In reality, we know that various WACC parameters have varied from 2005 to date. Comparing Figure 8.4 from the August 2005 Cost of Capital statement⁸⁰² with the values in Annex 14 of the March 2013 BCMR statement⁸⁰³, it can be seen that every parameter relevant to calculation of the WACC has varied. As a result, the ‘rest of BT’ WACC has fallen markedly over that period.
- A6.139 We have observed declining values for the WACC across both the mobile⁸⁰⁴ and fixed CPs over the last 10 years and it is not clear why we would not also see a declining WACC for our hypothetical NGN operator. However, we note the small increase in BT’s WACC between the value calculated for the 2012 LLU/WLR charge control and the 2013 LLCC and have updated our estimate of BT’s WACC to reflect the one used in the 2013 LLCC. We do not believe that this small increase detracts from the general decline in WACC values over the last 10 years.

Conclusion on the WACC

- A6.140 We have not changed our approach to calculating the WACC as a result of the responses to the February 2013 consultation. For historic periods, we have used the WACC value that applied for the relevant NCC period. Since the publication of the February 2013 consultation, we have updated our estimate of BT’s WACC so it aligns with the estimate used in the 2013 LLCC.⁸⁰⁵ Our updated WACC series can be found in Figure 6.10 below.

Figure A6.10: Real pre-tax WACC⁸⁰⁶

	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Real WACC	8.7%	8.7%	8.7%	8.7%	8.3%	8.3%	8.3%	6.9%

⁸⁰¹ Given the way the WACC interacts with the Original ED algorithm, using a constant WACC will cause less cost to be recovered in the past than with a declining WACC

⁸⁰² http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf

⁸⁰³ <http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/>

⁸⁰⁴ Our estimates of the mobile WACC have declined from a real pre-tax value of 13.77% in 2002/03 to 6.2% by 2009/10.

⁸⁰⁵ See LLCC 2013 Statement. <http://stakeholders.ofcom.org.uk/consultations/business-connectivity-mr/final-statement/>

⁸⁰⁶ From 2011/12, the WACC is held constant at 6.9% pre-tax real in perpetuity.

Cost recovery

February 2013 consultation

Cost recovery over time

- A6.141 Once the total costs of the hypothetical NGN have been calculated, we must determine how these costs are recovered over time. In the February 2013 consultation, we proposed to adopt economic depreciation, rather than accounting depreciation, to recover costs over time. Economic depreciation better reflects the forward looking economic value of an asset than accounting approaches to depreciation and so better mimics the outcome of a competitive market. Economic depreciation considers costs over the whole economic life of the network and in particular avoids the inverse relationship between in-year utilisation and unit costs prevalent under accounting approaches to depreciation.⁸⁰⁷
- A6.142 Using economic depreciation in bottom-up cost modelling is consistent with the 2009 EC Recommendation, which states that: “*The recommended approach for asset depreciation is economic depreciation wherever feasible.*”⁸⁰⁸
- A6.143 Economic depreciation has been used in the MCT cost models since 2001. In recent MCT cost models, such as the 2011 MCT Cost Model, we used a form of economic depreciation known as Original ED.⁸⁰⁹ This method matches the cost of equipment to its actual and forecast use over the long term. Consequently, there is relatively little depreciation in years when utilisation is low and relatively high depreciation in years of full, or almost full, equipment utilisation.
- A6.144 An alternative way to characterise economic depreciation is as a cash flow analysis to answer the question: what time series of prices, consistent with trends in the underlying costs of production and given forecast traffic, yield an expected present value equal to the capital and operating cash flows arising from building and running the network? In order to answer this question, the Original ED calculation is performed in three stages:
- **Stage 1:** A constant unit cost is calculated as if the final year utilisation and input costs applied over the entire lifetime of the network.
 - **Stage 2:** A second component is added to recover the additional costs caused by earlier under-utilisation of the network compared to the final year level.⁸¹⁰ This step is also applied as a constant unit price for all years.
 - **Stage 3:** A third component is added to recover the remaining un-recovered (or-over-recovered) costs due to input costs, including the WACC, being above (or below) the final year level. The shape of this component is determined by the

⁸⁰⁷ An accounting approach to depreciation would usually involve taking the price that would be paid for equipment (or was paid under historic cost accounting) and dividing this value by the expected equipment life to reach a depreciation charge for that year. As a result, in periods of low utilisation unit costs are relatively high and in periods of high utilisation unit costs are low.

⁸⁰⁸ 2009 EC Recommendation, Recital (7).

⁸⁰⁹ Original ED was developed as a depreciation approach by Oftel see <http://www.ofcom.org.uk/static/archive/oftel/publications/mobile/depr0901.htm> We also used this form of economic depreciation in the 2005 MCT Cost Model and the 2007 MCT Cost Model.

⁸¹⁰ If utilisation is falling over time then this could be a negative value.

arithmetic difference between in-year and final-year input costs,⁸¹¹ and is therefore zero in the final year (or any year that shares the same level of input costs and WACC as the final year). More costs are recovered in years when asset prices and the WACC are higher than the final year.

A6.145 We consider Original ED to be a better depreciation approach to other forms of economic depreciation because we consider that it better mimics a competitive market.⁸¹²

A6.146 As noted above, this approach to economic depreciation has been widely applied by Ofcom in previous bottom-up MCT cost models⁸¹³ and has been supported by the CC each time it has been appealed; most recently in the 2012 CC Determination.

Cost recovery between assets.

A6.147 In the February 2013 consultation we described how the costs of a particular network element should be recovered over time from different network services. The costs recovered by a particular service are linked to the costs that are driven by that network service. Each network service will have a routing factor relating to each piece of network equipment, which will drive the amount of network equipment needed to carry a unit of the service.

A6.148 We went on to explain how these routing factors are adjusted so that they reflect different proportions of traffic in the busy hour (i.e. if data traffic has a greater proportion of total traffic in the busy hour than voice traffic, data services should recover more of the costs). These adjusted routing factors are used to determine the network element output from which costs are recovered and in turn to allocate network element unit costs to network services.

A6.149 We also outlined how we had made an adjustment to the cost recovery routing factors for outgoing calls and international calls. Given our definition of the wholesale call termination and wholesale call origination services, we believed that the cost allocated to these services should include no-more than the cost of transit across one core node. Transit across one core node is sufficient to reach a point of interconnection and leave the network.

A6.150 We explain that outgoing off-net calls may cross more than one core node as the network operates “far end handover”, but the cost of multiple core transits should not be recovered from the origination service. International calls (both incoming and outgoing), may need to pass multiple core nodes due to the lower number of international interconnection points, but again the cost of these multiple core transits should not be recovered from the wholesale call origination or the wholesale call termination service. In the February 2013 NCC model, we still allowed the traffic to pass over multiple core nodes, but we did not allow these costs to be recovered

⁸¹¹ The “input costs” for a particular year are the asset price (or operating cost) for that year and the WACC. The arithmetic difference between in-year and final year inputs cost is given by $=(\text{Asset price}_t \times \text{WACC}_t) - (\text{Asset price}_n \times \text{WACC}_n)$. Where (t) is the current year and (n) is the final year.

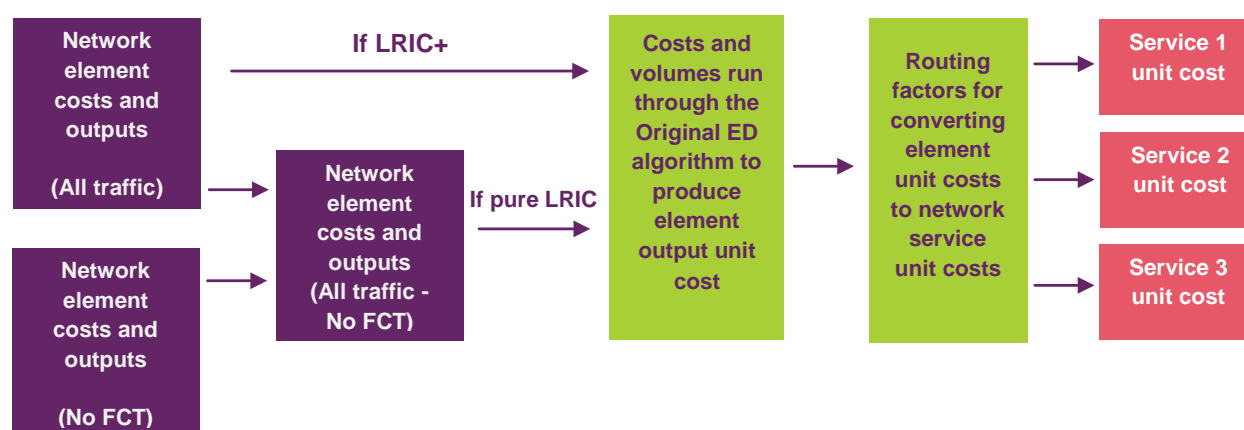
⁸¹² For example, other forms of economic depreciation, such as “Simplified ED”, do not calculate the terminal price based on mimicking a hypothetical competitive market; rather, the terminal price is a by-product of scaling the shape of the cost recovery profile to achieve full cost recovery. We have included Simplified ED in the model to enable us to perform a cross check against the Original ED algorithm.

⁸¹³ See <http://www.ofcom.org.uk/static/archive/ofel/publications/mobile/depr0901.htm> for an explanation.

through the cost recovery routing factors. Consequently, the routing factors we use for outgoing calls and international calls are different between network build and cost recovery for some core network assets.

- A6.151 Using the routing factors, the economic depreciation algorithm allows us to calculate the yearly unit (element) output cost for each network element. The unit (element) output cost is then multiplied by the adjusted routing factor to give the service unit cost. The outputs of this algorithm allow full cost recovery and thereby it follows that the service unit costs represent the LRIC+ for each service (in each year modelled). Figure A6.11 below shows the flow of calculations when costs are being allocated across time and between services.

Figure A6.11: Cost recovery over time and across services^{814 815}



Cost recovery: responses to the February 2013 consultation

- A6.152 BT argued that the economic depreciation calculation allocated too little cost to voice services. BT believed that the depreciation algorithm should explicitly consider the difference in revenue generated by voice and broadband. BT was concerned that the model allocates costs on each Mbit of peak network capacity and so implicitly assumes that each Mbit of peak capacity has the same value.
- A6.153 BT argued that because voice services generate value from services across the day, they can generate more revenue per unit of busy hour traffic than for data. BT calculated that voice services are currently worth 5 times more than data services and BT considered that this factor should be considered in the cost allocation.⁸¹⁶
- A6.154 BT believed that Ofcom's approach to cost recovery was causing an excessive amount of operating costs to be recovered in later periods. BT pointed to a report by Analysys Mason that showed the February 2013 NCC model was recovering too little cost in early periods when compared to other NRAs models and the 2011 MCT model.⁸¹⁷
- A6.155 In responses to the September 2012 consultation, TalkTalk⁸¹⁸ and [X]⁸¹⁹ agreed with our use of economic depreciation. CWW (now Vodafone) indicated that it was

⁸¹⁴ For illustration only, the figure shows a 3 service model.

⁸¹⁵ Fixed Call Termination (FCT)

⁸¹⁶ BT Response to the February 2013 consultation, paragraphy 9.159 and 9.161 to 9.162

⁸¹⁷ BT response to the February 2013 consultation, para 9.160 and 9.166 to 9.167 and Analysys Mason report in support of the BT response to the February consultation, para 9.2.2.

⁸¹⁸ Talk Talk response to the September 2012 consultation. Page 7

⁸¹⁹ [X] response to the September 2012 consultation. Question 10

not aware of any reason to justify a departure from the method we used in the MCT models.⁸²⁰

- A6.156 H3G generally agreed with our use of Original ED. H3G noted that Ofcom had corrected an error that occurred in the September 2012 NCC model. H3G considered that the correction introduced by Ofcom was inconsistent with the approach taken to the depreciation of capital expenditure. H3G also believed that there was a referencing error in the calculation.⁸²¹

Ofcom's analysis and assessment of responses

- A6.157 As noted above, Original ED has been used by Ofcom (and Oftel) for previous MCT cost modelling and endorsed by the CC in previous appeals. In the 2012 MCT appeals, the CC also supported the use of Original ED in the context of calculating termination rates based on LRIC (not just LRIC+).
- A6.158 We disagree with BT that the economic depreciation algorithm allocates too little cost to voice services. We agree with BT that in principle the economic value of the asset should be based on the discounted revenue stream that the asset can earn. Therefore, if voice services have greater value they might in principle contribute more to the recovery of the cost of the asset. However, it is often not appropriate to apply this logic when setting regulatory charges. There would be circularity in the rate setting process if we determined costs allocated based on the charges that the costs were being used to determine.
- A6.159 The purpose of the economic depreciation algorithm is to recover the cost of assets based on the amount of assets that a unit of traffic uses. The costs that are recovered from services are then determined by how intensively the service uses the asset. That said, we would be concerned if, by working in this way, the cost estimates produced by the model for other services (whether competitive or regulated) were above prevailing charges as this could cause a cost recovery problem. However, we have checked the outputs of the model against retail and wholesale charges for other services and do not believe there is a cost recovery problem.
- A6.160 The amount of cost recovery that occurs in each period is determined by the cost inputs and by the network traffic volumes. In the 2011 MCT modelling, high historic cost recovery is caused by large declines in the opex price trend over time. The NCC model also has a declining unit opex trend, but by a smaller amount than the MCT model.
- A6.161 The fixed traffic forecasts are characterised by high future volumes of data traffic. When future traffic is forecast to be higher than currently, we would expect more total costs to be recovered in the future and so lower unit costs in all periods not higher unit costs now and lower unit costs later (as under accounting depreciation). Higher future total cost recovery in the NCC model is therefore a sign that the model is behaving correctly.

⁸²⁰ CWW response to the September 2012 consultation. Page 19

⁸²¹ H3G response to the February 2013 consultation, page 17

A6.162 We agree with H3G that there was an error in the way the Original ED algorithm was calculating the recovery of operating costs. We have corrected this error in the final version of the 2013 NCC model.⁸²²

Operator Assistance Services and Emergency Services

A6.163 Following the publication of our draft statement on 20 August 2013, BT submitted that the charge control proposed for call origination did not adequately capture the costs associated with operator assistance.⁸²³

A6.164 BT provides the following variants of its wholesale “Call Origination Local Exchange Segment” service⁸²⁴:

(1) “Call Origination Local Exchange Segment (including Operator Assistance and Emergency Intermediate Services)”. This allows purchasers to use BT’s Operator Assistance (OA) Service and emergency call handling services without incurring additional charges for the use of those services; and

(2) “Call Origination Local Exchange Segment (including Emergency Intermediate Services)” service. This allows purchasers of call origination from BT to use BT’s emergency call handling services without incurring additional charges for this.

A6.165 The provision of OA and emergency call handling services incurs a cost to BT (e.g. the costs associated with agents handling those calls). The charges for (1) and (2) currently provide a contribution to the costs of OA and emergency call handling services. BT identified that our NGN cost model did not explicitly include the costs relating to the provision of OA and emergency call handling services.

Ofcom’s analysis and response

A6.166 In our February 2013 consultation, the forecast cost for the call origination basket did not include costs for the provision of OA and emergency call handling services. While the costs of these services were first explored with BT in correspondence in January 2013⁸²⁵, BT did not provide sufficient information for us to be confident that there were additional costs at the time of the February 2013 consultation. Furthermore, BT did not provide information in relation to the costs of providing OA and emergency call handling services as part of its formal response to the February 2013 consultation.

A6.167 After reviewing BT’s August submission and using our information gathering powers to confirm the nature and costs of services provided⁸²⁶, we consider it appropriate that call origination services purchased from BT should make an explicit contribution to the costs of providing OA and emergency call handling services. That is, the services in the call origination basket make use of these activities, BT has provided a clearer explanation of the costs involved, and since these are not

⁸²² The correction has occurred in the 3.Economic.xlsm Workbook in Worksheets E1 to E200. In each worksheet Range G85:AU85 now refers to cell AV20 rather than AV19.

⁸²³ Email from BT dated 30 August 2013.

⁸²⁴ BT Wholesale, Carrier Price List, Section C1.

https://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_browsable.jsp?sectionPath=all&sortOrder=d&sort=issueDate

⁸²⁵ Email from Ofcom dated 11 January 2013 regarding s135 notice sent on 24 October 2012.

⁸²⁶ S135 information requests were sent to BT, Virgin Media, Vodafone, BSkyB, TalkTalk, and Gamma on 13 September 2013.

call routing or conveyance costs, they would be expected to be incurred by a hypothetical efficient NGN.

- A6.168 Based on our improved understanding of the relevant costs, we have marked-up the wholesale call origination unit cost by 0.015ppm (in 2012/13 prices). This mark-up is held constant in real terms during the charge control period. We have based the mark-up for OA and emergency call handling services on data obtained using our S135 powers and data contained in BT's RFS.⁸²⁷

Verifying the model outputs

- A6.169 In building our bottom-up model, we have relied on data collected from stakeholders to establish asset costs. We have also relied on data from stakeholders, alongside practical and theoretical evidence, to establish the cost causation relationships in the model.
- A6.170 We believe that it is desirable to check the reasonableness of the model outputs. When we have built other bottom-up models in the past we have calibrated the outputs against actual operator data.⁸²⁸ This calibration looked at the total quantity of network equipment and accounting cost outputs provided by those CPs active in the market(s) in question.

February 2013 consultation

- A6.171 In the February 2013 consultation we outlined that it was not possible to calibrate the February 2013 NCC model in this way because we have no national NGN against which to calibrate it. While recent NGN entrants now have significant national deployments they do not cover the whole of the United Kingdom, in particular the less densely populated and/or more costly geographic areas.
- A6.172 In the February 2013 consultation, we laid out a possible approach for verifying the cost model outputs. In particular:
- i) The model should not recover more costs in historic periods than was possible given the level of regulated charges;⁸²⁹ and

⁸²⁷ We have based the mark-up on the average unit cost (adjusted for inflation) contribution that OA and emergency call handling services have made to the unit costs of wholesale call origination over the last 4 years. For the years 2009/10, 2010/11, 2011/12 and 2012/13, these unit cost figures are 0.011ppm, 0.011ppm, 0.015ppm and 0.021ppm respectively (in nominal terms). These unit cost contributions can be found in Appendix 1 of BT's Regulatory Financial Statements (<http://www.btplc.com/thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm>) In keeping the unit cost mark-up constant in real terms, we are implicitly assuming that there are no efficiency gains or cost-volume effects. While efficiency might imply falling unit costs, if the cost-volume elasticity is less than one then falling volumes would imply rising unit costs, so the effects may offset each other. Given that we have limited data on either of these effects, and given the limited materiality within the overall wholesale call origination cost stack (less than 4%), we consider that the simplifying assumption of constant real unit costs based on the last 4 years provides a reasonable basis to project forward looking efficient costs.

⁸²⁸ See Mobile call termination market review 2011 Annex 10.

⁸²⁹ We performed a similar exercise when building the 2011 MCT model to check if operators were able to recover costs based on historic regulated charges as we changed some of the model parameters. We believe that cross-checks are particularly important in the 2013 NCC modelling exercise due to our adoption of a new modelling approach.

- ii) The unit costs from the model should allow BT to recover efficiently incurred costs.

A6.173 In line with condition (i), we set a constraint on the model that for the historic period, the path of unit costs for wholesale call origination and wholesale call termination produced by the model should not recover more costs than an operator would have been able to recover given the regulated charges prevailing during most of the historic period. Figures A6.12 and A6.13 below shows a comparison of the unadjusted LRIC+ outputs for wholesale call origination and wholesale call termination in our base case and the on-net call in our base case against the historic average prices from BT's RFS.

Figure A6.12: Comparison of model outputs against BT RFS prices (termination and origination)^{830 831}

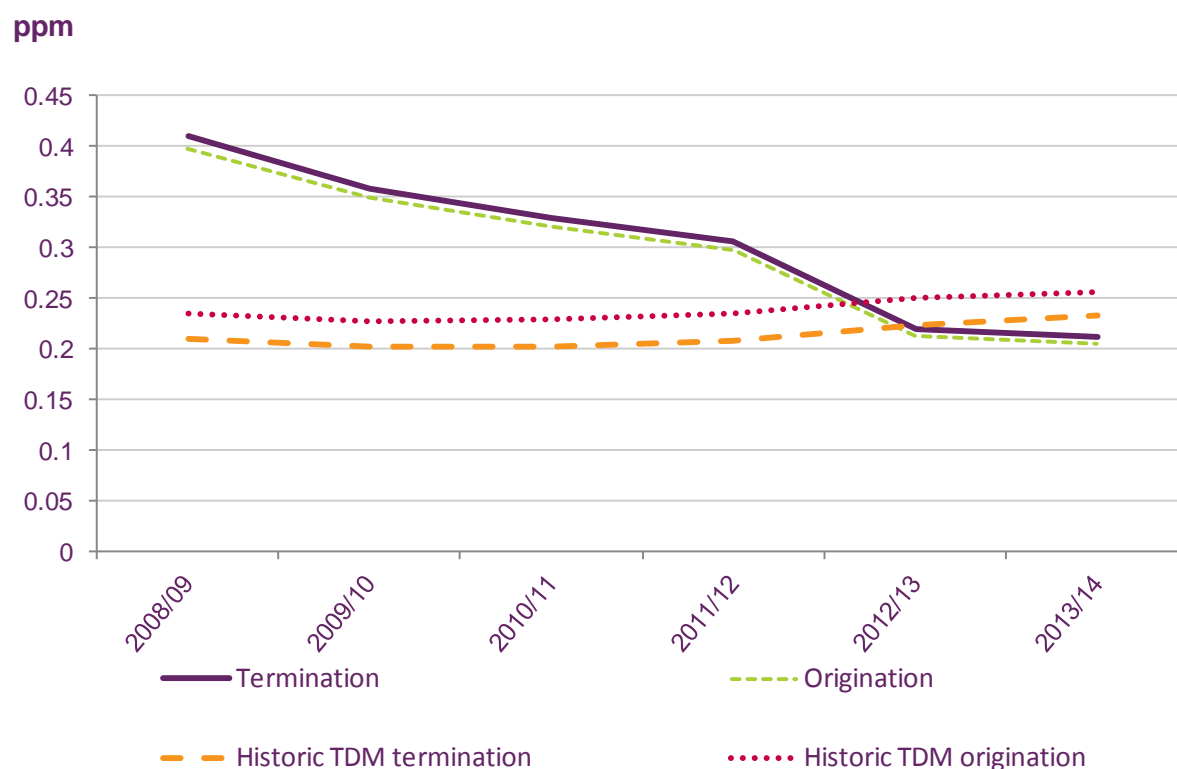
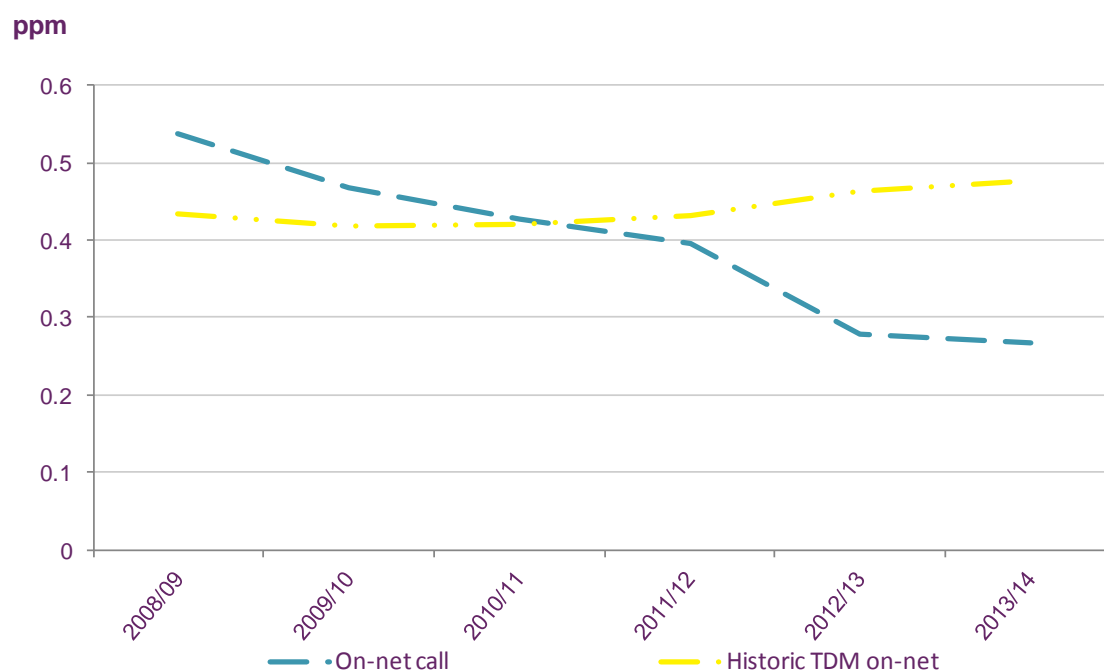


Figure A6.13: Comparison of model outputs against BT RFS prices (on-net call)



⁸³⁰ Wholesale call termination unit cost estimates from the NGN model are above origination unit costs due to the recovery of the cost of voicemail equipment.

⁸³¹ Figures A6.12 and A6.13 contain outputs from the 2013 NCC model before the mark-up has been added for OA and emergency call handling services. This mark-up has been performed separately as discussed above.

- A6.174 In the February 2013 consultation, we used this analysis to demonstrate that the unadjusted model allowed for greater cost recovery in the period 2008/09 to 2013/14 than would have been achievable given the regulated prices of wholesale call origination and wholesale call termination during that period (i.e. the unadjusted model resulted in an 'under recovery' of costs since the modelled network was assumed to incur higher costs between 2008/09 and 2013/14 than was actually recoverable given the regulation of wholesale call termination and wholesale call origination charges). We therefore sought to recover the difference between the costs determined by the unadjusted model and those that it was actually possible to recover (given the past regulation of wholesale call termination charges and wholesale call origination charges) by increasing future charges.
- A6.175 We calculated the discounted total under-recovered costs from termination and origination services separately in the historic period and allocated these costs as a mark-up on voice services in all future periods. This led to a mark-up of 0.011ppm to the LRIC+ of wholesale call origination and 0.20ppm to the LRIC+ of wholesale call termination.⁸³²
- A6.176 In line with condition (ii) above, we believed that the unit cost estimates produced by the model should allow BT the opportunity to recover its efficiently incurred TDM investments (i.e. recover the costs of its near fully depreciated TDM assets) for the period to 2016/17. In order to do this, we used the 2009 NCC model to project costs forward, but using 2011/12 cost data from BT and the actual traffic volumes. In doing so, we did not make the hypothetical ongoing network adjustments that were made in the 2009 NCC model.⁸³³ By updating the 2009 NCC model in this way (i.e. excluding any hypothetical ongoing network adjustments), we estimated the unit costs from a TDM network that is depreciated to the same extent as BT's. The result of this analysis showed that the modelled TDM's costs were below those produced by the February 2013 NCC model (which is based on an NGN).
- A6.177 Although we used an updated version of the 2009 NCC TDM model, we recognised the high level of uncertainty that exists in relation to the future cost of BT's actual TDM network. We therefore believed that the results of this cross-check should be treated with caution. We therefore did not treat condition (ii) as binding in the same way that condition (i) was binding.

Other cross-checks

- A6.178 We were also interested to see if our LRIC estimate for wholesale call termination fell within a reasonable range. Other European NRAs are also currently implementing LRIC models for FTRs. It would not be appropriate for us to try and match the outputs of other NRAs' models.⁸³⁴ However, the outputs produced by models from other NRAs are informative. In the February 2013 consultation, we found that our estimate of the LRIC for wholesale call termination was towards the bottom end of the estimates from other NRAs.

⁸³² ppm mark-up in 2012/13 prices.

⁸³³ The hypothetical ongoing network adjustments included projecting the Gross Replacement Cost of assets from a period when they were considered to be in an ongoing state, increasing the Net Replacement Costs and reducing the asset lives.

⁸³⁴ In its 2012 MCT Determination Section 3.576, the CC stated that "We do not consider that methods applied by other regulators are a determining factor for Ofcom's decision. Ofcom is not bound by how other regulators have implemented their own charge controls."

Responses to the February 2013 consultation

- A6.179 BT was concerned that the retrospective check (cross-check (ii)) was only on the prices charged in the past. BT noted that during some of the past period, costs on a PSTN were higher than the regulated prices. At the start of the current NCC period, modelled costs were forecast to be higher than regulated prices until the end of the charge control period.
- A6.180 BT argued that this meant there is no scope for any retrospective recovery of the hypothetical network's costs in the current charge control period. BT believed that the best way to avoid this problem was to start the network deployment from 2013/14 rather than 2008/09. BT suggested that if Ofcom continues to start the network deployment in 2008/09 it should not spread the unrecovered costs over the entire 32 year modelled period. BT believed that these costs should be recovered over the period of the next NCC period in order to ensure prices become consistent with the operation of a competitive market.⁸³⁵
- A6.181 BT did not agree with our assessment of cross-check (ii). BT believed that the rates set by the February 2013 NCC model would not allow efficient cost recovery. [X]⁸³⁶.
- A6.182 From the European NRAs that we compared our model outputs against, BT believed that Malta was not an appropriate comparator for the United Kingdom. BT argued that other EU countries such as France, Ireland and Denmark would be more appropriate. BT also believed that cost differences between countries should be accounted for when any comparison is made. BT considered that larger countries like Italy, Spain and Germany may be better comparators although they have not yet set their FTRs using LRIC.
- A6.183 Deloitte produced a report on BT's behalf to attempt to adjust the international comparison for different property and pay costs across countries. Deloitte found that UK property and accommodation costs were higher in the United Kingdom than comparator countries. Deloitte calculated that if cost differences are accounted for, the FTR estimate for 2013/14 should be closer to 0.1ppm.
- A6.184 BT also made reference to BEREC's assessment of the Italian NRA's (AGCOM) proposed approach to FTRs where BEREC used an average of proposed rates as a comparator. These suggested a call termination rate of 0.1ppm.⁸³⁷
- A6.185 H3G was concerned with our approach of ensuring that historical cost recovery in the NGN model should be no higher than historic regulated charges. H3G believed that this approach was potentially inconsistent with the approach used in the 2011 MCT charge control. H3G noted that Ofcom did not necessarily believe that a retrospection check would be necessary when setting MTRs.⁸³⁸

Ofcom's analysis and assessment of responses

- A6.186 We agree with BT that over the current NCC period unit costs were forecast to be above prices until the end of the period. The charge control was set using a 4 year glide-path (i.e. charges and costs were aligned in the final year of the charge control

⁸³⁵ BT response to the February 2013 consultation, para 9.168 to 9.170

⁸³⁶ [X].

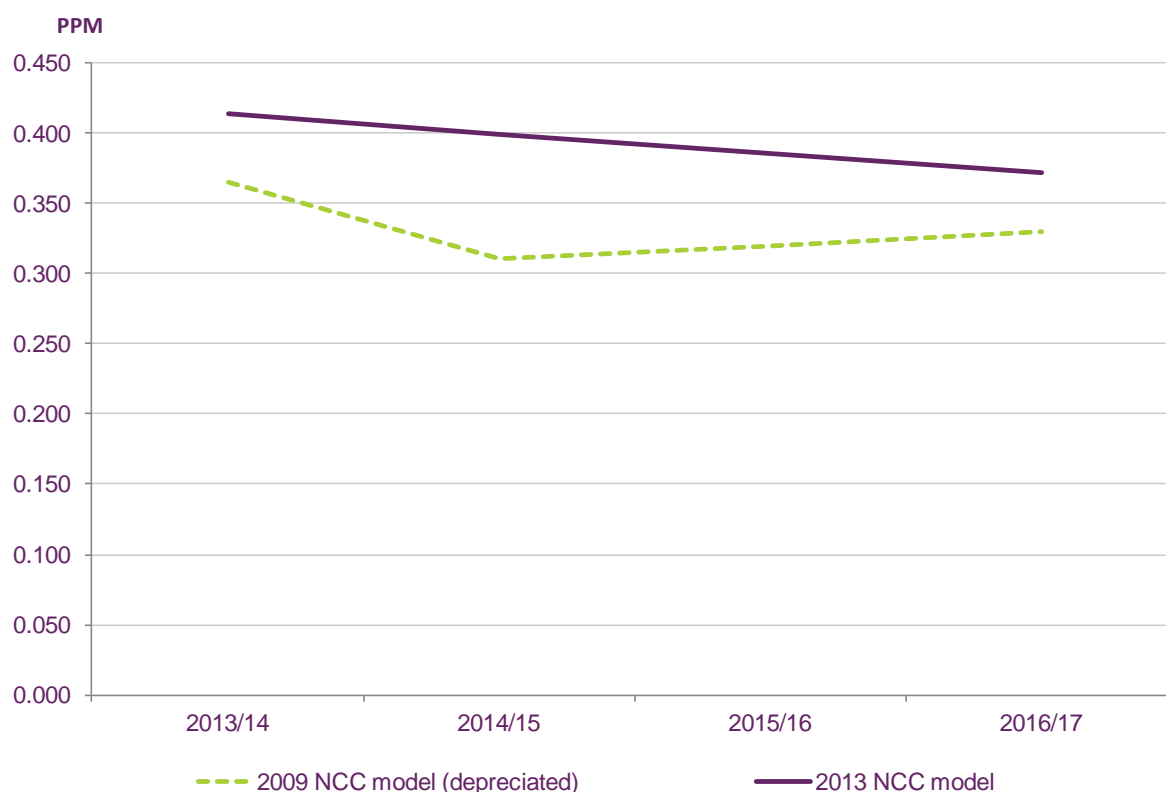
⁸³⁷ BT response to the February 2013 consultation, para 9.149 to 9.158

⁸³⁸ H3G response to the February 2013 consultation, page 12

– 2012/13) and did not include a one-off adjustment. However, we do not believe that this is a relevant factor when determining the appropriate adjustment for cross-check (i). The constraint on the hypothetical NGN's cost recovery would come from the regulated charges not from the unit cost level of a hypothetical TDM network.

A6.187 We do not agree with all the assumptions that are used in BT's model of its TDM unit costs, but we do believe that it provides a useful cross-check. We note that under the 2013 NCC model, [X]. As shown in Figure A6.14, the charges also recover more than the costs of a TDM network suggested by the updated 2009 NCC model. We believe this demonstrates that cross-check (ii) is met [X].

Figure A6.14: Comparison of End-to-End call cost (ppm 2012/13 prices)⁸³⁹



A6.188 We do not consider that the comparison produced by Deloitte for BT is particularly informative. The LRIC of termination is determined by the assets that are found to be incremental to the termination increment in each country. There is no reason to believe that the cost categories identified and adjusted by Deloitte would be those that contribute to the LRIC of termination. For instance, Deloitte make adjustments for accommodation even though accommodation, as a passive asset, is not included in the LRIC of termination.

A6.189 The cross-check against other NRAs' model outputs is used only to see if our model outputs lie within a reasonable range. In no way should the outputs from another NRA's model be determinative in how we set cost-based FTRs. It should not be assumed that different NRAs will find the same assets are incremental to

⁸³⁹ Comparison is performed using the sum of the September 2013 NCC unit cost estimates of origination and termination against the sum of the 2009 NCC model estimates of origination, termination and PPP.

termination. Ofcom must base its assessment on the best view of what a hypothetical NGN will look like in the United Kingdom. Comparisons with other European NRAs can be useful as a cross-check; but cannot be used prescriptively.⁸⁴⁰

A6.190 We have updated our comparison of other NRA's estimates of LRIC for termination and these are shown in Figure 6.15 below.⁸⁴¹ This comparison shows that although we are at the bottom end of LRIC termination rates calculated by European NRAs. However, for the reasons set out in this annex, we believe that the LRIC FTR we have calculated is reasonable.

Figure A6.15: European NRA LRIC estimates (2013)^{842 843}

	€cpm
Bulgaria	0.404
Ireland	0.098
Denmark	0.080
France	0.080
Malta	0.043
Italy - proposed ⁸⁴⁴	From 1 July 2013, 1 July 2014 and 1 July 2015 respectively 0.104, 0.075, and 0.043
UK	0.040 ⁸⁴⁵

A6.191 H3G is correct that we did not make a historic retrospection adjustment when setting MTRs. In the 2011 MCT review, we found that the unit costs being produced by the model were not only below the charges that had been set for previous charge controls, but were also below the unit cost estimates from the previous modelling exercise. There was therefore no need to make any retrospective adjustment. H3G is also correct to state that in the 2011 MCT statement we did not believe that a retrospective adjustment would necessarily be required even if historic costs were below what our model calculated should have been recovered. We considered that we gave MCPs a fair bet by using glide paths and aligning to future forecast costs without adjusting for too high or too low historic cost recovery.⁸⁴⁶

⁸⁴⁰ Competition Appeal Tribunal 2012 MCT Judgment.

<http://www.catribunal.org.uk/239-7143/1180-3-3-11-British-Telecommunications-PLC.html>

⁸⁴¹ These values have been taken from the BEREC opinion on a phase II investigation in relation to the market for call termination at a fixed location in the Czech Republic.

http://berec.europa.eu/eng/news_consultations/whats_new/1358-berec-adopted-a-new-opinion-on-a-phase-ii-investigation-in-relation-to-the-market-for-call-termination-at-a-fixed-location-in-the-czech-republic

⁸⁴² Source with the exception of Italy, BEREC Opinion on Phase II investigation: Case IT/2013/1415, Call termination on individual public telephone networks at fixed locations (market 3) in Italy, 25 March 2013.

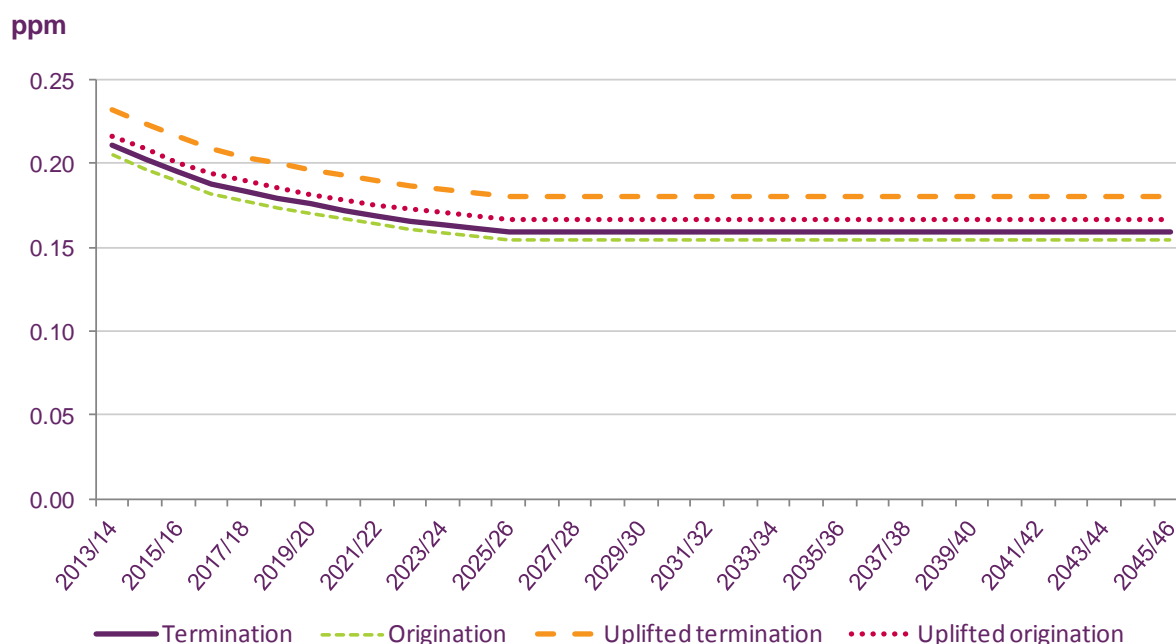
⁸⁴³ For countries with peak/off-peak price differentiation, the average price was estimated assuming a 60/40 traffic distribution. For Denmark, that has a set-up fee, the average price was calculated using 2 minutes as the average length of the calls.

⁸⁴⁴ Public consultation on the implementation of a cost model for the pricing of Interconnection services on a fixed network for the years 2013-2015, AGCOM, 23 May 2013.

⁸⁴⁵ Assuming an exchange rate of £0.85 = €1.

⁸⁴⁶ See 2011 MCT statement, para A6.231 to A6.232.

- A6.192 Although we did not believe that a retrospective adjustment would necessarily be appropriate in the case of MCT, the circumstances for this NCC are different. We are making changes that go beyond what we believe would be considered within the context of a fair bet. We are moving from modelling a TDM network based on BT's costs with appropriate efficiency adjustments to modelling a hypothetical efficient NGN drawing on cost information from all operators with NGN assets and so setting charges on a quite different basis. The hypothetical network that we are creating would have been constrained by the prices set for the current NCC, so we do not believe that it is appropriate for this network to have recovered these costs historically. In addition, we do not believe that it is consistent with mimicking a competitive market to assume that the hypothetical operator is able to charge historic prices above the prevailing rate.
- A6.193 An alternative option would be for us to adjust the model inputs to reduce historic cost recovery. Although we have made some adjustments to historic inputs we wish to maintain the link with bottom-up evidence. We also believe that in reality it is possible for an entrant firm with a new technology to temporarily have higher costs than an incumbent using a legacy technology (and so have its charges constrained). In this scenario, the entrant firm would recover more costs in the future.
- A6.194 In conclusion, we have maintained our approach to cost verification in the August 2013 NCC model. This has led to a mark-up of 0.021ppm to the LRIC+ of wholesale off-net call origination and 0.012ppm to the LRIC+ of wholesale off-net call termination (the mark-up on call termination will be reallocated to origination when termination is set at LRIC). Figure A6.16 shows the resultant LRIC+ for the years after 2012/13 when including the mark-up for wholesale call termination and wholesale call origination in the base case (referred to as "uplifted termination" and "uplifted origination" in the figure).

Figure A6.16: Off-net LRIC+ outputs including mark-up^{847 848}

Recovery of common costs

A6.195 When FTRs are set at LRIC, they will no longer provide a contribution to the recovery of common costs. In Section 8, we discuss why we believe these costs should be recovered from other regulated services and our preference for recovering them through a mark-up on wholesale call origination. Here, we set out how this uplift is calculated.

February 2013 consultation

A6.196 We proposed to calculate the level of under-recovered costs in each year by applying a mark-up to wholesale call origination to recover those costs in that year. By calculating the mark-up in this way, we aimed to ensure that the total amount of costs recovered by the model in each year (across all services) was the same whether wholesale call termination is set using LRIC or LRIC+.

Responses to the February 2013 consultation

A6.197 BT raised concerns that the proposed calculation of the additional uplift required for wholesale call origination (and in particular, the exclusion of on-net termination volumes in calculating the lost contribution to common cost recovery) would still leave some common costs unrecovered and/or a competitive distortion would persist.⁸⁴⁹

⁸⁴⁷ Wholesale call termination has a higher mark-up due to the difference between the NGN wholesale call termination unit cost estimates and the TDM wholesale call termination historic prices being greater than the difference between the NGN wholesale call origination unit cost estimates and TDM wholesale call origination historic prices.

⁸⁴⁸ Figures A6.16 contain outputs from the 2013 NCC model before the mark-up has been added for OA and emergency call handling services. This mark-up has been performed separately as discussed above.

⁸⁴⁹ BT response to February 2013 consultation

- A6.198 Vodafone⁸⁵⁰ argued that an absolute flat-rate mark-up across all call origination minutes is erroneous. Instead, it argued that the recovery of common costs displaced from termination should be applied pro-rata to the underlying individual (route dependant) service cost before mark-up, as Ofcom had done in applying the passive asset mark-up. This is because, it argued, the “termination common cost mark-up” is actually being applied across five different origination traffic services⁸⁵¹, each with different modelled costs (it also considered transit could bear some of these costs).
- A6.199 Vodafone⁸⁵² also raised concerns about the impact of the changes to wholesale call origination on NTS calls (discussed in Annex 9), and in the light of this, suggested a range of options to mitigate this. As well as those discussed elsewhere in the statement⁸⁵³, Vodafone argued⁸⁵⁴ that NTS call origination volumes should be excluded from the common cost recovery calculation (and therefore not incur the additional uplift). It argued that temporarily ring-fencing NTS calls would promote stability and benefit the end user, as there is no mitigation of any cost increase/revenue reduction for these calls and end-users will have to meet the full cost of the change with little advanced warning.

Our analysis and conclusions

- A6.200 In principle with FTRs at LRIC, we would expect the waterbed effect to work such that CPs rebalance prices for other services in order to leave overall cost recovery largely unaffected. However, as discussed in Section 8, there is a risk that price regulated wholesale products (i.e. CPS and WLR) will cause a competitive distortion between direct access CPs and CPs without direct access, which would compromise recovery of common costs no longer recovered through FTRs at LRIC.
- A6.201 In order to avoid this competitive distortion we have included a mark-up on wholesale call origination. The purpose of this mark-up is to stop a CP without direct access from being able to undercut a direct access CP. The mark-up is set so that the common cost recovery from of wholesale end-to-end calls (excluding transit or other conveyance costs) is the same after FTRs are set at LRIC as before.
- A6.202 Our calculation of the mark-up now involves a small change from the formula presented in the February 2013 consultation and addresses the concern identified by BT. The reason for this is because the previous formula did not address the contribution to common costs from the incoming leg of on-net calls for the direct access CP. However, if this is not factored into the prices faced by CPs without direct access, they will be able to price end to end calls in a way that would undermine the ability of direct access CPs to maintain the contribution to common costs from on-net calls.⁸⁵⁵

⁸⁵⁰ Vodafone response to the February 2013 consultation, section 6.8

⁸⁵¹ On-net single aggregation node, on-net cross core, off-net outgoing national single aggregation node, off-net outgoing national cross core and off-net outgoing international.

⁸⁵² Vodafone response to the February 2013 consultation, section 2

⁸⁵³ Vodafone suggested modelling amendments (discussed in Annex 6 and Annex 7), freezing POLO / ROLOs at their 30 September 2013 levels for NTS calls until the point of transition to the new NGCS regime (discussed in Annex 9), and smoothing the charge control profile to reduce the one-off change in wholesale call origination pricing as it relates to NTS calls (discussed in Annex 9).

⁸⁵⁴ Vodafone response to the February 2013 consultation, section 6.8

⁸⁵⁵ This ability to undercut stems from imposing the competitive constraint of the price of end-to-end calls being the same (whether offered by the indirect access CP or the direct access CP)..

A6.203 In summary, we calculate the mark-up to wholesale call origination for common cost recovery in 6 steps:⁸⁵⁶

- i) Step 1: Calculate the LRIC+ vs LRIC margin: i.e. in each year of the charge control, calculate the difference between the forecast LRIC+ and LRIC for wholesale call termination;
- ii) Step 2: Calculate unrecovered common costs in £m: i.e. multiply the ppm margin in Step 1 by the incoming off-net terminating minutes of traffic for that year to calculate the incoming off-net cost under-recovery;
- iii) Step 3: Calculate the mark-up required per minute of originated calls that will terminate off-net: i.e. divide the total under-recovery of common costs by the originating minutes of traffic that will go off-net.
- iv) Step 4: Calculate the off-net call origination rate as if this were charged separately: i.e. add the mark-up calculated in Step 3 to the off-net origination unit cost.
- v) Step 5: Calculate the on-net origination rate as if this were charged separately but constraining the on-net end to end call price to be no higher than before: i.e. calculate the difference between the end-to-end LRIC+ of an on-net call and the LRIC of wholesale call termination.
- vi) Step 6: Now impose the constraint that internal and external wholesale call origination is charged the same: i.e. calculate the unit cost of wholesale call origination as the on-net and off-net origination volume weighted average of the separate origination rates derived in Steps 4 and 5.

A6.204 Figure A6.19 below shows model outputs for steps 3 to 6 when calculating the wholesale call origination rates required to recover the common costs no longer recovered from wholesale call termination in our base case.

Figure A6.19: Common-cost mark-up on origination (ppm 2012/13 prices)⁸⁵⁷

	2013/14	2014/15	2015/16
Step 3: Mark-up on off-net origination	0.263	0.254	0.245
Step 4: Total off-net origination unit cost	0.490	0.473	0.457
Step 5: On-net origination (including on-net common cost)	0.243	0.234	0.225
Step 6: Weighted average wholesale call origination unit	0.415	0.401	0.387

⁸⁵⁶ An alternative way of performing this calculation is to spread the unrecovered costs from incoming off-net termination over all origination (on-net and off-net). This approach would lead to the same outcome as described in our 6 steps. We have performed the calculation as described in the six steps because it is more aligned with the way the model produces outputs.

⁸⁵⁷ Note that on-net origination unit costs are lower than the origination unit costs of call that go off-net.

- A6.205 In response to the points raised by Vodafone, we do not consider it necessary to set charges on a more granular basis reflecting route variations when the competitive distortion that could arise (as a result of attempts to recover the lost contribution to common costs) can be addressed without doing so.
- A6.206 We also do not consider it appropriate to exclude NTS call origination from the origination mark-up. Limiting the wholesale call origination volumes from which the common costs can be recovered will cause an increase in the call origination rate applied to geographic calls.
- A6.207 Moreover, this would be an adjustment to address a temporary effect on NTS calls since after to the unbundling of NGCS tariffs the price for call conveyance (the access charge) will be subject to competition among fixed CPs (including direct access CPs and those serving some or all of their customers using wholesale call origination purchased from BT). Once the NGCS changes are implemented we would clearly want all wholesale call origination priced the same and we do not consider it appropriate to delay the move to the new LRIC rates for FTRs and LRIC+ rates for call origination (including the common cost reallocation) or create additional complexity by creating further caps (or baskets) for call origination. The impact on NTS calls of the changes to wholesale call origination regulation is discussed in Annex 9.
- A6.208 Figure A16 below shows the yearly mark-up on wholesale call origination charges required to recover the common costs no longer recovered from termination in our base case scenario.

Efficient charges for interconnect services

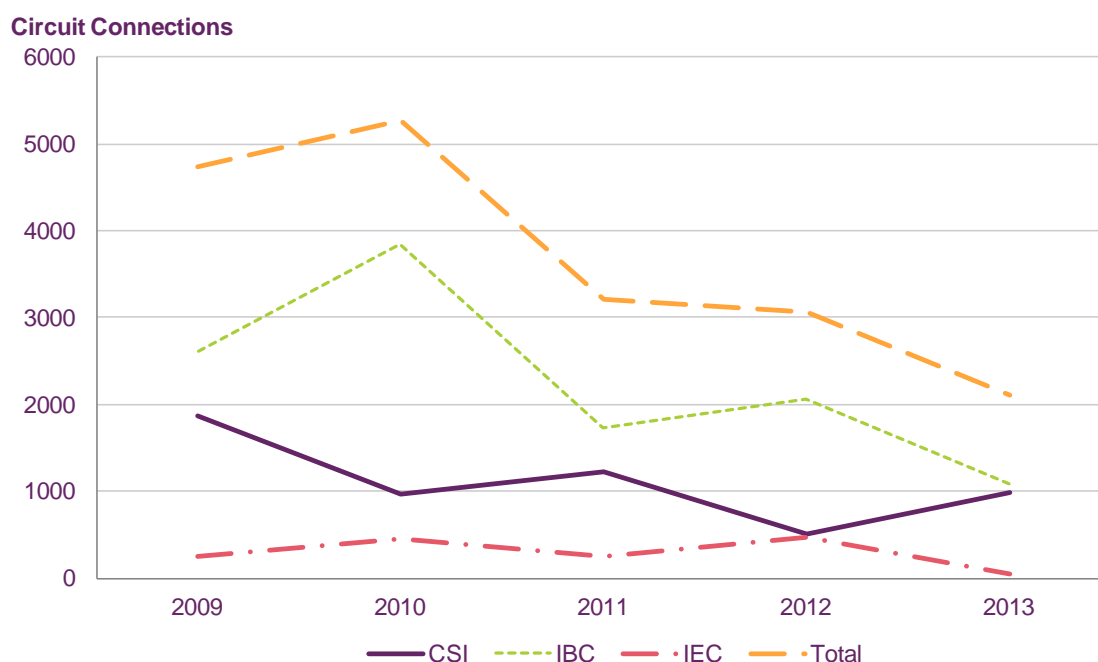
- A6.209 In Section 10 we outline our decision to apply a charge control on the interconnect basket. We explain that we wish to restrict the charges for TDM interconnection services because we recognise that BT has the ability and incentive to price excessively.

February 2013 consultation

- A6.210 In the February 2013 consultation, we identified three options for capping the charges for the interconnect services basket (ISB):
- i) build a cost model for ISB services;
 - ii) allow charges to remain at their current level but indexed each year by RPI (i.e. an RPI+0% cap); or
 - iii) control charges at their current level in nominal terms (i.e. a 0% cap).
- A6.211 In deciding on the appropriate basis for charge controlling interconnect circuits, we examined a number of factors:
- 6.211.1 how volumes of the interconnect services have developed over time;
 - 6.211.2 whether charges for interconnect circuits are significantly different from costs; and
 - 6.211.3 whether the current costs are reflective of the ongoing costs of offering interconnect circuits.

A6.212 Over the course of the current NCC period, we observed a large decline in the number of interconnect circuits. Figures A6.20 and A6.21 are updated versions of the charts that were included in the February 2013 consultation and show the decline in connection volumes and fixed rental volumes over the period. Since 2008/09, the total volume of connections has decreased by 55% and the volume of fixed rentals has fallen by over 39%, although much of the reduction in rentals occurred at the start of the period with total rental volumes subsequently being flatter between 2009/10 and 2012/13.

Figure A6.20: ISB connection volumes⁸⁵⁸



⁸⁵⁸ Customer Site Interconnect (CSI), Intra-Building Circuit (IBC) and Interconnect Extension Circuit (IEC)

Figure A6.21: ISB rental volumes



A6.213 Evidence from BT's (RFS) suggested that the charges for interconnect circuits are now significantly above reported costs (with return on capital employed (ROCE) for interconnect circuits increasing from under 11% in 2008/09 to almost 40% in 2012/13).

A6.214 However, other evidence suggested that these ROCE figures were misleading. We found that a large part of the decline in costs of interconnect circuits had come about because of a reduction in the mean capital employed (MCE) implying that interconnect circuits are becoming fully depreciated. Consistent with our approach in the previous NCC, we would not wish to base charge controls on a heavily depreciated asset base, because these costs will not reflect the costs of a hypothetical ongoing network.

A6.215 We attempted to remove the impact of assets becoming fully depreciated by using the 2009 NCC model (a hypothetical 'ongoing' network) and updating our cost estimates. The analysis using our 2009 NCC model predicted costs falling much more slowly than in BT's RFS (with total interconnect circuit costs being above interconnect circuit revenues).

A6.216 In the February 2013 consultation, we considered that it would not be proportionate to build a cost model to set charges. We considered that BT's current revenue from ISB services was within a reasonable range for a hypothetical ongoing network and so we proposed to hold the average revenue for the basket of interconnect circuits constant in nominal terms (i.e. an RPI-RPI cap). In addition, we proposed to prevent excessive changes in the price of individual services within that basket by imposing sub-caps on each ISB service of RPI+10%.

Responses to the February 2013 consultation

- A6.217 TalkTalk⁸⁵⁹, Virgin Media⁸⁶⁰, FCS⁸⁶¹, Lanonyx⁸⁶² and Lexgreen Services⁸⁶³ agreed with our proposals.
- A6.218 BT⁸⁶⁴ agreed with Ofcom that interconnect circuits costs have declined faster than volumes as a result of assets nearing the end of their accounting lives and becoming fully depreciated.
- A6.219 BT explained that switch and transmission assets are the most important asset classes used in providing interconnect circuits (although the distance related costs will also involve duct and fibre assets). The ratio of NRC to GRC for these assets has declined significantly between 2008/9 and 2011/12. This has also been associated with a decline in depreciation as tranches of assets become near fully depreciated.
- A6.220 BT explained that this shows Ofcom's explanation of the increase in ROCE being attributable to assets becoming fully depreciated is consistent with BT's PSTN assets approaching the end of their accounting lives and becoming fully depreciated.
- A6.221 BT also highlighted two further points about Interconnect Circuits:
- 6.221.1 The reported returns do not take account of the cost sharing arrangements for Customer Sited Interconnect (CSI) circuits whereby the costs of the circuit are shared in line with the volume of traffic in each direction. Adjusting for this would reduce the overall revenue and the rate of return earned in the ISB market.
- 6.221.2 Since the last charge control in 2009 there has been a very significant build-out of LLU to reach nearly all of BT's local switch sites. This means CPs no longer have to use BT infrastructure to reach a local switch but can make alternative arrangements with a CP to link their network to the BT exchange site. This would allow Interconnect Extension Circuits (IEC) and CSI interconnect circuits to be migrated to In-Span Interconnect (ISI). If this were to happen, BT's revenues and returns from the ISB would be very significantly reduced. The existence of competing network infrastructure means that BT is constrained in setting prices for the ISB services.
- A6.222 BT considered that there is no need for Ofcom to impose an RPI-RPI cap and Ofcom's objectives could be met with an RPI-0% cap which would ensure that interconnect circuit prices remain unchanged in real terms.
- A6.223 [X]⁸⁶⁵ fundamentally disagreed with Ofcom's proposed ISB charge control and considered this allowed the perpetuation of TDM technology by allowing BT to get away with historical over recovery despite the presence of *ex-ante* regulation of its costs and to "cash cow" what is essentially a sunk asset.

⁸⁵⁹ TalkTalk response to February 2013 consultation, page 9

⁸⁶⁰ Virgin Media response to February 2013 consultation, page 26

⁸⁶¹ FCS response to February 2013 consultation, page 3

⁸⁶² Lanonyx response to February 2013 consultation, page 6

⁸⁶³ Lexgreen Services response to February 2013 consultation, page 4

⁸⁶⁴ BT response to February 2013 consultation, page 99

⁸⁶⁵ [X] response to February 2013 consultation, page 20

- A6.224 [X] calculated that that this over-recovery may have resulted in it overpaying BT [X] for circuits during the last NCC. It therefore urged Ofcom to assess the response and situation carefully as this is a material and significant issue, likely to result in a regulatory dispute.
- A6.225 [X] argued that a downward glide path would reduce the incentives for BT to invest in next generation technology during this charge control period and would provide the appropriate step-off into the subsequent charge control. It also contended that Ofcom should consider the extent to which, by providing such disincentives to invest in NGN technology, it is perpetuating the need for regulation of TDM products much longer than would otherwise be necessary.
- A6.226 H3G⁸⁶⁶ agreed with Ofcom's proposal to set a separate charge control basket for interconnect circuits and supported the addition of sub-caps (instead of a cost orientation obligation) to control charges for individual products within the interconnect basket. In particular, it argued that using only a charge control basket would allow BT to increase the price of some services in nominal terms and to decrease other prices in order to stay within the price controls.
- A6.227 H3G noted that Ofcom has traditionally used a cost orientation obligation on individual products (based on a DLRIC 'floor' and a DSAC 'ceiling') together with charge controls to prevent BT from abusing this pricing flexibility. However, H3G reiterated its response to Ofcom's "*Review of Cost Orientation and Regulatory Financial Reporting in Telecoms - Call for Inputs*", that cost orientation has not been effective in controlling BT's charges, because it allows too much scope for BT to recover excessive common costs on individual services.
- A6.228 For that reason, H3G agreed with Ofcom that the use of sub-caps was clearly preferable to a cost orientation obligation in this case.
- A6.229 Vodafone⁸⁶⁷ argued that there was a continued need to maintain a cost orientation remedy where the end pricing is still derived from BT's cost base, such as in the case of interconnect-specific services. It did not believe that any form of charge control or protective sub caps were an adequate substitute (for a cost orientation requirement) and urged Ofcom to retain a basis of charges condition on these services. Vodafone argued that:
- 6.229.1 Charge controls, sub-baskets and or sub-caps are not capable of ensuring that all prices remain aligned with cost over time;
 - 6.229.2 Accurate cost information is important for a variety of reasons including setting future prices/charge controls and ensuring individual prices are aligned with cost; and
 - 6.229.3 Ofcom's justification for removing the condition on interconnect specific services was weak. The obligation is not an onerous one, indeed it is a base level safeguard designed to ensure that the pricing does not move out of line with the underlying cost or provision of key SMP services.

⁸⁶⁶ Three response to February 2013 consultation, page 13

⁸⁶⁷ Vodafone response to February 2013 consultation, page 46

Our analysis and conclusions

A6.230 We consider that, given the decline in volumes since 2009 and the current level of charges, it would be disproportionate to build a detailed cost model for ISB services. Therefore, we have decided the appropriate basis for controlling interconnect circuits through examining:

6.230.1 Whether charges for interconnect circuits are significantly different from costs; and

6.230.2 Whether the current costs are reflective of the ongoing costs of offering interconnect circuits.

A6.231 We note that BT agreed with our analysis from the February 2013 consultation that the increase in the reported ROCE for interconnect circuits was the result of assets approaching the end of their accounting lives and becoming near fully depreciated.

A6.232 BT has argued that the returns identified by Ofcom in the February 2013 consultation did not take account of cost sharing arrangements for CSI circuits whereby the costs of the circuit are shared in line with the volume of traffic in each direction (which reduces the overall returns in the ISB market). To clarify, BT is referring to arrangements whereby revenue is shared in line with the direction of traffic which it refers to as 'cost sharing'. Ofcom requested further information from BT in relation to the returns for interconnect services (including the impact of cost sharing arrangements).⁸⁶⁸ Our analysis of the returns on interconnect services based on the evidence gathered is provided below.

Figure A6.22: Comparison of BT's ISB ROCE

	2008/09	2009/10	2010/11	2011/12	2012/13
Reported ROCE in BT's RFS	10.7%	23.9%%	30.7%	44.1%	38.9%
Our estimate of ROCE (including impact of revenue sharing)	[X]%	[X]%	[X]%	[X]%	[X]%
Pre-tax nominal WACC	11.4%	11%	11%	11%	9.9%

A6.233 Our analysis suggests that although returns (including the impact of cost sharing arrangements) are below those reported in BT's RFS they are above the regulatory WACC for interconnect services for the last three years reported. Again, however, the estimated ROCE shown here is associated with assets becoming fully depreciated and higher than those expected if those assets were being replaced on the basis of a hypothetical on-going network.

⁸⁶⁸ Section 135 notice sent on 9 May 2013.

A6.234 In the February 2013 consultation, we attempted to remove the impact of assets becoming fully depreciated by using the 2009 NCC model and updating our cost estimates with the actual interconnect circuit connection and rental volumes. By using the 2009 NCC model, we had a better reflection of the costs of a hypothetical ongoing network. Figure A6.23 below shows this updated analysis to include revenue sharing. The figure compares the total of interconnect circuit costs from BT's RFS, the total revenue from interconnect circuits and the estimate of total interconnect circuit costs from the 2009 NCC model.

Figure A6.23: [X]

A6.235 As can be seen above, the cost analysis from the 2009 NCC model shows costs falling more slowly than in BT's RFS. The 2009 NCC model predicts that total interconnect circuit costs are currently above interconnect circuit revenues, whereas the RFS data shows that revenues are above costs.

A6.236 Although including the revenue sharing lowers the total revenue line, our conclusions from the February 2013 consultation are unchanged. BT's current revenue from ISB services are considered to lie within a reasonable range for a hypothetical ongoing network. Our view is that this analysis points towards keeping the charges for interconnect circuits relatively stable.

A6.237 BT has suggested that the substantial increase in LLU volumes since the last charge control opens up the possibility that operators could migrate CSI and IEC interconnect circuits to ISI with use of third-party infrastructure to backhaul to their own networks thereby acting as a price constraint on CSI and IEC circuits. Given this, BT contends that an RPI-0% cap allowing prices to increase in line with inflation would be appropriate.

A6.238 We do not consider that BT's reported returns on interconnect services (or returns estimated by Ofcom including revenue sharing arrangements) accord with those expected from a set of services that are sufficiently price constrained by third-party infrastructure investment in backhaul. In our view, this does not support a more relaxed cap than the nominal cap we proposed in the February 2013 consultation.

A6.239 [X], on the other hand, was concerned that our proposals perpetuated the choice of TDM technology and allowed BT to over recover costs on what was essentially a sunk cost. It suggested that Ofcom adopt a downward glide path in interconnect service prices.

A6.240 We discuss our choice of technology in Annex 5 of this document including why we have decided to regulate TDM interconnection. In addition, we have performed a simple update of the 2009 NCC model to provide a comparison of BT's returns against those of a hypothetical ongoing network. While we recognise the limitations of updating the 2009 NCC model (given concerns over how accurate AVEs and CVEs may now be), our analysis suggests that BT's current revenues from ISB services lie within a reasonable range for a hypothetical ongoing network and that a tighter charge control than that required by a nominal cap would be inappropriate.

A6.241 Given the large margin over RFS reported costs both before and after adjusting for 'cost sharing' and because there may be a concern over how accurate the CVEs and AVEs in the 2009 NCC model are given the significant volume declines seen since the last NCC was set, we have decided to impose a charge control cap on

ISB services that is fixed in nominal terms (i.e. a 0% annual change in the basket revenues).

Sub-caps on individual services

- A6.242 The more services that are within baskets, the more scope there is for individual prices to be changed significantly (e.g. increased significantly more than the overall cap). While an important part of the rationale for the pricing flexibility within the basket is efficient pricing (including efficient recovery of common costs), the greater the pricing flexibility, the greater the risk that customers of certain services might be disproportionately affected if prices changed very significantly within a charge control year and the competitive conditions for different services may well differ.
- A6.243 Therefore, when constructing a charge control basket, although we wish to give BT enough pricing freedom to respond to changes in market conditions and efficiently recover common costs, we also aim to ensure that this pricing freedom is not used in a way that might harm competition.
- A6.244 In assessing the choice between cost orientation and sub-caps for the ISB basket, we continue to believe that a sub-cap on individual interconnect services provides at least as good protection to customers from the risk of large price increases as a cost orientation obligation. We have observed large variations in the DSAC for certain interconnect circuit charges over the current control period.⁸⁶⁹ These large variations do not appear to be occurring in a predictable manner. Consequently, we believe that sub-caps, pre-specified for the duration of the control, are likely to provide interconnecting CPs with greater regulatory certainty than potentially variable ceilings and floors based on distributed stand alone cost (DSAC) and distributed LRIC (DLRIC)).⁸⁷⁰
- A6.245 In setting these sub-caps we would not want the sub-cap to be tighter than the overall basket cap, since this would undermine the scope to change individual prices. Therefore, the question is by how much more than the cap individual prices should be allowed to change.
- A6.246 In the February 2013 consultation, we proposed an RPI+10% sub-cap on interconnect circuits. However, given that the overall basket cap for interconnect services is a zero controlling percentage (effectively RPI-RPI), we now consider that a more reasonable allowance above this is 10% - i.e. that prices in any given year for any given part of any interconnect tariff cannot change by more than 10% (as opposed to RPI+10%). We believe that this will provide a better safeguard to customers from sudden price shocks on individual services.
- A6.247 We have checked that such a sub-cap would not result in the likelihood of individual charges rising above the projected DSAC for each interconnect service. However, given the uncertainty over any forecast of the DSAC for interconnect services, this analysis was not in itself determinative in our choice of a 10% sub-cap.
- A6.248 Our conclusion is to impose sub-caps on individual ISB services of 10%.

⁸⁶⁹ For example, the DSAC for IEC connections increased by 407% between 2008/09 and 2011/12 before decreasing by 28% during 2012/13. Meanwhile, the DSAC for IBC rentals decreased by 39% between 2008/09 and 2010/11 but thereafter increased by 49% to 2012/13.'

⁸⁷⁰ Notwithstanding the above, although we are not requiring BT to publish DLRIC and DSAC information in its RFS for ISB services, BT will be required to provide such information to Ofcom annually as part of its cost accounting obligations.

Annex 7

CSMG report on NGN modules of NCC model

A7.1 This annex has been published separately.

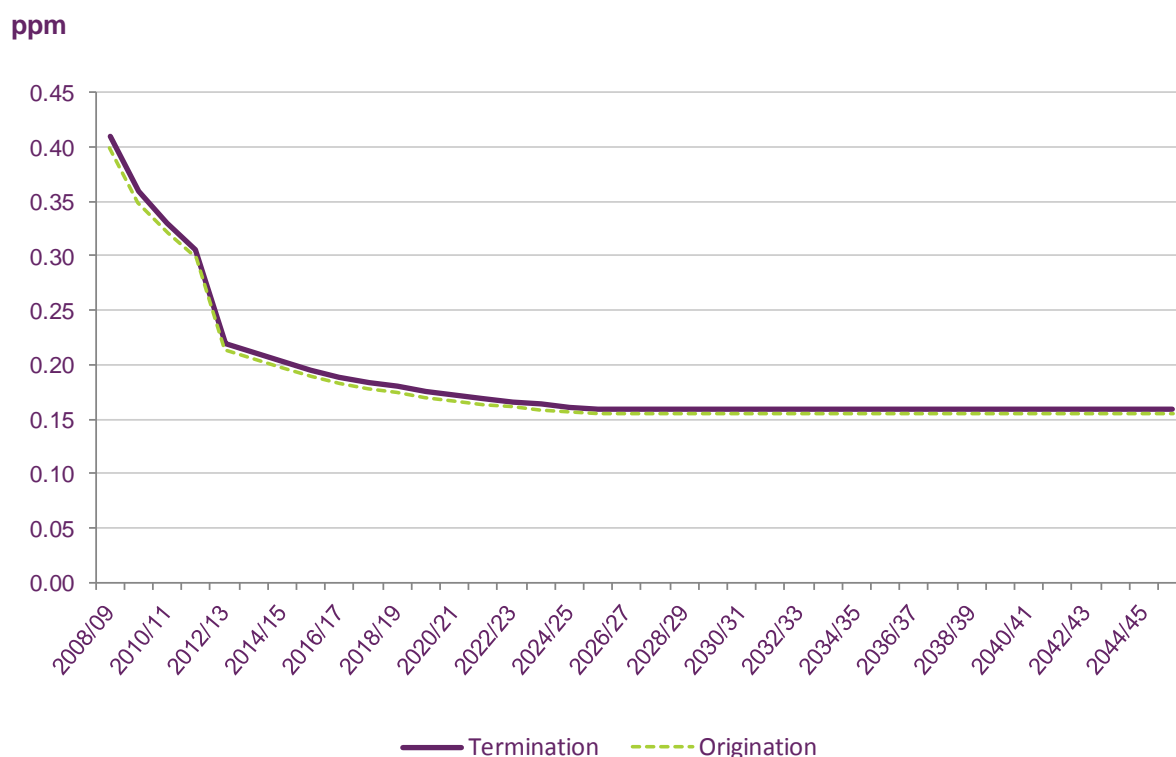
Annex 8

Network cost model outputs and crosschecks

Introduction

- A8.1 We have used the August 2013 NCC model to calculate the unit costs of wholesale call termination using both LRIC+ and LRIC, and LRIC+ for wholesale call origination.⁸⁷¹ The detailed assumptions underlying the model have been discussed in Annex 5, Annex 6 and Annex 7. This annex summarises the results of the model.
- A8.2 Figures A8.1 and A8.2 below show the unadjusted⁸⁷² off-net wholesale call termination and off-net wholesale call origination outputs across the modelling period.

Figure A8.1: Off-net wholesale call origination and off-net wholesale call termination LRIC+ (ppm 2012/13 prices)⁸⁷³

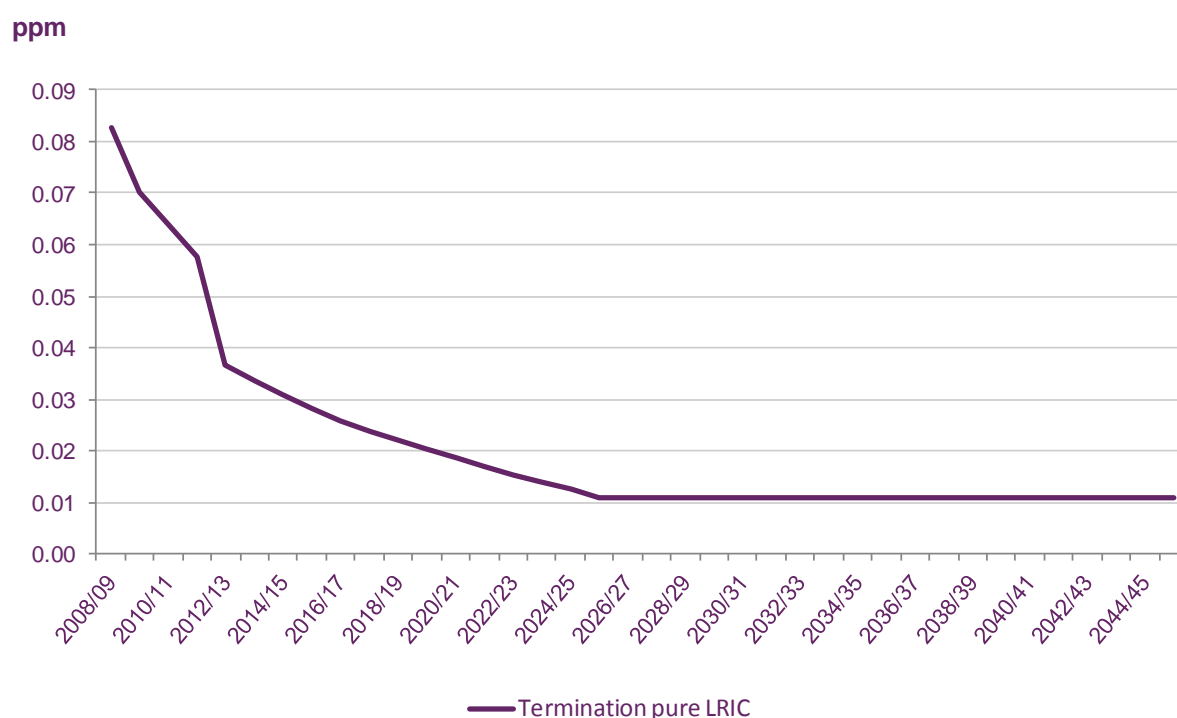


⁸⁷¹ 'Incoming voice' is the terms used to describe wholesale call termination in the model. Incoming voice is used interchangeably with wholesale call termination in this annex.

⁸⁷² Before the adjustment made as part of the cost verification, or as part of the common cost recovery from wholesale call termination services.

⁸⁷³ Figures A8.1 and A8.2 contain outputs from the 2013 NCC model before the mark-up has been added for OA and emergency call handelling services. This mark-up has been performed separately as discussed in Annex 6.

Figure A8.2: Wholesale call termination LRIC (ppm 2012/13 prices)



Model outputs and sensitivities

A8.3 This section deals with the model outputs under the base case scenario, it shows the sensitivity of the model to changes in certain assumptions and it also shows the model outputs under low cost and high cost scenarios in order to illustrate a range of possible unit cost outputs. It also provides a breakdown of the impact that changes since the February 2013 NCC model have had on the unit costs forecasts of wholesale call termination and origination. The remainder of this section is laid out as follows:

- i) We first describe the assumptions used in the base case and present the corresponding results calculated using LRIC+ and LRIC for wholesale call termination and LRIC+ only for wholesale call origination.
- ii) We then show the impact that changes to the February 2013 NCC model have had on the unit costs of wholesale call termination and origination.
- iii) We have also used the model to examine the sensitivity of the unit costs of wholesale call termination under a wide range of assumptions. We have carried this out by conducting sensitivity analyses. We present these sensitivity analyses in two sections, one examining the sensitivity of the results to changes in demand assumptions, and one discussing other assumptions such as technology. After the sensitivity analyses, we present the results of the model under two other scenarios (in addition to the base case), high cost and low cost. These scenarios vary the most significant assumptions, as identified by the sensitivity analyses.

A8.4 The LRIC+ forecasts for wholesale call termination reported in this annex include the mark-up following the historic cost recovery check described in Annex 6. The LRIC+ forecasts for wholesale call origination reported in this annex include the

mark-up described in the historic cost recovery check and the common cost recovery mark-up (each described in Annex 6).

Model results for the base case

A8.5 The base case scenario has the following assumptions:

- i) An operator with 20 points of interconnect;
- ii) 1 voice server node⁸⁷⁴;
- iii) NGN services start to be offered in 2008/09 with full migration lasting 4 years⁸⁷⁵;
- iv) Our medium demand forecast (as described in Annex 6) is used for all line and usage per line assumptions;
- v) Long-term market share for the efficient operator is 33%;
- vi) Wholesale call termination is the weighted average of off-net incoming calls (passing over a single aggregation node), off-net incoming calls (passing across the core) and off-net incoming international calls.
- vii) Wholesale call origination is the weighted average of on-net origination calls (passing over both a single aggregation node and passing across the core), off-net outgoing call (passing over a single aggregation node), off-net outgoing calls (passing across the core) and off-net outgoing calls (to international);
- viii) WACC is set at a real pre-tax rate of 6.9% on a forward looking basis⁸⁷⁶; and
- ix) Costs are in real terms for 2012/13 prices.

Changes from the February 2013 NCC model

A8.6 Figure A8.3 below shows the changes from the values in the February 2013 consultation to the values in this statement. We have grouped these changes in blocks to make it easier to observe the effect of the changes. The rationale for these changes is discussed in detail in Section 9, Annex 6 and Annex 7.

Figure A8.3: Changes from the values in the February 2013 consultation to the values in the statement (2013/14 ppm unit cost in 2012/13 prices)

	Origination LRIC+	Termination LRIC
February 2013 consultation	0.297	0.040
Updates to the network cost module	0.473	0.051
Updates to the economic module	0.400	0.050
Updates to the demand module	0.307	0.055
Updates to the scenario inputs	0.415	0.034

⁸⁷⁴ In order to maintain resilience, the voice server nodes are doubled and so an input of 1 voice server node equates to 2 voice server nodes being built.

⁸⁷⁵ Network build starts in 2007/08 and deployment takes 4 years. There is a 1 year lag before services are run over the network, so traffic is not carried until 2008/09.

⁸⁷⁶ The historic WACC is taken as given and not flexed in the sensitivity analysis.

Sensitivity analysis: demand assumptions

A8.7 We have carried out a number of sensitivity analyses to explore the impact of varying assumption on the model results. This section examines the effect of changes in demand parameters, while the following sections consider the impact to changes in technology and cost inputs. The four demand sensitivities are:

8.7.1 **Voice traffic:** high, medium and low values for all voice traffic inputs;

8.7.2 **Data traffic:** high, medium and low values for the number of broadband lines and peak bandwidth use;

8.7.3 **Market share:** 25%, 33% and 50% market share assumption (other network traffic assumptions are held at the base case scenario level);⁸⁷⁷ and

8.7.4 **All traffic:** high, medium, and low values for voice traffic, data traffic and market share.

A8.8 In the following subsections we consider the impact of changing each of these groups of parameters. In the final section we consider these parameters as part of the low, high and medium scenarios. The different levels of voice and data parameters are discussed in more detail in Annex 6.

Voice use

A8.9 Figures A8.4 and A8.5 below show the impact on the estimated wholesale call termination and wholesale call origination unit cost of changing the forecast use of voice services and the growth in the number of lines. It can be seen that when using LRIC+, higher levels of voice usage and numbers of lines leads to lower unit costs for wholesale call origination. Figure A8.5 shows that when using LRIC for wholesale call termination, unit costs decrease as voice use increase, but there is very little change to the model outputs under different scenarios.

⁸⁷⁷ As discussed in Section 9 and Annex 6, we assume a 33% market share in the base case.

Figure A8.4: Wholesale call origination LRIC+: analysis for different voice use forecasts

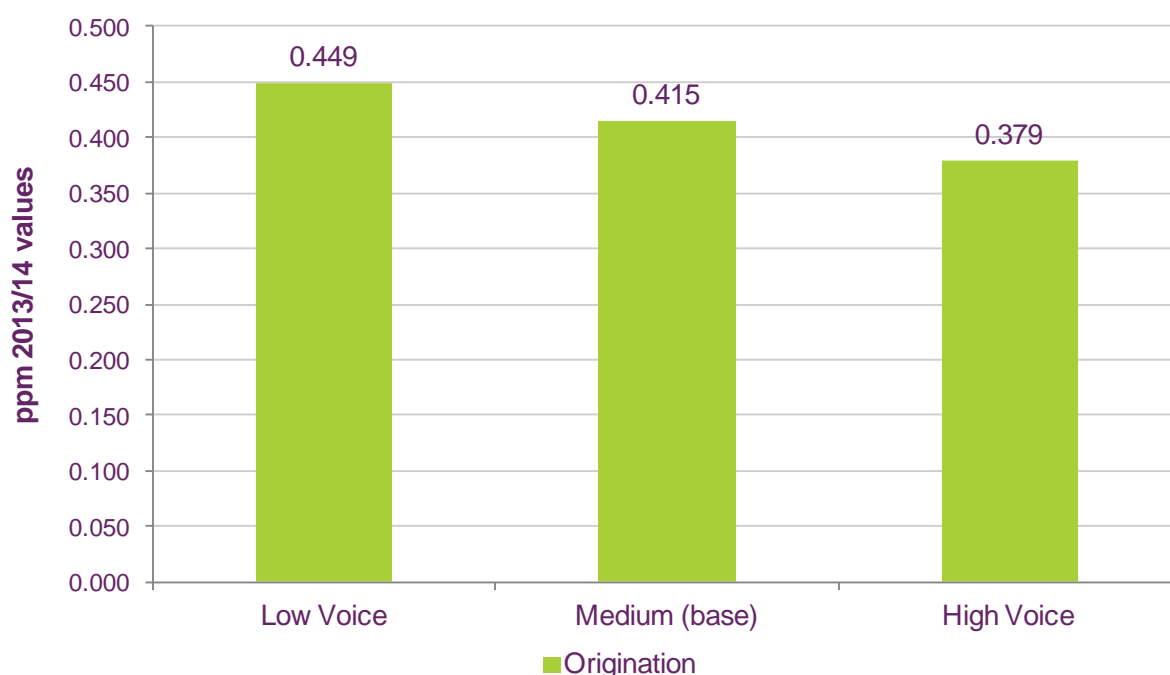
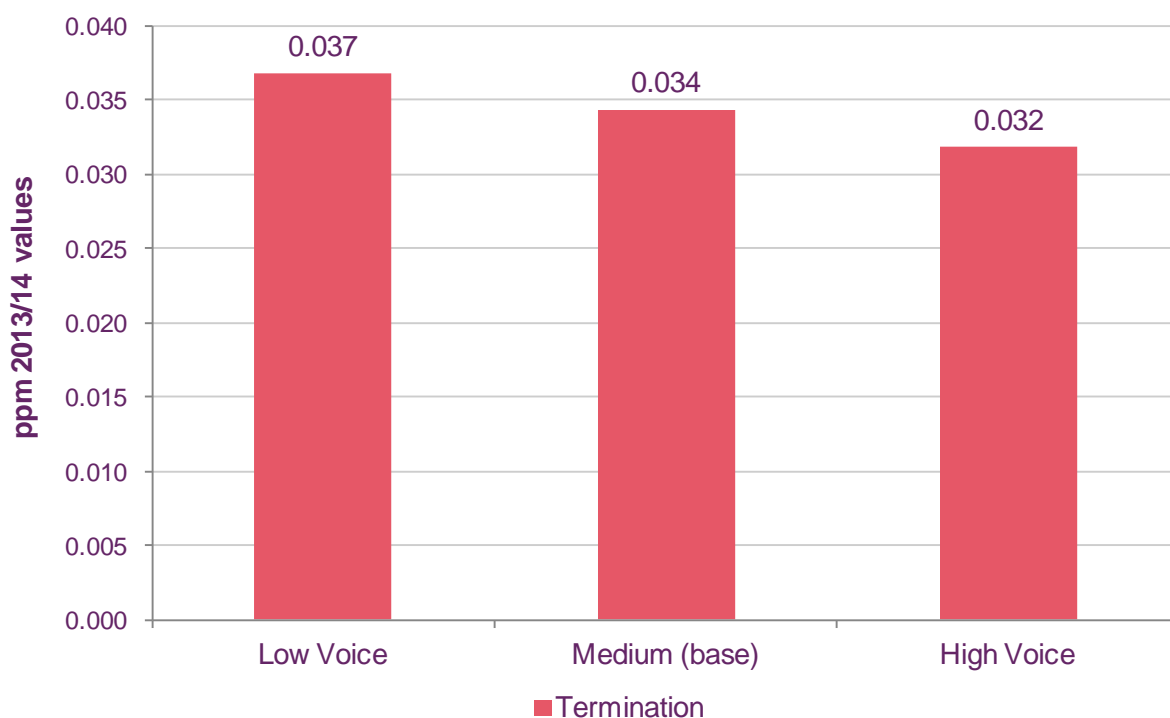


Figure A8.5: Wholesale call termination LRIC: analysis for different voice use forecasts



Data traffic forecasts

A8.10 Figure A8.6 shows the LRIC+ unit costs of wholesale call origination when we change the growth in broadband lines and peak broadband use. As we would expect, under LRIC+ a greater amount of data traffic passing over the network will decrease the unit cost of voice. Figure A8.7 shows the impact on the LRIC of

wholesale call termination when we change the data forecast parameters. The LRIC of wholesale call termination is relatively insensitive to changes in the amount of data traffic, which is again what we would expect for the LRIC of a voice service.⁸⁷⁸

Figure A8.6: Wholesale call origination LRIC+: sensitivity analysis of data use forecasts

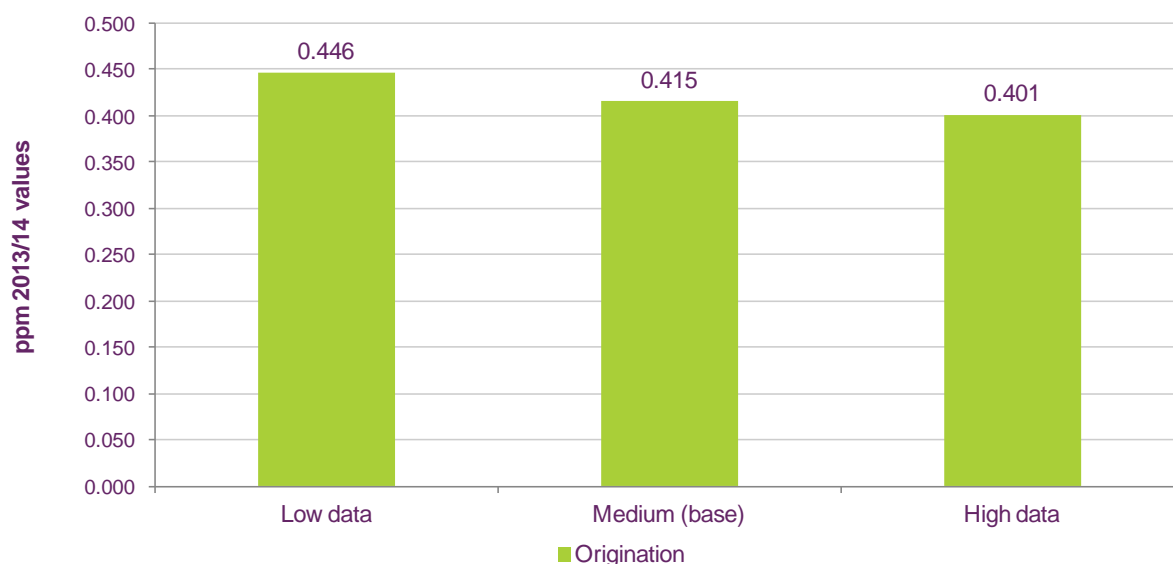
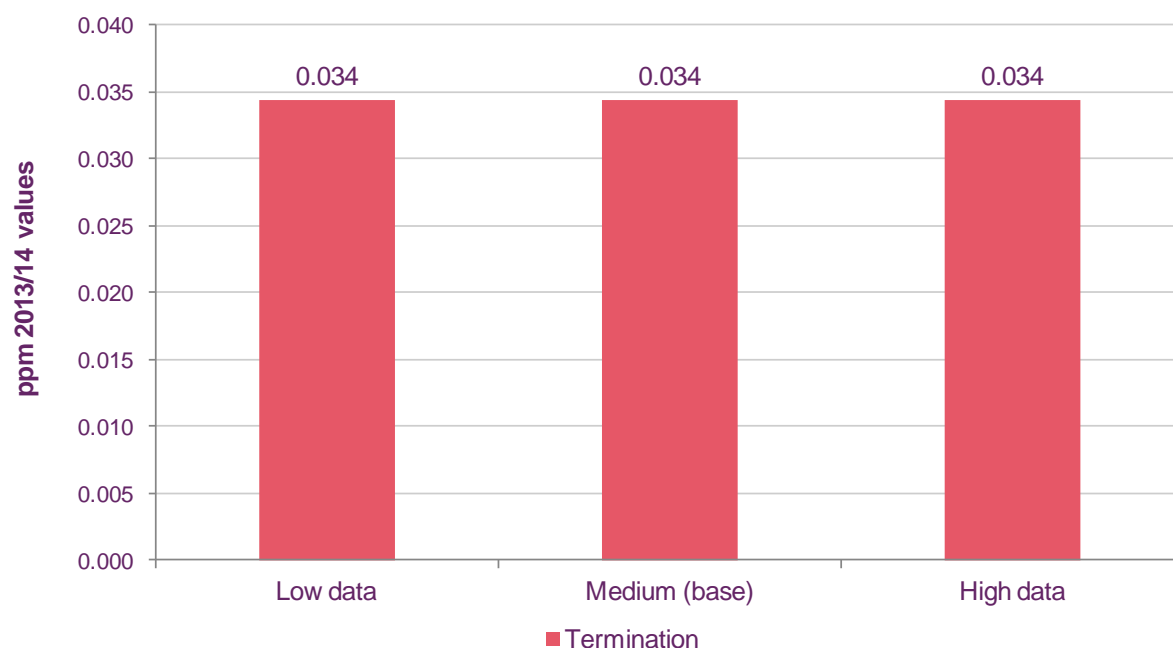


Figure A8.7: Wholesale call termination LRIC: sensitivity of data use forecasts



Market share

A8.11 Figures A8.8 and A8.9 below show the change in model outputs if we use the market share scenarios described in Annex 6. As with other demand related sensitivities, increasing the market share causes the LRIC+ unit costs to fall. Figure

⁸⁷⁸ As noted in Annex 6, some limited sensitivity can sometimes be observed due to the modularity of assets.

A8.9 shows that as market share increases, the LRIC of wholesale call termination first decreases and then increases.⁸⁷⁹

Figure A8.8: Wholesale call origination LRIC+: sensitivity to changes in market shares

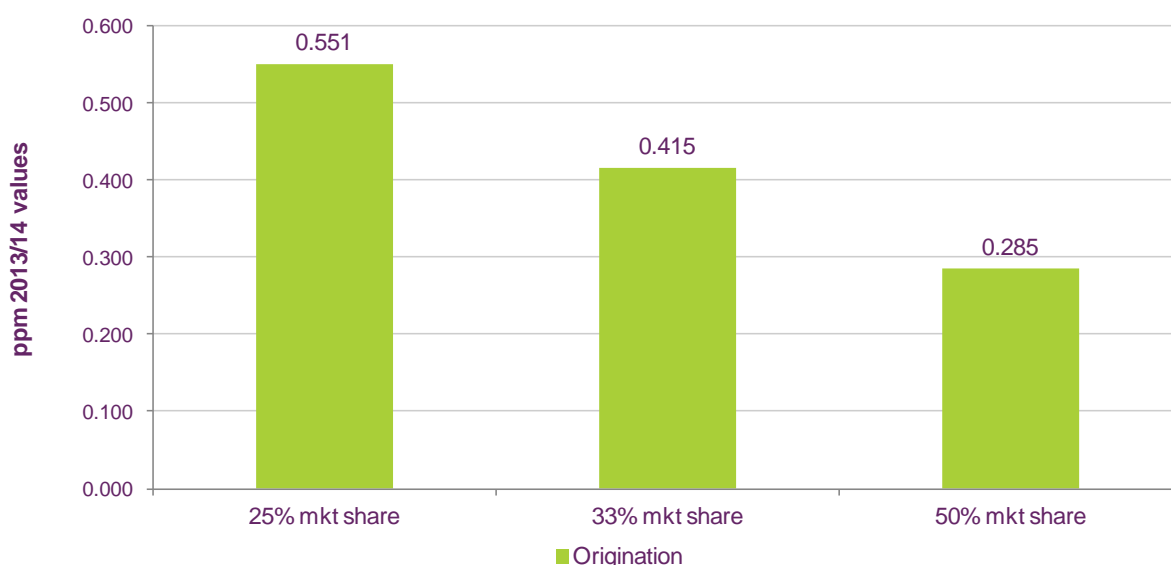
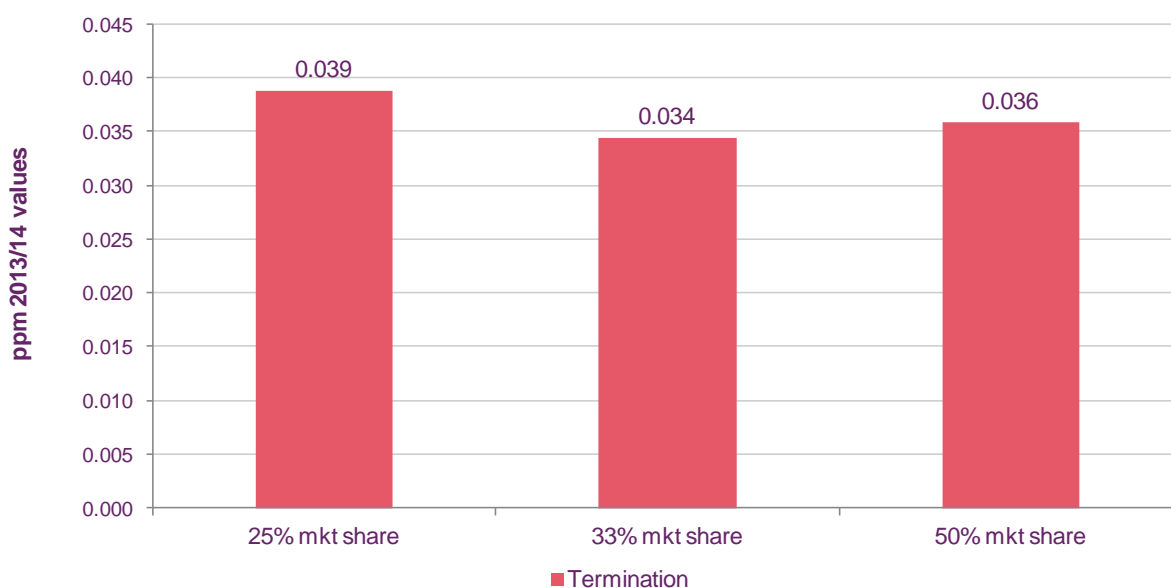


Figure A8.9: Wholesale call termination LRIC: sensitivity to market share



Combination of multiple demand assumption

A8.12 The effect of changing the main demand parameters together (including the market share) is shown in Figure A8.10 for the LRIC+ of wholesale call origination and

⁸⁷⁹ The inverse relationship between market share and LRIC (in moving from 25% to 33%) is due to greater asset utilisation without causing more asset capacity boundaries to be reached. However, moving from 33% to 50% causes unit costs to increase as more assets become incremental to termination but each asset is not being utilised as much as when traffic was at 33%.

Figure A8.11 for the LRIC of wholesale call termination. The LRIC of wholesale call termination decreases as all the demand parameters increase.⁸⁸⁰

Figure A8.10: Wholesale call origination LRIC+: sensitivity to all demand parameters

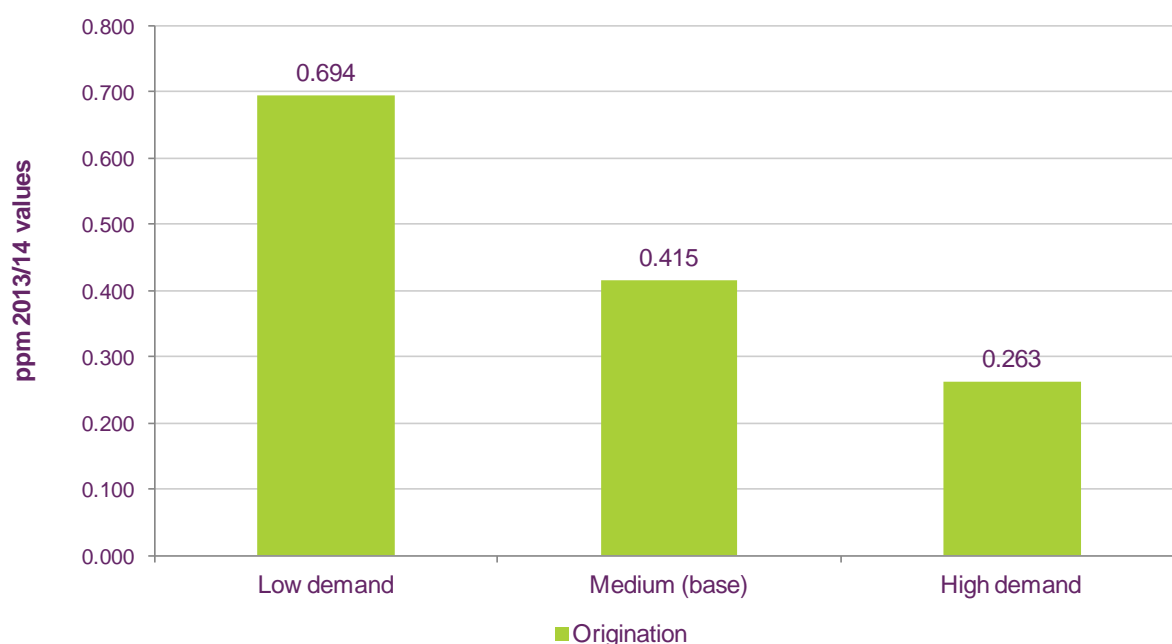
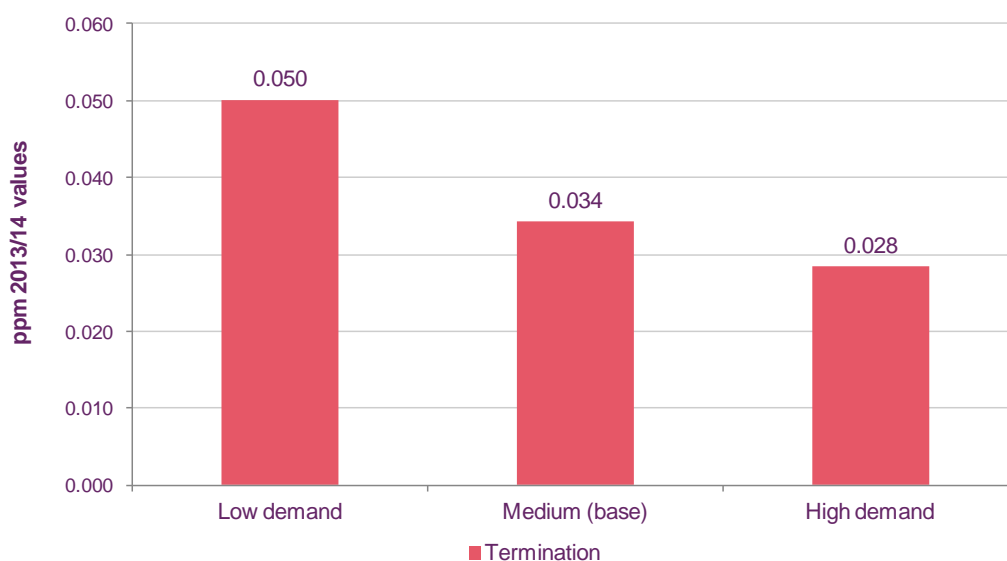


Figure A8.11: Wholesale call termination LRIC: sensitivity to all demand parameters



Sensitivity analysis: network and input cost assumptions

A8.13 In this section we study the impact of a number of non-demand related assumptions on the unit cost outputs of the September 2013 NCC model. These assumptions cover both network build parameters and cost inputs:

- i) Speed of network roll-out;

⁸⁸⁰ The large decline in the cost estimates of both the LRIC+ of wholesale call origination and the LRIC of wholesale call termination is caused by the interaction of multiple demand parameters (i.e. lower voice usage, number of lines and market share).

- ii) Start of network roll-out;
- iii) Number of points of interconnect;
- iv) Asset utilisation;
- v) WACC for the modelled operator; and
- vi) Length of the average busy hour call;

Speed of network deployment

A8.14 As discussed in Annex 6 we assume that deployment of the NGN starts in 2007/08 and lasts for 4 years. We have run sensitivities to examine the impact of a different length of deployment period. The shortest deployment period is 4 years. The longest deployment period is 8 years and we also run a 6 year sensitivity.

A8.15 Figures A8.12 and A8.13 show the impact of changing the deployment period on the LRIC+ outputs and LRIC outputs respectively. Increasing the speed of deployment decreases the LRIC+ for wholesale call origination. Likewise, increasing the speed of roll-out lowers the wholesale call termination LRIC estimate.

Figure A8.12: Wholesale call origination LRIC+: sensitivity to NGN deployment period

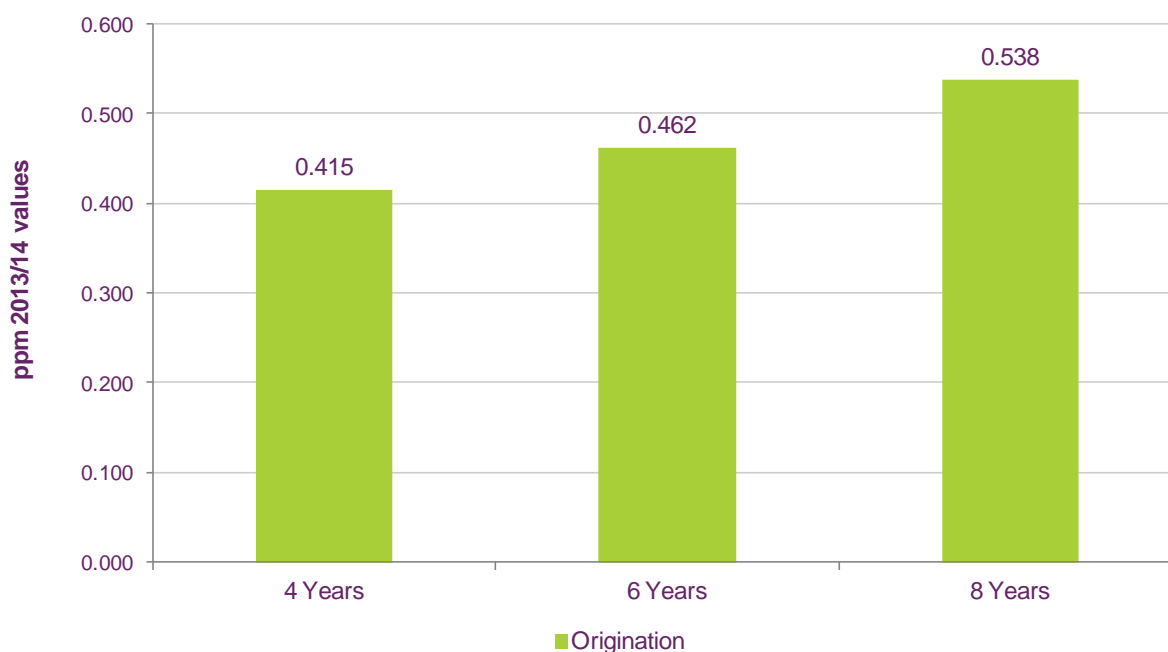
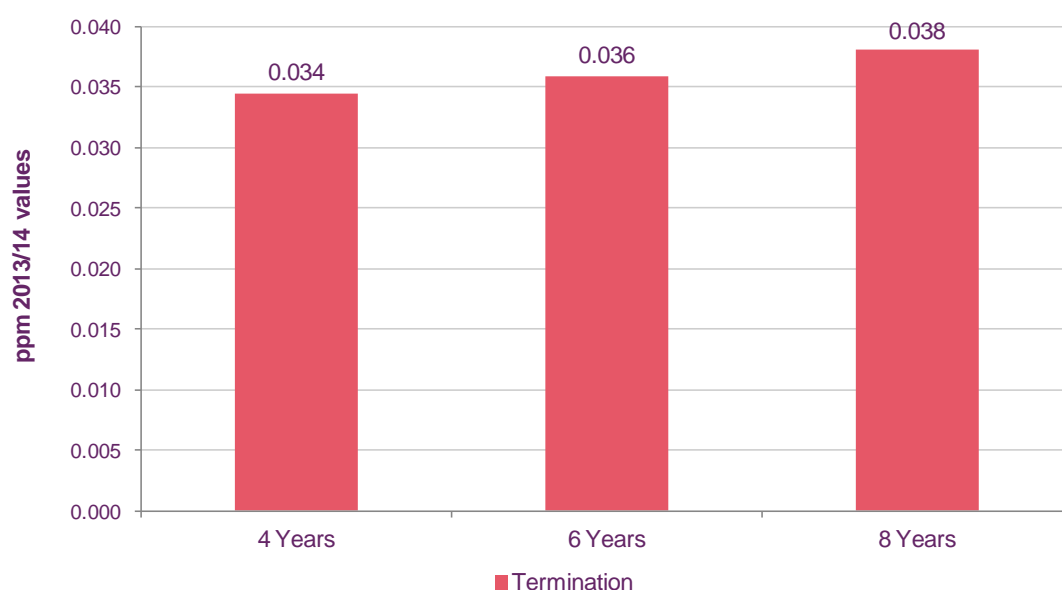


Figure A8.13: Wholesale call termination LRIC: sensitivity to NGN deployment period



Start of network roll-out

A8.16 In Annex 6, we discuss our decision to start network deployment in 2007/08. We have created sensitivities to look at the impact of changing the deployment of the network. The earliest date we test for the start of deployment is 2005/06. The latest date is 2012/13. In Figures A8.14 and A8.15 below, we show the results of these sensitivity analyses. In each case the deployment period is held constant at 4 years.

Figure A8.14: Wholesale call origination LRIC+: sensitivity to a change in the start of deployment

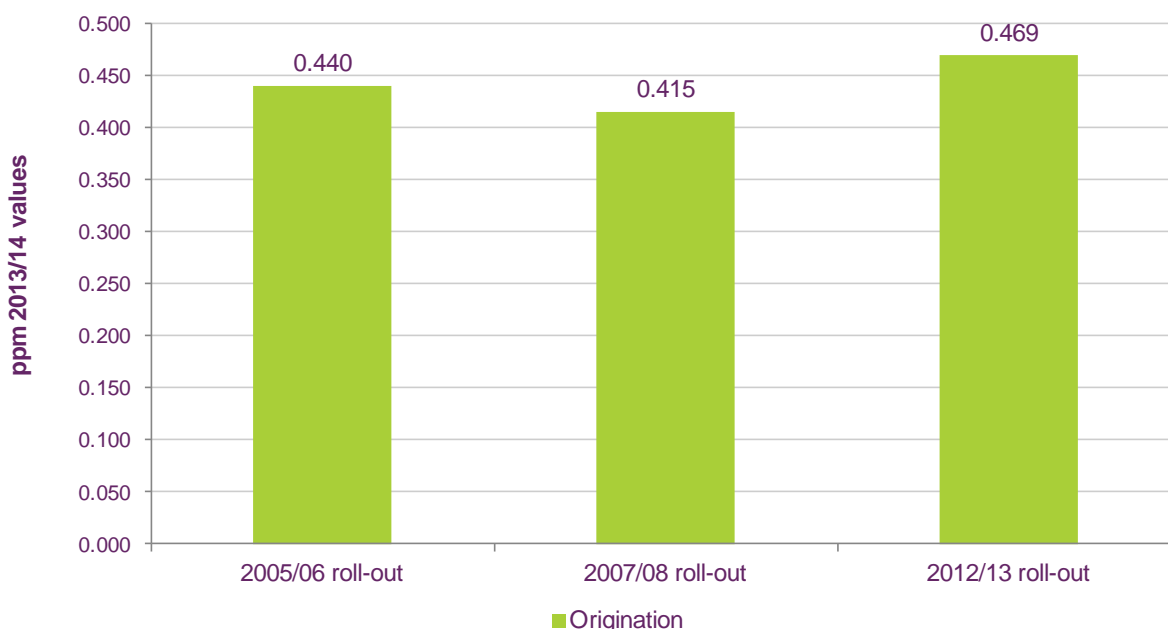
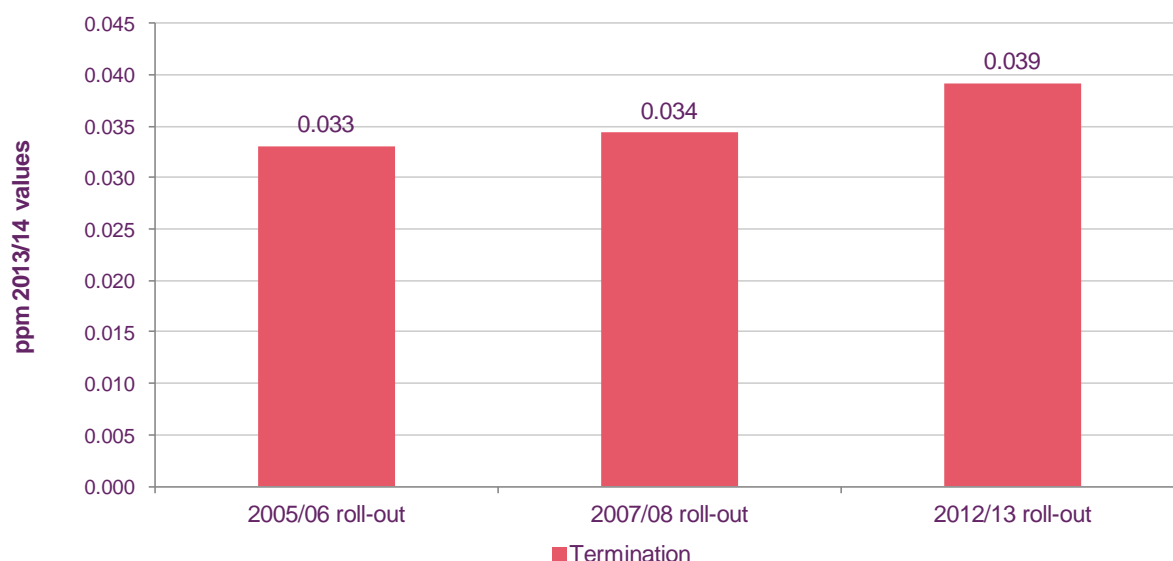


Figure A8.15: Wholesale call termination LRIC: sensitivity to a change in the start of deployment

A8.17 The sensitivity of termination and origination unit cost when we move to a 2012/13 start date is due to the way Original ED recovers the costs of assets over time, and the way the network is deployed. By moving the deployment start date to 2012/13, the first year of cost recovery is 2013/14. Consequently, this is the point at which input costs are highest and the Original ED algorithm seeks to recover relatively more costs (in unit cost terms) in this period – compared to what it would do if the deployment date were earlier. A 2012/13 start date will also mean the network is still being deployed during the charge control period, which will impact on the unit cost traffic volume weightings. The terminal unit cost estimates under the base case scenario and 2012/13 start date scenario are very similar. We see an increase in wholesale call origination unit cost when we bring the roll-out date forward from 2007/08 to 2005/06 because the historic cost recovery mark-up is larger (i.e. the period of time over which costs are above charges is greater).

Number of Points of Interconnect

A8.18 As we explain in Annex 6, we have based our network on 20 points of interconnect (PoI). We have also explored the sensitivity of the model to a higher number of Pols. We have looked at the impact of 30 PoI and 100 PoI. The use of 30 PoI more closely reflects BT's initial plan for 21CN of 27 (+2) Pols. The use of 100 Pols reflects almost all of the aggregation nodes being used as Pols.

A8.19 Figures A8.16 and A8.17 show the impact of changing the number of PoI on LRIC+ and LRIC outputs respectively. Changing the number of Pols has no consistent impact on the LRIC of wholesale call termination. This is to be expected as increasing the number of PoI will increase the amount of interconnection assets required, but decrease the amount of assets required for carrying the call around the network.

Figure A8.16: Wholesale call origination LRIC+: sensitivity to number of Pols

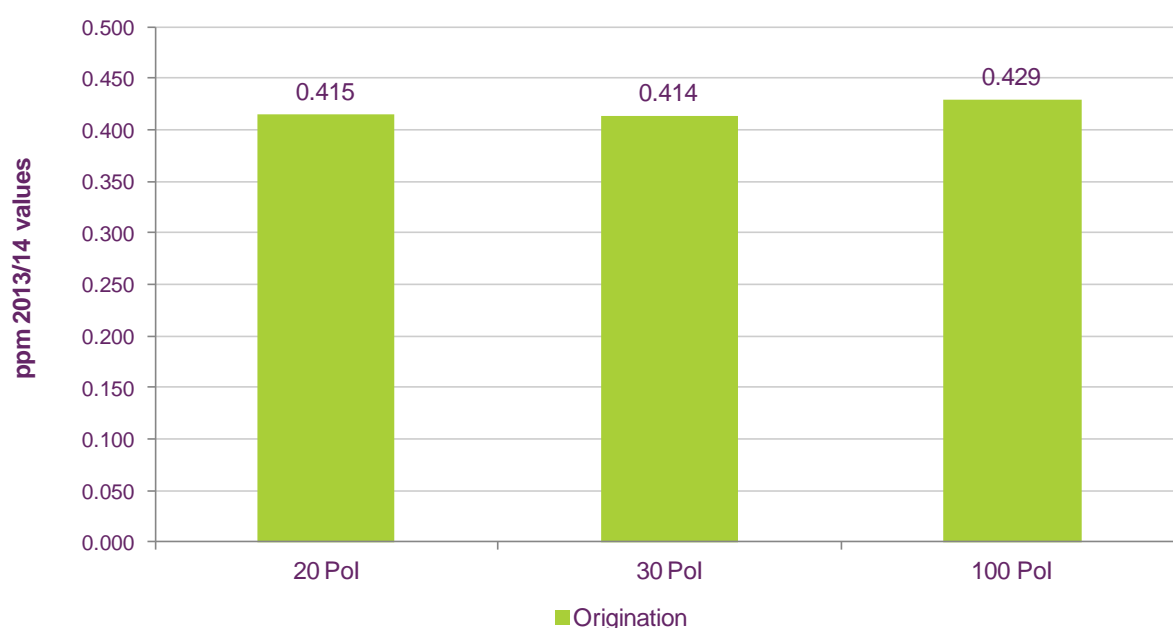
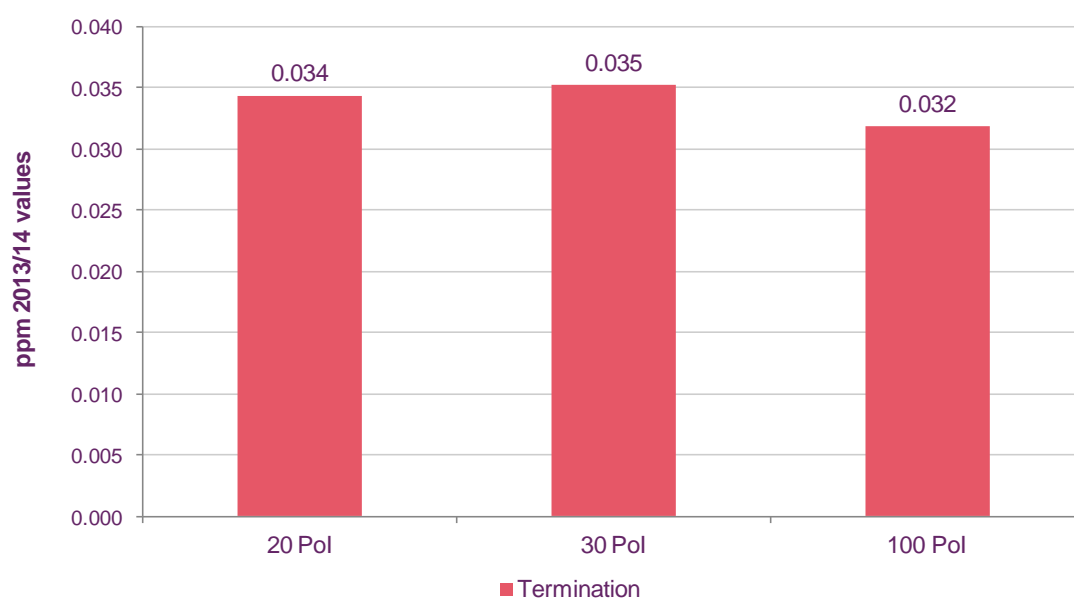


Figure A8.17: Wholesale call termination LRIC: sensitivity to the number of Pols



Asset utilisation

A8.20 As we explain in Annex 6, we assume that the maximum asset utilisation value in the model is 70%. To test the sensitivity of this parameter, we use a low value of 65% and a high value of 75%. Figures A8.18 and A8.19 below show the results from these sensitivity analyses.

Figure A8.18: Wholesale call origination LRIC+: sensitivity to maximum asset utilisation

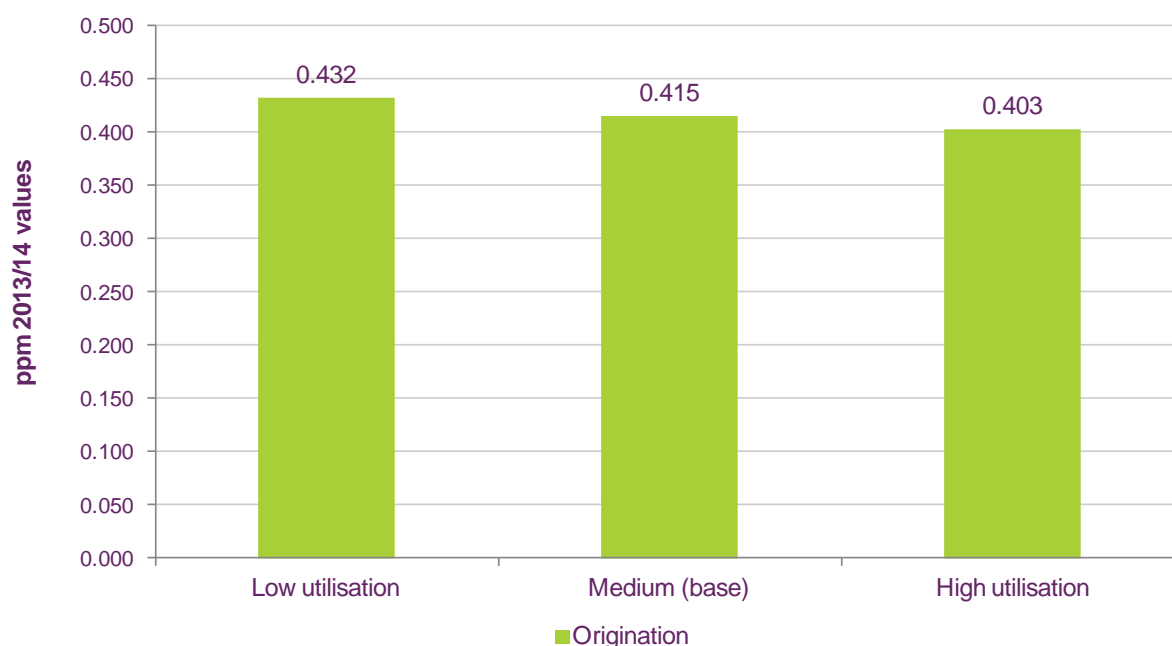
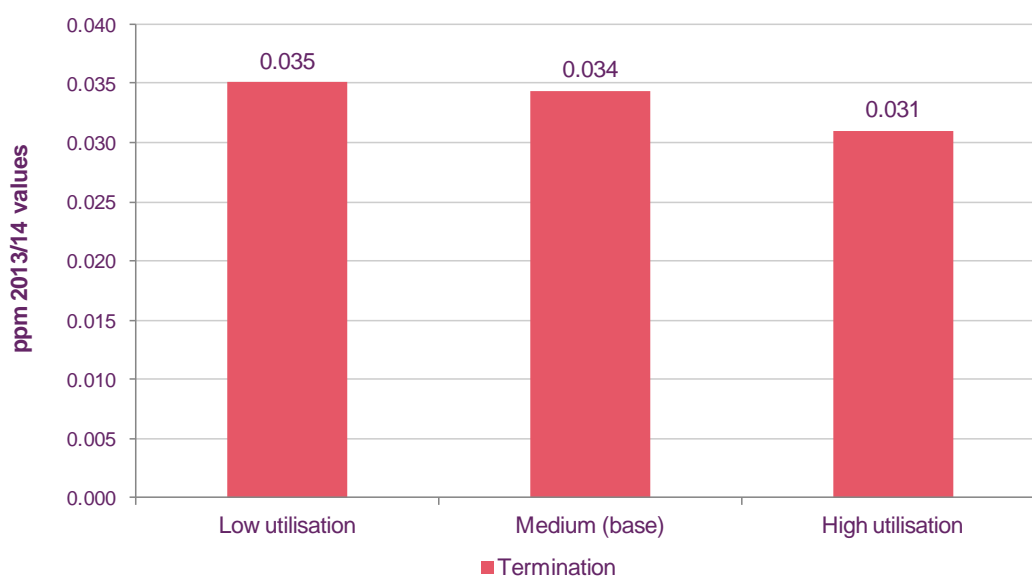


Figure A8.19: Wholesale call termination LRIC: sensitivity to maximum asset utilisation.



A8.21 Both the LRIC+ outputs and the LRIC outputs are relatively insensitive to changes in asset utilisation and in both cases higher utilisation leads to a lower unit cost.

WACC

A8.22 The base case assumes a pre-tax real WACC of 6.9%. We have carried out a sensitivity analysis examining the impact of a higher rate (8%) and a lower rate (6%) for the WACC. As we would expect, increasing the WACC causes a small increase in both the LRIC and LRIC+ outputs.

Figure A8.20: Wholesale call origination LRIC+: sensitivity to changes in WACC

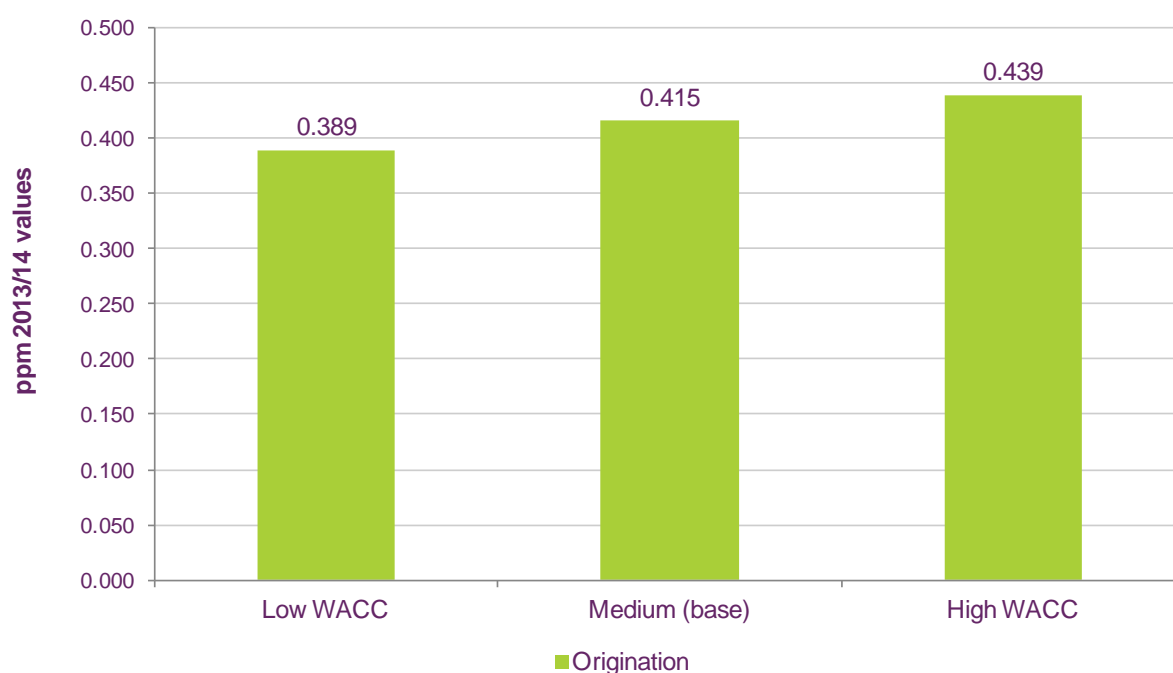
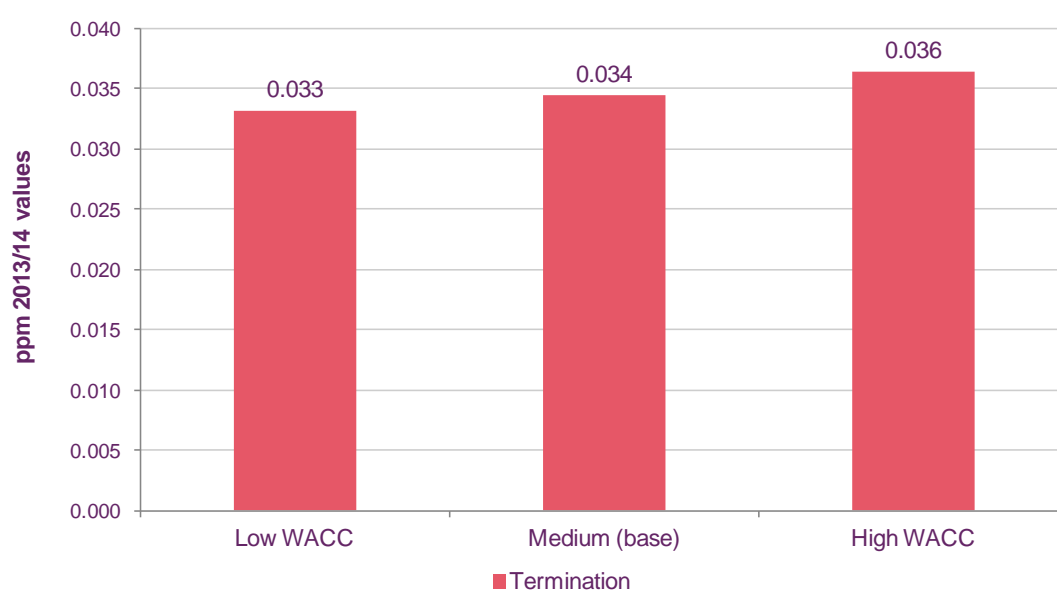


Figure A8.21: Wholesale call termination LRIC: sensitivity to changes in WACC



Base case, high cost and low cost scenarios

A8.23 In order to define a range of possible values for the unit cost of wholesale call origination and wholesale call termination, we have defined high cost and low cost scenarios alongside the base case. These scenarios combine different assumptions that we believe fit together as scenarios. The different sets of assumptions for the three scenarios are summarised below:

Figure A8.22: Summary of assumptions for the three scenarios

	Base Case	High cost scenario	Low cost scenario
Demand	Medium	Low	High
Busy hour call length	2.9	4.0	1.5
WACC	6.9%	8.0%	6.0%
Asset utilisation	0.70	0.65	0.75

A8.24 The resulting unit costs for wholesale call termination using LRIC and wholesale call origination using LRIC+ (including the contribution to common costs no longer recovered from FTRs at LRIC) can be seen in Figures A8.23 and A8.24 below. The wholesale call origination LRIC+ ranges between 0.304ppm and 0.629ppm. The wholesale call termination LRIC ranges between 0.027ppm and 0.065ppm.

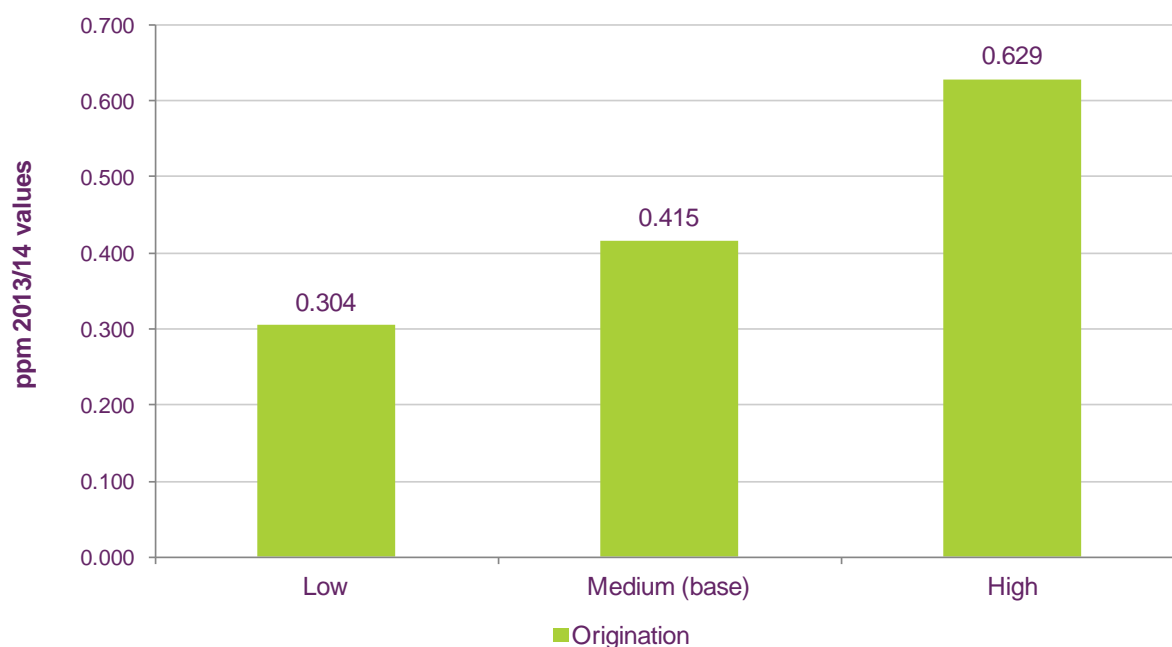
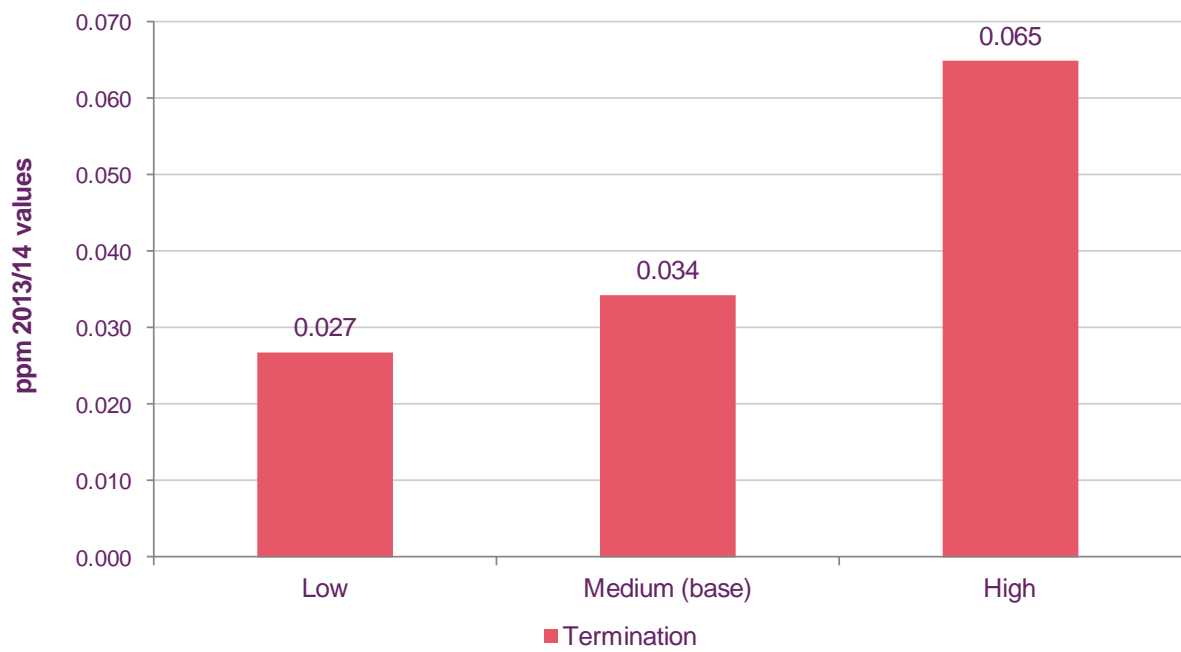
Figure A8.23: Wholesale call origination LRIC+ scenarios

Figure A8.24: Wholesale call termination LRIC scenarios



Annex 9

Effective date for new rates

Introduction

- A9.1 In Section 11 we outlined our decision to set FTRs at LRIC on 1 January 2014.
- A9.2 We also outlined our decision to link wholesale call origination to wholesale call termination so that wholesale call origination rates are adjusted to bring them in line with the new LRIC+ rates (including the additional common cost mark-up) on 1 January 2014.
- A9.3 Our decision in relation to the effective date is a change to the February 2013 consultation where we proposed to set FTRs at LRIC and wholesale call origination rates at LRIC+ on 1 October 2013.
- A9.4 This annex provides further detail on stakeholder responses and our analysis in the light of those responses. It should be read in conjunction with Section 11 where we summarise our reasoning for the effective date chosen.

Proposals in the February 2013 consultation

- A9.5 As summarised in Section 11, in the February 2013 consultation, we proposed to adopt LRIC for FTRs as soon as possible. Therefore the proposed FTRs would have been set at LRIC on the first day of the new charge control period (i.e. 1 October 2013).
- A9.6 For wholesale call origination, we proposed that the transition to the new LRIC+ rates (including the additional common cost mark-up) should be linked to that for wholesale call termination (i.e. 1 October 2013).

Stakeholder responses to the February 2013 consultation and our analysis

- A9.7 Of the 35 respondents to the February 2013 consultation, 6 agreed with our proposals and 16 raised concerns.
- A9.8 The detailed points raised by stakeholders on the proposal to set FTRs at LRIC from 1 October 2013 have been grouped as follows:
- Effects on competition between fixed CPs;
 - Effects on competition between fixed and mobile sectors;
 - Effects on competition in Number Translation Services (NTS);
 - Effects on consumers (specifically through the potential impact of our proposals on retail prices);
 - Effects on incentives to invest;
 - Implementation of the 2009 EC Recommendation;
 - Regulatory precedent and expectations; and

- A summary of other arguments.

A9.9 We also received responses relating to the profile of the proposed call origination rates and more specifically concerns around the ‘saw tooth’ profile whereby the proposed call origination rates initially increase above existing rates before falling over the period of the next NCC. We briefly discuss this issue at the end of this annex.

Stakeholder responses: effect on competition between fixed CPs

- A9.10 Verizon supported our proposal to reduce FTRs to LRIC as soon as possible and considered this consistent with Ofcom’s duties.
- A9.11 [X] recognised the need to comply with the 2009 EC Recommendation and noted developments regarding its enforcement in other Member States. It believed that anything other than the imposition of Ofcom’s proposals, as articulated in the February 2013 consultation, would amount to promoting the interests of specific CPs’ business models (or specific technologies) over others, and over the interests of the consumer (i.e. denying them cheaper calls, which is almost certainly one possible outcome from some of these proposals).
- A9.12 [X] also indicated that it intends to launch new services on the basis of FTRs being reduced to LRIC on 1 October 2013 (or without undue delay).⁸⁸¹ TalkTalk considered that although a significant and immediate reduction in FTRs on 1 October 2013 would likely cause some disruption, the proposed date for setting FTRs at LRIC was the best way forward, considering all the circumstances.⁸⁸²
- A9.13 BT argued that our proposals would have no positive impact on competition between fixed operators. It argued that, whereas high MTRs have helped to subsidise mobile phone handsets and have helped MCPs with a high level of on-net traffic, whilst putting small MCPs and fixed CPs at a commercial disadvantage, such conditions have not been present in the fixed sector. Instead, BT considered that our proposals would disrupt the business models of many fixed CPs.
- A9.14 BT stated that, as a net terminating operator, it would have the ability to recover only the common costs no longer recovered through FTRs, to the extent that this was permitted by us in our regulation of wholesale call origination rates. It also stated that, for the same reasons, any net terminating operator would be unable to recover such costs.
- A9.15 BT suggested that Ofcom should consider a glide path comparable to that for MCT (discussed further below) or 18 months (linking it to the implementation of the new NTS regime) before FTRs are set at LRIC.
- A9.16 Resilient Networks, Lanonyx Telecom, BT, FCS, Simwood eSMS, TSL, [X], ITSPA, KCOM, Lexgreen Services, Virgin Media, [X], Magrathea, Teleappliant argued that our proposals would have a significant impact on their businesses and that therefore they needed more time to adjust. Some of these arguments were based on the belief that the waterbed effect would not operate effectively, so they would be unable to recover lost revenue by increasing other prices.

⁸⁸¹ [X].

⁸⁸² TalkTalk response to February 2013 consultation, Question 11.1

- A9.17 Resilient Networks, FCS⁸⁸³ and ITSPA⁸⁸⁴ raised concerns about the impact of our proposals on smaller CPs, specialist or niche providers (such as those in the ‘enterprise sector’). These CPs’ business models rely mainly on revenue generated through FTRs (and have an asymmetry between inbound and outbound traffic). Therefore, they are unable to recover the loss of termination revenue through call origination services and may not have time to be able to renegotiate contracts or diversify in order to offset losses. Simwood eSMS⁸⁸⁵, TSL⁸⁸⁶, [X]⁸⁸⁷, KCOM⁸⁸⁸, Magrathea⁸⁸⁹, Teleappliant⁸⁹⁰, Lexgreen⁸⁹¹, Lanonyx Telecom⁸⁹², [X]⁸⁹³ and [X]⁸⁹⁴ made similar points.
- A9.18 TSL suggested that our proposals would have a detrimental impact on competition. It argued that the business sector of the telecoms industry, in which it operates, is highly competitive and that smaller CPs would not be able to offset lost revenue for a considerable period of time, due to relatively long minimum contract periods (3-5 years).⁸⁹⁵
- A9.19 Resilient Networks provided further detail and stated that [X].⁸⁹⁶
- A9.20 [X] stated that any arguments brought before Ofcom regarding “time to adjust” for businesses that are reliant on termination revenues are somewhat problematic given it is some years since the 2009 EC Recommendation and some time since the CAT and CC upheld challenges relating to it (and that received widespread media coverage). [X] argued that Ofcom’s role as a regulator is not to provide mitigation for those CPs that do not engage with the regulatory environment in which they operate regarding matters allegedly crucial for their business models, at the cost of consumers or other CPs. Ofcom should not therefore override the existing jurisprudence or regulatory certainty established by the EC. Furthermore, in any event, once Ofcom published its proposals, businesses started to adjust and a reversal of any kind on the substantive points could be as damaging to some as the proposals themselves.
- A9.21 FCS called for a glide path of (at least) three years before FTRs are set at LRIC and ITSPA stated that some of its members suggested a two-step drop (October 2013 and October 2014), which would broadly coincide with the implementation of the new NTS regime. Resilient Networks believed that a three-year glide path before FTRs were set at LRIC could mitigate some of the impacts, allowing time for transition and contractual changes.
- A9.22 Virgin Media conducted its own assessment of the potential impact of our proposals on its business. [X].

⁸⁸³ FCS response to February 2013 consultation, page 5

⁸⁸⁴ ITSPA response to February 2013 consultation, page 3

⁸⁸⁵ Simwood eSMS response to February 2013 consultation, Question 11.1

⁸⁸⁶ TSL response to February 2013 consultation, pages 1-3

⁸⁸⁷ [X] response to February 2013 consultation

⁸⁸⁸ KCOM response to February 2013 consultation, page 5

⁸⁸⁹ Magrathea response to February 2013 consultation, pages 4-5

⁸⁹⁰ Teleappliant response to February 2013 consultation, pages 1-2

⁸⁹¹ Lexgreen Services response to February 2013 consultation, Questions 11.1 and 11.2

⁸⁹² Lanonyx Telecom response to February 2013 consultation, Questions 11.1 and 11.2

⁸⁹³ [X] response to February 2013 consultation, page 1

⁸⁹⁴ [X] response to February 2013 consultation

⁸⁹⁵ TSL response to February 2013 consultation, pages 1-3

⁸⁹⁶ Resilient Networks response to February 2013 consultation, Annex

- A9.23 [X]. Virgin Media highlighted two other factors that would influence the impact of our proposals – transit costs and the termination of ported traffic.
- A9.24 In relation to transit costs, Virgin Media argued that it would be disadvantaged by our proposals due to its network architecture. Virgin Media explained that it is not as interconnected at the BT DLE level as some of its competitors and therefore is more likely to incur transit charges when handing over traffic for termination. This means that as FTRs reduce (and assuming that transit rates remain unchanged) unbundled operators which have high DLE interconnectivity due to local loop regulatory incentives are at a considerable advantage compared to Virgin Media. It also noted that the industry move to NGN meant that the rationale for investing to increase local exchange connectivity was lessened, despite the incentives created by our February 2013 consultation.
- A9.25 In relation to the termination of ported traffic, Virgin Media argued that due to the levels at which we proposed to set FTRs, a CP would be obliged to provide termination on ported traffic at a loss and this would adversely affect competition. It called for a phased introduction of reduced FTRs, allowing industry to assess how it needed to comply with the cost orientation obligation in GC18.⁸⁹⁷
- A9.26 Virgin Media argued that if its primary submission in favour of a three-year glide path for FTRs was not accepted, we should still consider an alternative option: an initial partial reduction in FTRs, followed by a glide path.⁸⁹⁸

Our analysis: competition among fixed CPs

- A9.27 We have explained the competition benefits from setting FTRs at LRIC in Section 8. Competition effects were also an important part of the case for setting MTRs at LRIC in the 2011 MCT Statement, as set out in the 2012 CC Determination.⁸⁹⁹
- A9.28 We recognise that depending on the balance of inbound and outbound traffic some CPs will gain from our proposals, while others will be net losers.
- A9.29 We have received a number of responses from CPs which have business models that primarily focus on providing call termination services (without having a corresponding volume of outbound traffic). Some of these CPs have actual costs of termination that are below the current regulated rates, and use the difference between their actual costs and the regulated charges as a source of revenue to fund other services, and make a profit. We recognise that our decision to set FTRs at LRIC will remove this source of revenue for such CPs and they are likely to need to adjust their business models.
- A9.30 However, we are also aware that setting FTRs at LRIC will benefit other CPs (both fixed CPs and mobile CPs) either immediately (given their balance of inbound and outbound traffic) or will open up future commercial opportunities. We have been informed by two CPs - [X]⁹⁰⁰ and [X]⁹⁰¹ - of their intention to launch new services in response to the February 2013 proposals to set FTRs at LRIC from 1 October 2013.

⁸⁹⁷ Virgin Media response to February 2013 consultation, pages 8-10 and Annex 2

⁸⁹⁸ Virgin Media response to February 2013 consultation, pages 8-9 and Annex 1

⁸⁹⁹ 2012 CC Determination, paragraphs 2.62-2.524 and 2.927-2.939.

⁹⁰⁰ [X]

⁹⁰¹ [X]

- A9.31 Virgin Media was concerned that it would face a greater impact than its competitors from our proposals to set FTRs at LRIC given its network infrastructure and its higher propensity to incur transit charges. However, we do not believe that Virgin Media's concern detracts from the competitive benefits that we have identified in setting FTRs at LRIC. Specifically, lower FTRs reduce the outpayments to competing CPs when handing over traffic for termination to the CP in question. While a reduction in FTRs means that the per minute outpayment for transit/conveyance becomes a higher proportion of the per minute outpayment than before, those CPs which face lower per minute transit/conveyance charges have been able to achieve this only by incurring upfront investment costs in building out to the terminating nodes of other CPs (particularly BT).
- A9.32 We recognise that in the short term some CPs will be disadvantaged from FTRs being set at LRIC given they terminate more traffic than they originate. Furthermore, such CPs may also suffer in the longer term unless they adjust their business models to accommodate FTRs being set at LRIC. However, this does not alter the competitive benefits that we have identified in setting FTRs at LRIC.
- A9.33 We acknowledge the arguments made by some CPs about the disruption caused to their businesses and the resulting need to adjust business models (beginning with re-negotiating contracts with customers). However, given the benefits of setting FTRs at LRIC, we do not believe that it would be appropriate to delay the effective date of setting FTRs at LRIC to allow all customer contracts to run their course. Furthermore, we would anticipate that contracts would allow for some variation due to regulatory changes.

Stakeholder responses: effects on competition between fixed and mobile sectors

- A9.34 Vodafone⁹⁰², H3G⁹⁰³ and EE⁹⁰⁴ supported our proposals, arguing that FTRs should be reduced to LRIC as soon as possible in order to restore a consistent approach to regulating MTRs and FTRs. They pointed out that the deadline for implementing the 2009 EC Recommendation had already passed and argued that further delays would not be appropriate. Vodafone and EE also highlighted the scale of the potential reduction in fixed termination revenues due to our proposals and compared this to the scale of the reduction in mobile termination revenues when MTRs were reduced to LRIC. They suggested that this was a relevant factor when considering how quickly our proposals could be implemented.
- A9.35 Vodafone also outlined other ways in which it believed the situation differs with respect to mobile and fixed termination and which supported the argument for reducing FTRs as soon as possible.⁹⁰⁵
- While a glide path was applied for the mobile sector, in that instance there was time to allow for a glide path and still be compliant with the 2009 EC Recommendation, whereas this is not the case with regard to fixed termination.
 - When MTRs were reduced, stakeholders had not had time to digest the 2009 EC Recommendation, whereas three years have now elapsed.

⁹⁰² Vodafone response to February 2013 consultation, pages 48-49

⁹⁰³ H3G response to February 2013 consultation, page 13

⁹⁰⁴ EE response to February 2013 consultation, pages 13-14

⁹⁰⁵ Vodafone response to February 2013 consultation, pages 48-49

- A9.36 EE referred to the arguments BT had made for MTRs to be cut to LRIC as soon as possible. EE believed that the same logic applied to FTRs and that BT would have been aware how the 2009 EC Recommendation would apply to FTRs when it made these arguments.⁹⁰⁶
- A9.37 BT did not believe that our proposals would have any positive impact on competition between fixed and mobile operators. It believed that, due to traffic imbalances between the fixed and mobile sectors, our proposals would mean that losses in termination revenue would require a greater than proportionate increase in the origination charges to offset the loss.
- A9.38 BT argued that MCPs benefited from a glide path (two years and one day) since they received higher payments from fixed operators while MTRs were above LRIC – it estimated this to be of the order of £300m from April 2011 to April 2013. It considered it inequitable that fixed operators should not be able to benefit in a similar way through the implementation of a glide path – it estimated the benefit would be around £100m over the same elapsed period of time. Moreover, it argued that the absence of a glide path for FTRs imposed a greater challenge on fixed operators to improve their efficiency over time than that faced by the MCPs, despite it being easy for MCPs to recover costs at the retail level.
- A9.39 BT believed that a one-off reduction to FTRs would put fixed CPs at a disadvantage compared to mobile CPs and that there would be no material distortions to hinder MCPs if we were to adopt a glide path.⁹⁰⁷
- A9.40 FCS⁹⁰⁸, Colt⁹⁰⁹ and [X]⁹¹⁰ compared our proposed effective date with the glide path adopted to reduce MTRs to LRIC levels and argued that we should allow a similar period of time (two years and a day) to reduce FTRs to the same cost standard.
- A9.41 Magrathea⁹¹¹, Teleappliant⁹¹² and Resilient Networks⁹¹³ made similar arguments, referring to the length of the glide path used in regulating MTRs. They also suggested that the potential consumer harm from current FTRs was not as pronounced as the harm from high MTRs in the mobile sector, so the case for a rapid reduction in charges was less strong in the case of FTRs. They also suggested that any benefits would be offset by the harm and disruption caused by two changes in regulation (our proposals and the proposals for the new NTS regime).
- A9.42 Virgin Media argued that we had placed too much weight on the analysis we performed for the mobile market and were wrong to read across this type of analysis to the fixed market, which it believes is significantly different. It argued that we inferred an excessive level of support from the CC's judgment approving LRIC rates for the mobile market. It noted that the CC, nonetheless, still approved a glide path in this case, rather than a one-off adjustment.⁹¹⁴

⁹⁰⁶ EE response to February 2013 consultation, pages 13-14

⁹⁰⁷ BT response to February 2013 consultation, paragraphs 11.14-11.27

⁹⁰⁸ FCS response to February 2013 consultation, page 5

⁹⁰⁹ Colt response to February 2013 consultation, Section 3

⁹¹⁰ [X] response to February 2013 consultation

⁹¹¹ Magrathea, response to February 2013 consultation, pages 4-5

⁹¹² Teleappliant response to February 2013 consultation, pages 1-2

⁹¹³ Resilient Networks response to February 2013 consultation, page 4

⁹¹⁴ Virgin Media response to February 2013 consultation, page 8

- A9.43 BT argued that, whereas call termination is a two-way access service in mobile termination markets, this is not always the case for fixed termination. BT argued that there are a variety of business models in the fixed sector, with some operators (such as CPS operators) never providing call termination and others (such as NTS operators) specialising in providing termination. Therefore, BT argued that it was incorrect for us to assume that there would be alternative avenues for cost recovery.
- A9.44 BT also referred to our claim that, by exposing “common infrastructure across termination and other markets” to competition, it was “possible to rely more on competition to drive dynamic efficiency (rather than rely on price cap regulation and glide paths)”. BT disputed this assertion, arguing that mobile and fixed infrastructures differ markedly and that there was not a single common infrastructure in the case of the fixed sector that could be “exposed to competition”.
- A9.45 BT also argued that we were wrong to suggest that the way in which termination is regulated would have little effect on incentives for cost-reducing innovation. In particular, BT believed that such arguments apply differently to the mobile and fixed sectors, since retail prices can be adjusted in the mobile sector through the waterbed effect, whereas all of BT’s relevant wholesale services are regulated, so there can only be a change in these charges (and therefore, retail cost inputs) to the extent that this is permitted by regulation.
- A9.46 Therefore, BT believed that we were wrong to favour allocative efficiency arguments for imposing a rapid adjustment.⁹¹⁵
- A9.47 DotEcon (on behalf of BT) pointed to differences between the mobile and fixed sectors that it suggested were relevant when assessing the costs of a rapid adjustment to regulated charges. It argued that, in the case of MTRs, by far the most important customers of wholesale termination are other MCPs and fixed CPs, whereas in the case of FTRs there are more diverse downstream users, including providers of NTS services.⁹¹⁶
- A9.48 EE noted that MCPs had in the past been given shorter implementation periods than we had proposed in our consultation. It did not believe that there were any circumstances which warranted a different approach for the fixed sector.⁹¹⁷

Our analysis: competition between the fixed and mobile sectors

- A9.49 Our analysis suggests that MCPs will benefit from FTRs being reduced by around £57m per year.⁹¹⁸ To put this expenditure saving in context, this would be equal to approximately 10% of the revenue generated by MCPs in relation to mobile to fixed calls.⁹¹⁹ Therefore, there is a clear benefit to MCPs in regulating fixed and mobile termination according to the same cost standard.

⁹¹⁵ BT response to February 2013 consultation, paragraphs 11.5-11.11

⁹¹⁶ BT response to February 2013 consultation, ‘Response to Ofcom critique of the DotEcon submission’, pages 95-96

⁹¹⁷ EE response to February 2013 consultation, Question 11.2

⁹¹⁸ This is the estimated reduction in payments for fixed termination resulting from a reduction in the FTR from 0.219ppm to 0.034ppm. It assumes that volumes of calls from mobiles to fixed geographic numbers are unchanged at 31bn minutes (see footnote 475 accompanying paragraph 8.31).

⁹¹⁹ Ofcom quarterly data, Q4 2012, Mobile telecoms tables, Table 1, Mobile to UK fixed calls revenue of approximately £555m

- A9.50 We are mindful that MTRs have been set at LRIC since 1 April 2013. Therefore, fixed CPs have already benefited from MTRs being reduced to LRIC and we believe that restoring regulatory consistency between the mobile and fixed sectors as soon as possible is important.
- A9.51 Some stakeholders have made comparisons with the glide path adopted for MTRs (two years and a day) and have argued that it would be consistent to delay setting FTRs at LRIC for a similar period. However, we do not consider that delaying setting FTRs at LRIC would ensure consistency between the mobile and fixed sectors since this would prolong the different regulatory cost standard that is applied to FTRs and MTRs. We consider that restoring a consistent regulatory treatment for FTRs and MTRs in relation to the cost standard used is of greater importance. We consider that restoring a consistent regulatory treatment for FTRs and MTRs will be beneficial to competition between the fixed and mobile sectors. As such we reject the view that setting FTRs at LRIC should be delayed to maintain the same length of glide path as that adopted for MTRs.
- A9.52 We do not accept Virgin Media's claim that we have placed too much weight on the analysis carried out in the mobile market and that we were wrong to carry this over to the fixed market. Our approach has been to identify the competitive benefits of setting FTRs at LRIC and then consider whether there are adverse consequences from moving to this point without delay. We recognise that the CC set a period of two years and a day into the control period for MTRs to be reduced to LRIC but do not consider that this provides evidence supporting the imposition of a similar approach for FTRs.
- A9.53 BT has suggested that our proposal to set FTRs at LRIC from 1 October 2013 would impose a greater challenge on fixed CPs to improve their efficiency compared to MCPs in the case of MTRs being set at LRIC. It is not clear from BT's evidence that efficiency savings are more difficult to achieve in the fixed sector than in the mobile sector. However, even if we were to accept this, we consider that ensuring consistency between the mobile sector and fixed sectors in relation to the cost standard used for setting call termination rates is of greater importance.
- A9.54 Some other CPs argued that the harm from the current level of FTRs is not as great as that arising from the level of MTRs before the reduction to LRIC and suggested that this meant that the case for rapid adjustment was weaker. We agree that, in absolute terms, FTRs are not so far out of line with LRIC as MTRs were at the time of the 2011 MCT Statement. However, they are of a similar difference in percentage terms. Due to the large volumes of fixed call termination⁹²⁰, the case for applying a consistent regulatory treatment should not be underestimated. Therefore we do not see this as a reason for further delaying the reduction in FTRs.
- A9.55 As explained in the February 2013 consultation, the levels of the FTRs and MTRs may differ, but this is explained by the different cost functions underlying mobile and fixed-line communications. In particular, the provision of mobile call termination causes additional costs to be incurred in the radio access network (RAN) as well as the core network. In fixed networks, the provision of wholesale call termination drives additional costs in the core network only (not in the access network where costs are subscriber, i.e. access line, driven).

⁹²⁰ For instance, there were 68.9bn minutes of terminated traffic on UK geographic numbers in 2012. Ofcom, *Communications Market Report*, 2013 Figure 5.29, p336.

- A9.56 BT and DotEcon highlighted differences in the structure and nature of competition between the fixed and mobile sectors and suggested these were relevant when assessing the costs of rapid adjustment to charges. We agree that termination may not be a universally two-way access service, due to the presence of certain CPs that never provide call termination and others that specialise in providing termination. This is a factor that would influence the scale of the impact of our regulation on certain CPs and is something we have considered in this annex. However, we consider this as an exception that we should take into account, rather than something that fundamentally alters our analysis of fixed call termination.
- A9.57 We disagree with BT's argument that there was not a "common infrastructure" in fixed voice telephony that could be exposed to competition. We consider that the physical infrastructure of call termination overlaps significantly with that for call origination, as it does for MCPs.⁹²¹ We recognise that the wholesale call origination side is not competitive (unlike in the mobile sector) and is subject to *ex-ante* regulation. However, by increasing the cap on wholesale call origination rates to allow for the common costs that will no longer be recovered through FTRs being set at LRIC, direct access CPs can choose how they recover the common costs no longer recovered through call termination at the retail level without facing a competitive distortion with respect to CPs using CPS/IA and WLR.

Stakeholder responses: effects on competition in the NTS segment

- A9.58 In the February 2013 consultation, we did not consider that the effects in the NTS value chain would warrant a delay in setting FTRs at LRIC.
- A9.59 BT disagreed with our assessment of the impact of our proposals on competition among NTS Terminating Communication Providers (TCPs). BT set out three types of business model for an NTS Service Provider (SP):
- i) SPs that directly connect to the delivery destination of the business customer;
 - ii) SPs purchasing an equivalent service from a third-party TCP (noting that this would be a private network and outside the regulatory regime associated with termination); or
 - iii) SPs using regulated call termination across a public network, such as BT, where the regulatory regime does apply.
- A9.60 BT argued that over time a balance has emerged between these models and a sudden reduction in FTRs would disrupt that equilibrium. BT argued that SPs that do not connect directly to their customers, instead using BT (or another public operator), would see a sharp reduction in their costs compared to an SP that relies on its own network directly. These SPs may not be able to recover the common costs excluded from call termination and would thereby find themselves priced out of the market.
- A9.61 BT argued that directly connected operators would have to reduce their prices to the LRIC level if they wished to retain business (allowing nothing for the recovery of their joint and common costs). As these providers rely heavily on direct termination they may have few, if any, alternative avenues to increase prices elsewhere to make up the shortfall in revenues and a number are likely to fail. BT believed that

⁹²¹ We also note that BT referred to a 'common infrastructure' in the fixed sector, shared by regulated and unregulated services, in its response to our May 2012 CFI, Question 28.

this meant that we were wrong to claim that a reduction in FTRs to LRIC would 'level the playing field'.⁹²²

- A9.62 BT also noted that some NTS TCPs could be adversely affected both by a reduction in FTRs and by a reduced pass-through from the retail level. It did not believe that retail prices could easily adjust for any changes in the structure of wholesale tariffs. It argued that it was unlikely that retail contracts with end-users would allow for automatic price increases as a result of variations in regulation and it believed that there would be delays in businesses being able to make the necessary changes. Additionally, it noted that some of the services in question are provided free to end-users, making a price increase in wholesale call origination difficult to recover.⁹²³
- A9.63 BT believed that our proposal to set FTRs at LRIC from 1 October 2013 would cause unnecessary disruption to the NTS sector. BT argued that a glide path could mitigate or avoid this problem and suggested that, since we planned to allow an 18-month implementation period for the new NTS regime, an equivalent glide path for reducing FTRs to LRIC is the minimum necessary. BT urged us to conduct a specific consultation with NTS terminating operators to fully assess the impact of our proposals.⁹²⁴
- A9.64 BT raised concerns that the impact of our proposals on the NTS sector could lead SPs to use more expensive non-geographic numbers, which could deter vulnerable consumers from making calls. It believed that this was a significant concern, particularly with regard to SPs that provide socially important services.⁹²⁵
- A9.65 Vodafone⁹²⁶ expressed concerns about the impact of our proposals in the NTS sector. It noted that 0845 POLOs⁹²⁷ in particular have fallen significantly over the past 18 months and that a further increase in the cost of call origination by RPI+18% will have a further detrimental impact on 0845 as well as all other NTS numbers.
- A9.66 Vodafone argued that Ofcom must make an effort to minimise any disruption as far as possible and believed it would be preferable to smooth out the impact of call origination price changes on NTS POLOs. It suggested that this smoothing effect could be done in a variety of ways including:
- Making a number of adjustments to the model.
 - freezing POLO / ROLOs⁹²⁸ at their 30 September 2013 levels until the point of transition to the new NTS regime.
 - smoothing the charge control profile and reducing the extent of the one off change in call origination pricing in October 2013.

⁹²² BT response to February 2013 consultation, paragraphs 11.29-11.31

⁹²³ BT response to February 2013 consultation, paragraphs 11.33-11.34

⁹²⁴ BT response to February 2013 consultation, paragraphs 11.28 and 11.35

⁹²⁵ BT response to February 2013 consultation, paragraph 11.32. We described the types of service that may be considered 'socially important' in our 2012 NTS Consultation: Ofcom, *Simplifying Non-geographic numbers*, April 2012 <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geographic-no/> for instance, see paragraph 5.103

⁹²⁶ Vodafone response to February 2013 consultation, page 10

⁹²⁷ Payments to other licensed operators (POLOs).

⁹²⁸ Retentions for other licensed operators (ROLOs)

Our analysis: effects on competition in the NTS segment

- A9.67 In April 2013, Ofcom published a policy position and further consultation to reform the regulatory regime for NTS.⁹²⁹ Under the new regime the NTS charge will be unbundled into two components:
- an Access Charge (for retail call origination): a set price, in pence per minute, which goes to the originating CP (OCP) connecting the call (this will be set out in the consumer's tariff package); and
 - a Service Charge (for NTS call termination): the price, in pence per minute, paid to the TCP and the company providing the service over non-geographic numbers, i.e. the SP.
- A9.68 Under our plans for introducing the unbundled tariff for calls to NTS numbers outlined in the April 2013 policy position, we will allow 18 months for stakeholders to make the necessary adjustments to contracts and business models. In the interim period, the existing structure of regulating NTS call origination will continue. Consequently, we recognise that the changes to the NCC will potentially affect the payments for both NTS call termination and NTS call origination.

NTS call termination

- A9.69 BT has argued that because some TCPs will use their own networks to provide geographic call termination (where the original non-geographic number is translated to a geographic number) whereas others will use a "host" network to provide the underlying geographic call termination, lowering FTRs could potentially affect competition between TCPs. In particular, providers of NTS termination that purchase network access from another CP in order to physically provide termination would face lower charges when FTRs are set at LRIC. BT has raised this as a concern, arguing that as contracts between TCPs and SPs expire, the SPs will seek better deals from those CPs that do not terminate calls on their own networks at the expense of those that do.
- A9.70 We are not convinced that the arguments made by BT have negative consequences for competition between TCPs. Under the current regulation, where FTRs are set above LRIC, TCPs which use hosting provided by another CP (i.e. purchase geographic call termination) will earn a lower margin than TCPs using their own networks (since the relevant marginal cost when using their own network is likely to be LRIC). Moving to LRIC-based FTRs would level the playing field between these two types of NTS TCPs (in terms of the likely margin between the NTS termination rate and the marginal or incremental cost of geographic call termination).⁹³⁰
- A9.71 Therefore, we consider that the competition detriment identified by BT relates more to the potential harm for certain types of NTS provider. However, there are other NTS providers that will gain and our decision to set FTRs at LRIC may facilitate

⁹²⁹ Ofcom, Simplifying Non-geographic Numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges, April 2013.

<http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geographic-no/>

⁹³⁰ We recognise that as a contract between a TCP and a SP expires the SP will consider the level of charges it faces when choosing its TCP. However, this is unlikely to be the only consideration. SPs are also likely to consider other factors, including the nature and quality of the service that TCPs can offer and any switching costs.

competition in the provision of NTS calls during the period before the new NTS regime.

- A9.72 Nevertheless, we recognise that the changes to FTRs may result in CPs seeking to renegotiate contracts. We consider that our decision to set new rates from 1 January 2014 will allow CPs to begin this process.

NTS call origination

- A9.73 Under existing regulation, when an NTS call is made the caller pays the OCP for the retail call and the OCP then passes on an agreed termination payment to the TCP. The TCP is then able to share this revenue with the NTS SP. For calls that originate on BT's network, the termination rate paid by BT is the retail revenue for the call minus a retention by BT comprised of:

- i) an allowance for BT's costs of call origination (as determined by the NCC on wholesale call origination);
- ii) an allowance for NTS retailing costs (the NTS retail uplift); and
- iii) in the case of premium rate services (PRS), there is also an allowance for bad debt.

- A9.74 Under the existing NTS call origination obligation, any change in the wholesale call origination charge would affect the margin on NTS calls earned by NTS providers. However, our initial estimates suggest that the net effect on the amount BT retains from retail prices on NTS calls may not change substantially. The estimated increase in BT's retention on NTS calls in 2013/4 if wholesale call origination is capped according to the projected LRIC+ with an additional mark-up would be less than 0.2ppm.⁹³¹

- A9.75 The corresponding reduction in the payment made by BT to TCPs is estimated to be 23% of the current amount received by TCPs for 0845 calls and 2-20% of the amount received for other NTS calls.

- A9.76 The way that revenues are shared between TCPs and SPs will vary depending on their contracts. Therefore the loss in termination revenue paid to the TCP as a result of the increase in wholesale call origination rates may also be shared between TCPs and SPs.

- A9.77 A number of other points should also be noted in respect of potential impacts on those in the NTS value chain:

⁹³¹ Calculated using BT's NTS calculator, the impact is estimated to be approximately 0.18ppm. We have produced this estimate using the day, evening, weekend rates weighted by BT's network tariff gradient. BT's retention on these calls is equal to the rate for wholesale call origination + PPP + the NTS retail uplift. We calculate the change in BT's retention by comparing (a) the estimated retention in 2013/4 based on the new cap for wholesale call origination (which will now also include costs previously recovered via the separate PPP charge) and a cap of RPI for the NTS retail uplift with (b) what the retention would be if it was held constant in nominal terms from 2012/13 to 2013/14. (This may be considered a conservative assumption because, if we had assumed that the current RPI+X caps on wholesale call origination (RPI+2.75%) and on the NTS retail uplift (RPI+1.25%) had continued, the estimated impact of the changes would have been smaller.) The call retail prices are consistent with the discounted values used in the BT NTS calculator.

- Even where payments to TCPs are reduced to some degree, all TCPs using wholesale call origination provided by BT are likely to be similarly affected and so we do not expect a distortion to competition.
- Any effect from setting FTRs at LRIC and wholesale call origination rates at LRIC+ is expected to be time limited to around one year – i.e. from the period when wholesale call origination is capped on the new LRIC+ basis and until the time when the unbundled tariff regime is proposed to take effect.
- We anticipate that commercial contracts would provide for variations subject to regulatory changes. [X].

A9.78 In the light of the above, we do not consider that the effects in the NTS value chain give rise to competition concerns that would cause us to delay bringing FTRs in line with LRIC (and call origination rates to the new LRIC+). However, we recognise that the changes to FTRs and wholesale call origination rates may result in CPs seeking to renegotiate contracts. We consider that our decision to set new rates from 1 January 2014 will allow CPs to begin this process.

A9.79 We disagree with BT's suggestion that we should allow at least 18 months before setting the new FTRs and wholesale call origination rates which is the length of time we set for implementing changes to the regime for non-geographic calls.⁹³² Within the NCC we are changing the levels of charges, rather than creating a new form of regulation which fundamentally alters the way charges are structured. Therefore we do not believe that the changes we are making are as profound as those being introduced with the 'unbundled tariff' or that it is necessary to allow a similar length of implementation period.

A9.80 We do not consider that it would be appropriate to freeze POLOs and ROLOs (as suggested by Vodafone) up until the new NTS regime commences. We respond to Vodafone's points regarding making adjustments to the model in Annex [6] and respond to the suggestion to smooth wholesale call origination rates later in this annex.

Stakeholder responses: effects on consumers

A9.81 Both Verizon⁹³³ and [X]⁹³⁴ stated that they believed our proposals would be in the interests of consumers.

A9.82 In relation to consumer benefits, Resilient Networks suggested that we may have limited our consideration to individual (private or residential) consumers and may have marginalised business consumers and the commercial offerings on which they rely. It argued that, while the drive to reduce MTRs was motivated by the perception that individual mobile users were subject to excessive charging by MCPs, the same concerns are not present in relation to FTRs.⁹³⁵

A9.83 BT agreed with our conclusion that any impact on consumer prices of reducing FTRs to LRIC in a one-off drop is likely to be small.

⁹³² Ofcom, *Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to the 080 and 116 ranges*, April 2013

<http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

⁹³³ Verizon response to February 2013 consultation, paragraph 7

⁹³⁴ [X] response to February 2013 consultation, page 22

⁹³⁵ Resilient Networks response to February 2013 consultation, page 4

- A9.84 BT argued that cost reductions (due to reduced FTRs) for some fixed CPs and for MCPs would not be reflected in lower retail prices. It believed that the scope for passing on reductions in wholesale costs to consumers is limited in the fixed sector, also referring to doubts we had expressed as to the strength of such an effect (the ‘fixed tariff package effect’ also known as the waterbed effect) in the ladder pricing disputes.^{936 937}
- A9.85 BT argued that the comparative inability of firms to pass on reductions in costs to consumers meant that a longer glide path, which incentivised firms to reduce common costs would be more likely to benefit consumers.⁹³⁸
- A9.86 BT also commented on the impact of our proposals on corporate networks, which include voice, data and broadband services. It stated that businesses tend to receive more calls than they originate, so call termination is an important part of the service. [X].⁹³⁹
- A9.87 BT stated that our proposals could increase the problem of nuisance calls, if sufficient time was not allowed in order to introduce counter measures.⁹⁴⁰ Resilient Networks raised a concern that our proposals would increase the problem of nuisance calls.⁹⁴¹

Our analysis: effects on consumers

- A9.88 As FTRs are reduced, mobile consumers who call fixed-line subscribers can be expected to gain, to the extent that MCPs pass on the reduction in charges for calls to fixed-line numbers. This effect may be felt either through retail call prices or through inclusive packages.
- A9.89 On the other hand, fixed-line subscribers may face price increases. This is because termination is part of a two-sided market, with the other side being the retail prices paid by fixed-line customers. Therefore, a reduction in FTRs would tend to cause prices on the “other side” of the market to rise. This process is typically referred to as the waterbed effect.⁹⁴²
- A9.90 If there is a full waterbed effect (i.e. retail prices are adjusted upwards to off-set 100% of the net revenue loss from FTRs being reduced from existing levels to LRIC) and there are no other changes in costs, we estimate that the impact on fixed line and call spend would be around £2.04 annually for each line. This would be equivalent to less than 1% of the average retail spend per line on access and calls. Table A9.1 summarises our analysis.

⁹³⁶ ‘Ladder pricing’ is a term that was used to describe a sliding scale of termination rates for BT NTS number ranges.

⁹³⁷ Ofcom, *Final Determination of the 0845 Dispute*, August 2010, paragraph 7.53.

⁹³⁸ http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/761146/Final_Determination.pdf. This case is to be heard in the Supreme Court on appeal.

⁹³⁹ BT response to February 2013 consultation, paragraphs 11.39-11.43

⁹⁴⁰ BT response to February 2013 consultation, paragraphs 11.36-11.38

⁹⁴¹ BT response to February 2013 consultation, paragraphs 11.44-11.47

⁹⁴² Resilient Networks email to Ed Vaizey’s office, 29 May 2013.

⁹⁴² The incentive on fixed CPs to increase prices on the “other”, i.e. retail, side of the market will be mitigated by the extent of wholesale call termination purchased from other fixed CPs. That is, with regulation based on symmetric FTRs for all fixed CPs, while wholesale call termination revenues will fall, so will outpayments to other fixed CPs. Therefore, what matters in terms of the waterbed effect is the net volume (and revenue) of wholesale call termination – i.e. external sales of wholesale call termination minus purchases of wholesale call termination from other fixed CPs.

Table A9.1 – Potential impact of FTR proposals on retail customers (business and residential)⁹⁴³

	(1) Net revenue loss attributable to FTR reduction ⁹⁴⁴	Impact on fixed-line customers ⁹⁴⁵ (business and residential)	
		(2) Impact on yearly bills	3) Relative to retail spend on fixed voice services (access and calls) ⁹⁴⁶
Full waterbed effect	£68m	£2.04	0.8%
80% waterbed		£1.63	0.6%
50% waterbed		£1.02	0.4%

A9.91 There is some uncertainty around the extent of the waterbed effect in fixed markets, but our proposals are not sensitive to this.^{947 948} Even if the waterbed effect is complete, we consider that the estimated impact of reducing FTRs from existing levels to those determined by our Final Statement is likely to be very small. However, we recognise that the impact will not be uniform across all CPs and will be dependent on the balance of inbound and outbound traffic. It is also important to note that this is only a static analysis – it does not take into account the dynamic effects of our proposals, which we argue are good for competition, and thus beneficial to consumers.⁹⁴⁹

A9.92 We have carried out an Equality Impact Assessment to assess whether the impact of our proposals could fall disproportionately on particular groups of consumers. This is explained in Annex 12 where we conclude that it is unlikely that our wholesale level remedies will have a material negative impact on any specific consumer group (regardless of their preferences for fixed or mobile telephony).

A9.93 We published a consultation in March 2013 in relation to price rises in fixed term contracts in which we proposed changes to allow consumers to withdraw from a

⁹⁴³ This assumes that the impact of lost revenue for fixed CPs leads to an increase in fixed line bills of an equal amount for both business and residential customers.

⁹⁴⁴ See paragraph A9.109 below.

⁹⁴⁵ Note that this is the estimated impact per line. Some customers, in particular businesses, may take more than one line.

⁹⁴⁶ Based on Ofcom quarterly data. Data excludes VAT. The estimated impact on residential consumers alone is not substantially different from the estimated impact on consumers in total.

⁹⁴⁷ There has been greater research into the waterbed effect in mobile markets, as covered in our Statement on Mobile Call Termination, in which we stated that we believed the waterbed effect was likely to be strong but incomplete.

⁹⁴⁸ There is a wide body of literature on the waterbed effect in relation to telecommunications, such as Schiff, A (2008) "The 'waterbed effect and price regulation", *Review of Network Economics*, Vol. 7, Issue 3, pp.392-414 and Genakos, C. and Valletti, T. *Testing the 'waterbed' effect in mobile telephony*, *Journal of the European Economic Association*, vol. 9(6), pages 1114-1142, December 2011.

⁹⁴⁹ See Section 8 for our assessment of the arguments for bringing FTRs into line with LRIC.

contract without penalty if there is any increase in prices during the term of the contract.⁹⁵⁰ However, we do not believe that the developments in that consultation should cause us to alter our decision, since the changes in our NCC affect all CPs and there are unlikely to be any significant adverse effects on consumers or competition if consumers are given the option to withdraw from their contracts early.

- A9.94 In its response to our February 2013 consultation, BT appears to conflate the 'fixed tariff package effect' with the 'pass through' effect. The fixed tariff package effect and the 'pass through effect' would operate in opposite directions. The fixed tariff package effect may tend to lead to higher prices as fixed CPs receive less termination revenue, whereas the 'pass through effect' may tend to lead to lower prices, to the extent that CPs pass on the reduction in the costs they face (from lower FTRs) to their customers through lower retail prices.^{951 952}
- A9.95 BT appears to suggest that there would be little effect on consumers from setting FTRs at LRIC. In response, we note only that we did not make a judgement in our February 2013 consultation on the precise impact of these types of process, and stated that our proposals were not dependent on where within a plausible range of results the impact on consumers should lie.⁹⁵³ We continue to hold this position. We consider that our decision will be beneficial to consumers in the long-run and any potential short-run adverse effects are not of a sufficient scale to cause us to alter our decision.
- A9.96 We do not believe that the points BT made about 'corporate networks' raise any new concerns in addition to those we have already dealt with (e.g. in relation to CPs that have traffic imbalances resulting from having a particular focus on specific customer groups). We recognise that some CPs will be affected more than others by our decision to set FTRs at LRIC (and this will be partly driven by their mix of customers, the associated traffic balances, and how other services are funded). However, given the benefits of setting FTRs at LRIC, we do not believe that it would be appropriate to delay setting FTRs at LRIC to allow all customer contracts to run their course.
- A9.97 We also note that delays in setting FTRs at LRIC would either prevent or slow down plans by CPs such as [X] and [X] to launch new commercial offers with low prices, which would be beneficial to consumers.
- A9.98 In respect of nuisance calls we recognise the harm and distress that they can cause and we have given this issue prominence in our Annual Plan for 2013/14.⁹⁵⁴ In May

⁹⁵⁰ <http://stakeholders.ofcom.org.uk/consultations/price-rises-fixed-contracts/>

⁹⁵¹ With regard to BT's comments about the lack of a 'fixed tariff package effect', we note that we discussed this issue in our August 2010 Determination on BT's termination charges for 0845 and 0870 calls. At that time BT submitted that there would be a 'fixed tariff package effect', whereby increased profit from termination would be passed on by BT in the form of lower prices for other fixed services, such as fixed access, calls or broadband services. The fixed tariff package effect is therefore another way to describe the waterbed effect in the fixed sector.

⁹⁵² Ofcom, *Determination to resolve a dispute between BT and each of Vodafone, T-Mobile, H3G, O2, Orange and Everything Everywhere about BT's termination charges for 0845 and 0870 calls*, August 2010, paragraphs 7.46-7.54 http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/761146/Final_Determination.pdf

⁹⁵³ February 2013 consultation, paragraph 11.43. We considered variations in the waterbed effect at the aggregate level when assessing the potential impact on retail prices. Individual fixed CPs may be affected differently, which we consider below.

⁹⁵⁴ Ofcom, *Annual Plan 2013/14*, March 2013 <http://www.ofcom.org.uk/files/2013/03/annplan1314.pdf>

2013 we published research on nuisance calls⁹⁵⁵ and we drew consumers' and businesses' attention to guidance for dealing with these calls⁹⁵⁶ and a five-point plan that we are implementing to tackle the issue.⁹⁵⁷

- A9.99 We consider that there will be a range of factors that will drive the volume of nuisance calls and do not consider that the narrowband market review should be used to steer policy outcomes in an area outside SMP regulation, such as nuisance calls, where we already have a clear policy approach.

Stakeholder responses: effects on investment

- A9.100 FCS argued that some smaller CPs are still investing in TDM networks and that there is a continuing need to fund this investment to provide diversity in service provision.⁹⁵⁸
- A9.101 [X].⁹⁵⁹
- A9.102 [X].⁹⁶⁰
- A9.103 BT argued that the proposed reduction in FTRs was not due to the current rate being above the competitive level, but to the fact that the recommended method of calculating the competitive level had changed, so it believed that the dynamic efficiency incentives of a glide path still stand.
- A9.104 BT suggested that if each firm had balanced traffic, a one-off reduction to FTRs may not compromise dynamic efficiency. However, since the market is not balanced between fixed CPs or between fixed and mobile CPs, it believed that even a comparatively short glide path would be beneficial.⁹⁶¹

Our analysis: effects on investment

- A9.105 The financial impact of FTRs being set at LRIC is relatively small in absolute terms and smaller than the impact of reducing MTRs to LRIC (see below). We do not believe that the change should have a material impact on incentives to invest. Therefore, we do not believe the estimated impacts would warrant a delay in bringing FTRs to LRIC (and wholesale call origination rates to the new LRIC+ basis). Moreover, the stronger the waterbed effect, the more the lost wholesale call termination revenue will be recouped such that the overall financial effect on fixed CPs will be reduced.
- A9.106 Furthermore, as discussed earlier in this section, we have received information from [X] and [X] that suggests investment in new services would be enabled by setting FTRs at LRIC without delay.

⁹⁵⁵ Ofcom, *Nuisance calls panel research*, May 2013 <http://stakeholders.ofcom.org.uk/market-data-research/other/telecoms-research/nuisance-calls-research/>

⁹⁵⁶ Ofcom, *Guide to tackling nuisance calls and messages*, October 2012 <http://consumers.ofcom.org.uk/2012/10/tackling-nuisance-calls-and-messages/>

⁹⁵⁷ Ofcom, *Action plan to tackle nuisance calls*, January 2013 <http://consumers.ofcom.org.uk/2013/01/action-plan-to-tackle-nuisance-calls/>

⁹⁵⁸ FCS response to February 2013 consultation, page 5

⁹⁵⁹ [X]

⁹⁶⁰ [X]

⁹⁶¹ BT response to February 2013 consultation, paragraphs 11.62-11.65

- A9.107 BT suggested that it would be wrong to implement an immediate reduction given the dynamic efficiency benefits still stand.⁹⁶² However, since call termination is part of a two-sided market, the typical arguments about improving dynamic efficiency through imposing a glide path over a longer period are significantly less important than they are in one-sided markets. In the case of MCT, the CC agreed that, “...as the profitability of investment decisions would not be affected by, or not greatly affected by, the level of termination rates, the length of the glide path should not significantly affect investment incentives.”⁹⁶³ We believe these arguments on dynamic efficiency also apply to FTRs and none of the responses we received to our February 2013 consultation raised sufficient concerns about investment or dynamic efficiency that should cause us to delay our decision to set FTRs at LRIC from 1 January 2014.
- A9.108 In aggregate, the scale of the change and the sums of money involved in the case of MTRs was larger than for FTRs.⁹⁶⁴ MTRs were to be reduced by approximately 3.5ppm (in 2008/09 prices) from their levels at the start of the control, which were approximately 4.2ppm (in 2008/09 prices), and net revenues received by MCPs (i.e. netting off M2M traffic) were expected to be reduced by approximately £600m as a result of the move from the prevailing level to LRIC.⁹⁶⁵ In the case of MCT, we estimated this revenue reduction represented around 4% of MCP retail revenues – which was an upper-bound given that it assumes no waterbed effect. On a per subscriber basis, this was estimated to amount to approximately £8 p.a or £0.70 per month (in 2012/13 prices this would be approximately £9.44 p.a.).⁹⁶⁶
- A9.109 In order to be brought in line with LRIC, FTRs have to fall from a level of 0.219ppm in the final year of the current charge control to 0.034ppm (in 2012/13 prices). Net wholesale call termination revenues for fixed CPs are expected to fall by approximately £68m in moving from current FTRs to LRIC.⁹⁶⁷ Relative to fixed retail call and access revenues this would be approximately 0.8% (and compared to all fixed telecoms revenues, this would be approximately 0.6%).⁹⁶⁸ On a per subscriber basis this would be approximately £2.04 p.a. per fixed line, assuming that there was no waterbed effect and there were no other changes in relevant costs.⁹⁶⁹ This indicates that the scale of the impact on fixed CPs of reducing FTRs from prevailing rates to LRIC is smaller than the corresponding impact on MCPs that was caused by reducing MTRs to LRIC.

⁹⁶² [X]

⁹⁶³ 2012 CC Determination, paragraph 5.70.

⁹⁶⁴ [Footnote deleted].

⁹⁶⁵ Paragraph 10.34.4 and fn 782, 2011 MCT Statement.

⁹⁶⁶ Footnote 433, 2011 MCT Statement.

⁹⁶⁷ Based on approximately 36.6bn minutes of net termination traffic. See the footnote accompanying paragraph 8.31 in Section 8 for details on how this volume of traffic has been estimated. Note that the analysis reported in this section relates to the effect in moving from the level of FTRs expected to prevail in 2012/13, not the new projected level of FTRs if they were set on a LRIC+ as opposed to a LRIC basis which was the focus of Section 8. The difference between the LRIC and LRIC+ rates reported in Section 8 is slightly greater than the difference between current FTRs and the LRIC rate reported here because the current FTR is below our modelled LRIC+ rate for incoming off-net termination.

⁹⁶⁸ Based on fixed retail calls and access revenues of £8.5bn (Ofcom quarterly data, Q4 2012) and all fixed telecoms revenues of approximately £12.2bn based on Figure 5.22 of the Communications Market Report, 2013.

⁹⁶⁹ Based on there being 33.1 million fixed lines. Telecoms Market Data Update Q4 2012, Fixed telecoms tables, Table 2. <http://stakeholders.ofcom.org.uk/market-data-research/market-data/communications-market-reports/tables/>.

A9.110 [X].^{970 971}

A9.111 [X]. We recognise that the changes to FTRs may result in CPs seeking to renegotiate contracts to allow them to invest in the future. We consider that our decision to set new rates from 1 January 2014 will allow CPs to begin this process.

A9.112 [X] also raised concerns about its ability to carry out certain investments. However, we do not believe that its investment in [X] should be directly relevant to the level of FTRs, since investment in these services should be driven by the potential revenues and costs in these sectors, rather than the revenues from fixed call termination.

Stakeholder responses: implementation of the 2009 EC Recommendation

A9.113 BT, Resilient Networks⁹⁷² and Virgin Media commented that the 2009 EC Recommendation had not yet been implemented in several other European countries and, where it had been implemented NRAs had generally adopted a glide path, rather than a one-off adjustment of FTRs to LRIC.

A9.114 BT provided an update of Cullen International's report on the progress across Europe of implementing the 2009 EC Recommendation. It stated that only 5 out of the 27 member states had set FTRs on the basis of LRIC and each of these had adopted a glide path or had allowed a significant period of time to implement the changes. BT argued that we should give some weight to these circumstances when considering how to implement the 2009 EC Recommendation and said that it believed that the original aim of achieving as much consistency as possible in a single market would not be undermined by the introduction of its proposed glide path (two years).⁹⁷³

A9.115 Virgin Media argued that we had overstated the importance of the 2009 EC Recommendation and that being "late" for the deadline would not be a valid reason for not imposing a glide path.⁹⁷⁴

A9.116 Virgin Media also argued that, since other European NRAs have tended to set FTRs at higher levels than the rates we proposed and since there will be further delays in implementing the 2009 EC Recommendation in many European countries, it would be sensible to adopt a more cautious approach by adopting a glide path. It believed that this would be beneficial, insulating United Kingdom operators from a significant disparity in FTRs and allowing us time to monitor the suitability of our modelling approach. In particular, it highlighted BEREC's opinion on the Italian notification to the EC, concluding that there may be legitimate reasons to set a glide path, due to the circumstances in the Italian market.^{975 976}

⁹⁷⁰ [X]

⁹⁷¹ For instance, see paragraphs 5.22-5.28, Competition Commission, MCT Final Determination of 9 February 2012, http://www.competition-commission.org.uk/assets/competitioncommission/docs/appeals/telecommunications-price-control-appeals/final_determination.pdf

⁹⁷² Resilient Networks response to February 2013 consultation, pages 3-4

⁹⁷³ BT response to February 2013 consultation, paragraphs 11.66-11.71

⁹⁷⁴ Virgin Media response to February 2013 consultation, pages 4-6

⁹⁷⁵ BEREC opinion on Phase II investigation: Case IT/2013/1415 Call termination on individual public telephone networks provided at a fixed location (market 3) in Italy
http://berec.europa.eu/eng/document_register/subject_matter/berec/opinions/1241-berec-opinion-on-

A9.117 Virgin Media⁹⁷⁷ highlighted our reasoning in the 2009 NCC Statement and argued that this provided the essential context to explain our approach to the 2009 EC Recommendation. It noted that we had said in the 2009 NCC Consultation that continuing to set the NCC on a CCA FAC basis would: *“address and meet the concerns expressed by the Commission”*.⁹⁷⁸

A9.118 It also noted that in the 2009 NCC Consultation Ofcom had:

“also taken into account the aims of the Recommendation, and consider that our proposed approach is consistent with those aims, and taking into account the current state of the market in the United Kingdom, the most appropriate way to seek to achieve those aims during the period proposed in the review”.⁹⁷⁹

A9.119 Virgin Media acknowledged that the situation had moved on since the setting of the previous NCCs, but it argued that if we properly took account of national circumstances in the fixed-line market, as we had done in the previous market review, it would be apparent that there are objective reasons for taking a different approach to that expressed in our proposals.⁹⁸⁰

Our analysis: implementation of the 2009 EC Recommendation

A9.120 In Section 8 (paragraph 8.19 to 8.24) we have described the recent developments among other European NRAs towards implementing the 2009 EC Recommendation. While these developments have not been determinative in shaping our decision, we consider that they provide no reason to further delay implementing our decisions. We also note that the CC considered that the 2009 EC Recommendation was a relevant factor that favoured adoption of a shorter glide path for MCT.⁹⁸¹

A9.121 With regard to Virgin Media’s reference to the Italian NRA’s (AGCOM) notification to the EC and BEREC’s opinion on the notification, we note that AGCOM withdrew its original notification to the EC and has since announced new proposals.⁹⁸²

A9.122 In the 2009 NCC Statement we did not prejudge the approach we would take for the new market review period. Our decision in 2009 took a number of factors into account. We recognised the implications of the 2009 EC Recommendation, but considered that at the time it was not appropriate to move to LRIC for FTRs because:

- it would require us to re-consult;

[phase-ii-investigation-case-it20131415call-termination-on-individual-public-telephone-networks-provided-at-a-fixed-location-market-3-in-italy](#)

⁹⁷⁶ Virgin Media response to February 2013 consultation, pages 6-7

⁹⁷⁷ Virgin Media response to February 2013 consultation, pages 5-6

⁹⁷⁸ Ofcom, *Review of BT network charge controls*, 19 March 2009, paragraph 4.190

http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/summary/reviewbntncc.pdf

⁹⁷⁹ Ofcom, *Review of BT network charge controls*, 19 March 2009, paragraph 4.190

⁹⁸⁰ Virgin Media response to February 2013 consultation, pages 6-8

⁹⁸¹ 2012 CC Determination, paragraph 5.74

⁹⁸² Cullen International, *WE Telecom Update April 2013*, <http://www.cullen-international.com/report/7665/c126758#> and Cullen International, *WE Telecom Update May 2013*, <http://www.cullen-international.com/report/7737/c130119#> AGCOM's revised proposal. Also see Section 8, paragraphs 8.19-8.24 for a further discussion of other NRAs' experience with implementing the 2009 EC Recommendation.

- the implementation date for LRIC (31 December 2012) was close to the end of the review period (i.e. fell in the final year of the control, 2012/13); and
- regulated FTRs were at the time the lowest in Europe.

A9.123 We signalled that we would engage on the question of the future regulation of termination rates through the wholesale mobile call termination review.⁹⁸³ In April 2010, we consulted on our proposals for LRIC-based MTRs and confirmed this in our 2011 MCT Statement, subsequently upheld in the 2012 CC Determination and CAT ruling in 2012.⁹⁸⁴

Stakeholder responses: 'reasonable expectations' and regulatory certainty

A9.124 A number of stakeholders argued that there was a precedent for adopting a gradual glide path in charge controls and that our proposals were an unexpected and unreasonable departure from this precedent.

A9.125 BT argued that a one-off reduction to FTRs would not be consistent with our regulatory policy and established practice. It believed that there was a precedent for setting a glide path when amending charge controls, both for one-way access markets and for two-way access markets.

A9.126 BT suggested that we had on many occasions favoured the use of glide paths, rather than one-off adjustments, as this would approximate more closely to the workings of a competitive market and provide incentives to enhance dynamic efficiency.

A9.127 BT argued that a one-off adjustment was not appropriate in this case since it believed:

- there are no allocative efficiency reasons to bring charges into line with costs immediately, rather than over a glide path;
- FTRs are currently regulated and are not high relative to costs; and
- FTRs are not at a level which could have a distorting effect on the market.⁹⁸⁵

A9.128 BT suggested that we had disregarded the principle of regulatory certainty. It believed that stakeholders would have reasonably expected that FTR reductions would be implemented through a glide path, since:

- we originally planned a four-year glide path for MTRs, extending beyond the 2009 EC Recommendation deadline;
- the essential circumstances warranting a deviation from a glide path are not met; and

⁹⁸³ 2009 NCC Statement, paragraphs 4.94-4.105

⁹⁸⁴ The CC Determination, February 2012, is available at http://www.competition-commission.org.uk/assets/competitioncommission/docs/appeals/telecommunications-price-control/appeals/final_determination.pdf and the CAT Judgement, May 2012, is available at: <http://www.catribunal.org.uk/238-7586/Judgment.html>

⁹⁸⁵ BT response to February 2013 consultation, paragraphs 11.48-11.61

- our 2009 NCC Statement occurred four months after the 2009 EC Recommendation was adopted, yet it allowed for common cost recovery in FTRs.⁹⁸⁶

- A9.129 BT provided additional material from DotEcon, clarifying certain points which it made in the report BT submitted as part of its response to our May 2012 CFI. DotEcon stated that its report did not rule out the possibility of a one-off adjustment, contrary to the interpretation in our February 2013 consultation. It clarified that its analysis indicated that a one-off adjustment (without a subsequent glide path) would never be optimal if there are adjustment costs. It stated that a one-off adjustment may be justified, depending on the nature of the costs and benefits, but the optimal price path should still involve a smooth adjustment to the target price once already sufficiently close to that target.⁹⁸⁷
- A9.130 In the view of FCS, the proposals were not clearly signalled in earlier consultations (e.g. the 2012 Call for Inputs), which meant that many (especially smaller) CPs had been unable to make preparations to adapt their business models to the new regime. It argued that our proposals would not allow CPs sufficient time to plan for the change and the impact could result in unnecessary distress and possible business failures for some CPs.⁹⁸⁸
- A9.131 Magrathea and Teleappliant did not accept any suggestion that the proposed changes to FTRs had been “trailed” and that CPs should have been expecting them. They noted that the February 2013 consultation was the first time that specific dates and numbers had been proposed and believed that most CPs would not have anticipated the scale and speed of the proposed changes. They argued that operators should not be penalised for Ofcom’s delay in implementing the 2009 EC Recommendation.
- A9.132 Colt cited a number of instances in which we had stated our preference for adopting glide paths rather than one-off adjustments and had explained the benefits of using glide paths.⁹⁸⁹
- A9.133 TSL⁹⁹⁰ and [X]⁹⁹¹ suggested that CPs which operated on a similar scale to them were not so well informed about changes in regulation, such as the 2009 EC Recommendation, and were surprised that we had proposed to implement reductions to FTRs so quickly.
- A9.134 [X] expressed its general preference for glide paths and contrasted the glide path that was set for reducing MTRs with what it saw as the “cliff” in FTRs facing fixed network operators. It believed that this raised questions about technology neutrality. Nonetheless, [X] argued in favour of the proposals in the February 2013 consultation. It highlighted the length of time that had elapsed since the 2009 EC

⁹⁸⁶ BT response to February 2013 consultation, paragraphs 11.12-11.13

⁹⁸⁷ BT response to February 2013 consultation, ‘Response to Ofcom critique of the DotEcon submission’, pages 94-95

⁹⁸⁸ FCS response to February 2013 consultation, page 5

⁹⁸⁹ NCC Determination, 15 September 2009, paragraph 4.107; WLR LLU consultation Draft Statement, February 2012, paragraph 3.104; and BCMR Statement, February 2013, paragraphs 18.100-18.103. Colt response to February 2013 consultation, Section 3

⁹⁹⁰ TSL response to February 2013 consultation, page 2

⁹⁹¹ [X] response to February 2013 consultation

Recommendation and the CAT and CC decisions relating to the Recommendation, which received widespread media coverage.⁹⁹²

Our analysis: 'reasonable expectations' and regulatory certainty

A9.135 We do not consider that we have given CPs a false impression that we would adopt a lengthy period to adjust FTRs to LRIC, or that we would be breaking with precedent by implementing a relatively quick adjustment.

A9.136 It is true that the CC did not agree with BT's appeal for an immediate reduction in MTRs (in that case from the prevailing level of MTRs down to LRIC+ as an additional step on the transition to LRIC for MTRs). The CC found that while there was a good case for reaching LRIC sooner, MCPs may have had difficulties in adjusting prices in the first year of the charge control, particularly because they would not reasonably have anticipated a one-off starting adjustment, given our usual practice of adopting glide paths and given the arguments put forward in the MCT consultation process.⁹⁹³ The CC also considered that BT had not provided any valid additional reason in favour of a one-off adjustment to lower MTRs in the first year.⁹⁹⁴

A9.137 With regard to the points made by DotEcon in BT's response to our February 2013 consultation, we believe that there will typically be some degree of adjustment costs when prices are changed. Therefore, in practice it would appear that its analysis would typically rule out the prospect of ever making changes to regulated charges on anything other than a glide path. We do not agree with this conclusion for the following reasons:

- We have previously set out the circumstances in which we might consider departing from a glide path in our consultation (and then statement) on LLU and WLR charge controls effective from April 2012.⁹⁹⁵ It was precisely these factors which BT cited in its appeal of Ofcom's 2011 MCT Statement – where BT claimed that these three factors were mirrored in the MTR case.⁹⁹⁶
- While the CC did not support a one-off reduction in the case of MTRs (a point which BT's response recognises), this reflected the fact that many of the considerations where the CC had found in BT's favour for a shorter glide path overlapped with consideration of whether there should also be a one-off

⁹⁹² [X] response to February 2013 consultation, pages 21-22

⁹⁹³ The CC noted that we had stated we have a '*strong preference for glide paths, rather than [one-off] adjustments, to align charges to costs*' and that this would have given MCPs a reasonable expectation of a glide path and no one-off adjustment. In this context the CC said that the failure of any party to propose a one-off adjustment during the consultation process strengthened that expectation. See paragraph 5.96 of the 2012 Determination.

⁹⁹⁴ 2012 CC Determination, paragraphs 5.103-5.104.

⁹⁹⁵ Charge control review for LLU and WLR services, Consultation, 31 March 2011, paragraph 3.90-3.98, and Charge control review for LLU and WLR services, Statement, 7 March 2012, paragraph 3.103-3.128. At paragraph 3.96 of the consultation we stated: "*In the context of the LLU and WLR charge controls, it is useful to understand the circumstances under which we might consider one-off reductions. This might include, for example, scenarios where: There are strong allocative efficiency arguments for bringing prices into line with cost sooner [...]. The previous charges were unregulated or are not subject to charge control and where [BT's] charges are high relative to costs. There is a need to align the charges for corresponding ancillary services [...] and [...] where the charges for [...] variants are materially out of line and this may have a distorting effect on the market.*"

⁹⁹⁶ See paragraphs 5.83 to 5.87 of the 2012 CC Determination.

adjustment. The CC also noted some of the difficulties that MCPs might face in adjusting retail prices in a shorter period.⁹⁹⁷

A9.138 A number of smaller CPs claim that they have not been well informed of our proposals to set FTRs at LRIC. We recognise that smaller CPs are unlikely to be able to devote the same level of resources as larger CPs to tracking regulatory developments (e.g. smaller CPs are unlikely to have specialised regulatory departments). However, we think it unlikely that CPs will have been unaware of the relevant recommendations, consultations and decisions relating to the regulation of FTRs or MTRs (or insulated from the knowledge of paying lower MTRs as a result of MTRs being set at LRIC).

Stakeholder responses: other arguments

A9.139 BT made some additional comments in relation to our proposed effective date.

- It considered that setting FTRs at LRIC on 1 October 2013 (and only six weeks after the planned publication of the statement) may be possible, but would be tight, due to the number of Access Charge Change Notices (ACCNs) that need to be produced and Carrier Price List (CPL) section documents to be revised.
- BT was also concerned about the speed with which other CPs would implement new rates (highlighting delays and lack of cooperation from other CPs in implementing changes in the past). It therefore suggested that a six-month implementation period would be required unless we took responsibility for ensuring that other CPs implement new rates promptly.⁹⁹⁸
- BT argued that the NCC has always been intended to align prices that would operate for a year from 1 April and the next set of price changes would be expected to occur at 1 April 2014, not on the first day of any new charge control. It claimed that, by introducing a new price cap effective from 1 October, we would be depriving it of revenue it would have expected to achieve for the period 1 October 2013 to 31 March 2014 and recovering its efficiently incurred costs as defined by the control. It explained that this was due to the fact that it was not recovering its costs at the end of the previous charge control, so price increases were necessary. It stated that it has continued to under recover its costs for the entire period of the charge control set in 2009 and would have returned to parity only by the end of the final financial year on 1 April 2014. It argued that we should continue with the established precedent of introducing changes effective from 1 April.⁹⁹⁹

A9.140 TalkTalk raised concerns that a six-week period would be too short to agree implementation of APCCs based on the LRIC of an NGN. TalkTalk suggested that, if we maintained the six-week period, it would expect BT to engage in negotiations on an expedited basis in order to ensure that any dispute could be referred to us prior to 1 October 2013.¹⁰⁰⁰

⁹⁹⁷ See paragraph 5.96-5.104 of the 2012 CC Determination.

⁹⁹⁸ BT response to February 2013 consultation, paragraphs 11.77-11.79

⁹⁹⁹ BT response to February 2013 consultation, paragraphs 11.72-11.76

¹⁰⁰⁰ TalkTalk response to February 2013 consultation, Question 11.2

Our analysis: other arguments

- A9.141 We acknowledge BT's view regarding the time needed to produce ACCNs and make changes to the carrier price list as a result of implementing price changes from setting FTRs at LRIC. This specific concern has been addressed by our decision to set the new FTRs and wholesale call origination rates from 1 January 2014.
- A9.142 We do not accept BT's argument that introducing a new cap from 1 October 2013 would have deprived it from recovering its efficiently incurred costs. The final year of the current price control runs from 1 October 2012 to 30 September 2013. Ignoring issues such as carry-forward provisions, BT is free to set prices so that it does not exceed the projected efficient costs for each charge control year. Any decision to change prices only on 1 April is of BT's choosing, not a regulatory constraint. Moreover, the current NCC is based on forecast costs which are converted to coincide with the charge control year, not with financial years. For the same reasons we would also reject BT's argument if it was applied to our decision to set new rates effective from 1 January 2014.
- A9.143 In respect of APCCs we do not accept that the effective date by which FTRs are reduced to LRIC should be determined by how long it might take CPs to agree any new rates for APCCs (or challenge such rates set by other CPs) in light of the requirements of the separate regulation governing the setting of such charges (GC18). As explained in Section 8 APCCs are not part of termination market services and are subject to different regulation.

Stakeholder responses: wholesale call origination

- A9.144 We did not receive specific objections to the changes in wholesale call origination rates being linked to the changes in FTRs.
- A9.145 However, Vodafone¹⁰⁰¹ and Virgin Media¹⁰⁰² noted that our proposals meant that wholesale call origination rates would rise in 2013/14 and then fall over the next two years to a final value below the starting point. Both respondents favoured a smoother profile of charges with Vodafone indicating that a smoother profile would mitigate its concerns about the impact of our proposals to increase wholesale call origination in the NTS sector.
- A9.146 Virgin Media also suggested a specific alternative, whereby linked to having a three year glide path until FTRs were set at LRIC, wholesale call origination rates would be held flat for the first two years, during which time the relevant common costs would be retained within the wholesale call termination rate, and then fall to the cost-based rate in the final year.¹⁰⁰³

Our analysis: wholesale call origination

- A9.147 As proposed in our February 2013 consultation, we have concluded that the effective date for the new wholesale call origination rates should be linked to that for FTRs being set at LRIC. Therefore, an adjustment is made to wholesale call origination rates to reflect the new LRIC+ rates at the point that FTRs are set at LRIC. This will be from 1 January 2014.

¹⁰⁰¹ Vodafone response to February 2013 consultation, pages 49-50

¹⁰⁰² Virgin Media response to February 2013 consultation, Annex 3, pages 30-35

¹⁰⁰³ Virgin Media response to February 2013 consultation, Annex 3, pages 30-35

A9.148 We do not consider that it is appropriate to smooth the profile for wholesale call origination rates. Smoothing wholesale call origination rates would mean that charges would be out of line with efficient costs by the end of the control period which is a situation we wish to avoid.

Annex 10

Guidance on the setting of fair and reasonable fixed termination rates

Introduction

- A10.1 In this section, we set out our guidance on fair and reasonable charges for the termination of calls to fixed geographic numbers¹⁰⁰⁴ in the United Kingdom for the period starting on 1 October 2013.
- A10.2 This guidance substantially mirrors the guidance issued in our April 2011 Statement *Fair and reasonable charges for fixed geographic call termination* (2011 F&R Guidance).¹⁰⁰⁵
- A10.3 Where necessary, we have revised the 2011 F&R Guidance to reflect the decisions in this statement. This is the case, notably, in respect of the application of this guidance to KCOM (as discussed further in Sections 6 and 8) and in respect of conversion costs between networks with different technical standards (as explained further in Annex 5).

Scope of guidance

- A10.4 This guidance concerns SMP Condition 1 as set out in Schedule 3 of Annex 1 which requires, among other things, that communications providers' (CPs') charges for wholesale call termination services (hereafter referred to as fixed termination rates (FTRs)) in the United Kingdom (including the Hull area) should be fair and reasonable. This guidance therefore applies to all CPs subject to that condition.
- A10.5 This guidance applies only to FTRs for wholesale fixed geographic call termination as defined in the Narrowband Market Review. It does not apply to charges for other services that a fixed network may perform in switching and conveying calls from other networks to its customers. Ofcom considers that charges for services which fall outside markets subject to SMP regulation are matters for commercial negotiation between CPs.

Reciprocal charging as a continued basis for fair and reasonable charges

- A10.6 Ofcom considers that, in principle, reciprocal charging, whereby the FTRs for wholesale call termination on other CPs' networks are based on the rates paid to

¹⁰⁰⁴ A geographic telephone number is one where part of its digit structure contains a Geographic Area Code (identifies a particular geographic area) that is used for routing calls to the physical location of the network termination point of the subscriber to whom the telephone number has been assigned, or where the network termination point does not relate to the Geographic Area Code but where the tariffing remains consistent with that Geographic Area Code. It starts with either '01' or '02'. *The National Telephone Numbering Plan*, 19 December 2011.

<http://stakeholders.ofcom.org.uk/binaries/telecoms/numbering/numplan201210.pdf>

¹⁰⁰⁵ Fair and reasonable charges for fixed geographic call termination, 27th April 2011.

<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>

BT for wholesale call termination on BT's network (as capped by the charge control imposed on BT), remains a fair and reasonable basis, consistent with SMP Condition 1 as set out in Schedule 3 of Annex 1, for all operators of fixed networks to set their FTRs in the United Kingdom.

Presumption that FTRs which are no higher than the Benchmark FTR are fair and reasonable

- A10.7 FTRs for wholesale call termination are presumed to be fair and reasonable where the 24 hour average FTR is no higher than the charge control rate as applied to BT (hereafter the "Benchmark FTR"), as set out in this 'Review of the fixed narrowband services markets' statement. Ofcom's rebuttable presumption is that 24 hour average FTRs that are higher than the Benchmark FTR are unlikely to be fair and reasonable.
- A10.8 Each CP subject to this guidance has flexibility over its time-of-day profile¹⁰⁰⁶, as we do not discount that different CPs may have different profiles which could still be considered fair and reasonable (for example, if justified based on differences in traffic profiles). Therefore, where a CP sets a higher rate than other CPs in a particular time period, we would expect that CP to be able to demonstrate that its 24 hour average FTR across all of its traffic did not exceed the Benchmark FTR in order to be presumed fair and reasonable.

Framework for the assessment of exceptions (the "three-stage test")

- A10.9 Any disputes pursuant to sections 185 to 191 of the Communications Act 2003 ("the Act") regarding FTRs above the Benchmark FTR will be resolved on the relevant facts.
- A10.10 However, Ofcom considers that FTRs above the Benchmark FTR for the period to 30 September 2016, are only likely to be consistent with SMP Condition 1 as set out in Schedule 3 of Annex 1 where a CP is able to demonstrate that:
- a) charging an FTR equal to the Benchmark FTR would deny it recovery of its actual costs of providing wholesale call termination;
 - b) its actual costs of providing wholesale call termination are efficiently incurred; and
 - c) charging a higher FTR than the Benchmark FTR would generate demonstrable consumer benefit. Such benefits might include lower overall end-to-end call costs (not just in particular cases but in general for calls to the CP's network) or other benefits to calling parties related, for example, to the quality of the service provided.

Application

- A10.11 This guidance applies to all CPs subject to Condition 1 as set out in Schedule 3 of Annex 1 as of 1 October 2013.

¹⁰⁰⁶ Whereby a CP charges different rates at different times of the day or week (e.g. daytime, evening and weekend).

Different network technologies and conversion costs

- A10.12 This guidance applies irrespective of the technology used by the network providing termination of calls to geographic numbers, i.e. whether internet protocol (IP) or variants thereof (as used by next generation networks (NGN)) or time division multiplexing (TDM), as used by incumbent CPs and earlier entrants. That is, FTRs charged by such networks will be presumed fair and reasonable if they are no higher than the Benchmark FTR. Claims for objectively justifiable higher FTRs would need to consider the cumulative three-stage test set out above.
- A10.13 Competition between CPs using NGNs and CPs using TDM networks is likely to continue for some time. Therefore, costs of conversion between different technical standards will continue to be incurred for calls between certain CPs for some time.
- A10.14 We do not consider that conversion is an activity or service that falls within the wholesale call termination market. Therefore, the cost stack which underpins the Benchmark FTR does not include such costs of conversion which should be agreed between CPs where appropriate (possible arrangements for conversion are discussed further in Annex 5).

Annex 11

Sources of evidence

Introduction

A11.1 We have noted throughout this statement the evidence we have relied upon in relation to our findings and how we have relied upon that evidence. This Annex lists the main sources of evidence used. We also list all respondents to our consultations and to our formal information requests.

A11.2 While the Annex lists the main evidence we have relied upon, the list is for convenience only and is not intended to be exhaustive.

List of respondents to the May 2012 call for inputs

A11.3 On 17 May 2012 we published a call for inputs ('May 2012 CFI') setting out our proposed approach to this market review and seeking stakeholder input.¹⁰⁰⁷

A11.4 Twelve stakeholders provided written responses to the May 2012 CFI:

- [X];
- British Telecommunications plc;
- Cable and Wireless Worldwide plc;
- Everything Everywhere Limited;
- The Federation of Communication Services (FCS);
- Hutchison 3G UK Limited;
- Internet Telephony Services Providers' Association (ITSPA);
- KCOM Group plc;
- TalkTalk Telecom Group plc;
- United Kingdom Competitive Telecommunications Association (UKCTA);
- Verizon UK Limited; and
- Virgin Media Limited

A11.5 We have published the non-confidential versions of the responses from all the stakeholders listed above. These can be found on our website.¹⁰⁰⁸

¹⁰⁰⁷ <http://stakeholders.ofcom.org.uk/consultations/narrowband-market-review-call/>

¹⁰⁰⁸ <http://stakeholders.ofcom.org.uk/consultations/narrowband-market-review-call/?showResponses=true&pageNum=1#responses>

List of respondents to the charge control consultation

A11.6 On 28 September 2012, we published a consultation on the possible approaches to cost modelling for the Network Charge Control setting out our proposed approach to cost modelling and seeking stakeholder input.¹⁰⁰⁹

A11.7 Ten stakeholders provided written responses to the consultation:

- British Telecommunications plc;
- British Sky Broadcasting Limited;
- Cable and Wireless Worldwide plc;
- Everything Everywhere Limited;
- Hutchison 3G UK Limited;
- Internet Telephony Services Providers' Association (ITSPA);
- TalkTalk Telecom Group plc;
- Verizon UK Limited;
- Virgin Media Limited; and
- Vodafone Group plc.

A11.8 We have published the non-confidential versions of the responses from all the stakeholders listed above. These can be found on our website.¹⁰¹⁰

List of respondents to the February 2013 consultation

A11.9 On 5 February 2013, we published a consultation setting out our proposed approach on markets, market power determinations and remedies.¹⁰¹¹

A11.10 Thirty-five stakeholders provided written responses to the consultation. Twenty-seven respondents submitted non-confidential responses:

- 24 Seven Communications Limited;
- 4D Interactive Ltd;
- Alternative Networks plc;
- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Citrus Telecommunications Ltd;

¹⁰⁰⁹ <http://stakeholders.ofcom.org.uk/binaries/consultations/narrow-band-market-review/summary/condoc.pdf>

¹⁰¹⁰ <http://stakeholders.ofcom.org.uk/consultations/narrowband-market-review/?showResponses=true>

¹⁰¹¹ <http://stakeholders.ofcom.org.uk/consultations/nmr-13/>

- COLT;
- Everything Everywhere (EE);
- Federation of Communications Services (FCS);
- Internet Telephony Services Providers Association (ITSPA);
- KCOM Group plc;
- Lanonyx Telecom Ltd;
- Lexgreen services Ltd;
- Localphone Limited;
- Magrathea;
- NICC UK Interoperability Standards;
- Resilient Networks Limited;
- SEE plc;
- Simwood eSMS Limited;
- Talk Talk Group;
- Teleappliant Ltd;
- Telephony Services Limited (TSL);
- Three;
- UK Competitive Telecommunications Association (UKCTA);
- Verizon Enterprise Solutions;
- Virgin Media; and
- Vodafone.

Eight respondents submitted confidential responses:

- [REDACTED]

A11.11 We have published the non-confidential versions of the responses from all the stakeholders listed above. These can be found on our website.¹⁰¹²

¹⁰¹² <http://stakeholders.ofcom.org.uk/consultations/nmr-13/?showResponses=true>

Information-gathering using statutory powers (s135)

A11.12 During this market review, we have issued a series of notices under section 135 of the Act requiring various CPs to provide specified information as set out in the notice. These information requests are listed below:

A11.13 Information request of 11 June 2012 regarding the provision of data necessary to conduct network cost modelling. Request addressed to and response received from:

- British Telecommunications plc.

A11.14 Information request of 16 July 2012 regarding interconnection and traffic volumes. Request addressed to and responses received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Colt Technology Services;
- Cable and Wireless Worldwide plc;
- Gamma Telecoms Holdings Limited;
- KCOM Group plc;
- TalkTalk Telecom Group plc;
- Verizon UK Limited; and
- Virgin Media Limited.

A11.15 Information request of 20 July 2012 to identify fixed communications providers (FCPs) which hold geographic number ranges for our analysis of wholesale call termination.

- The information request was sent to all companies registered as holding a number range as published by Ofcom:
<http://www.ofcom.org.uk/static/numbering/index.htm#geog1>
- The information request received 155 responses.
- This information was used to identify those with SMP in wholesale call termination. They include those who did not respond to the information request which have, by default, been included. The full list can be found in Annex 1.

A11.16 Information request of 1 August 2012 regarding the provision of data necessary to conduct network cost modelling. Request addressed to and responses received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;

- Cable and Wireless Worldwide plc;
- Gamma Telecoms Holdings Limited;
- TalkTalk Telecom Group plc; and
- Virgin Media Limited.

A11.17 Information request of 24 October 2012 regarding wholesale call origination, wholesale call termination and interconnection in addition to data necessary to conduct network cost modelling. Request addressed to and responses received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Cable and Wireless Worldwide plc;
- Everything Everywhere Limited;
- Gamma Telecoms Holdings Limited;
- Hutchison 3G UK Limited;
- KCOM Group plc;
- TalkTalk Telecom Group plc;
- Telefonica O2 UK Limited; and
- Virgin Media Limited.

A11.18 Information request of 10 January 2013 regarding the provision of data necessary to conduct network cost modelling. Request addressed to and response received from:

- British Telecommunications plc.

A11.19 Information request of 8 March to 11 March 2013 regarding narrowband call traffic volumes. Request addressed to and response received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Cable and Wireless Worldwide plc;
- Gamma Telecoms Holdings Limited;
- KCOM Group plc;
- TalkTalk Telecom Group plc; and
- Virgin Media Limited.

A11.20 Information request of 7 March 2013 regarding exchange line volume forecasts to inform network cost modelling. Request addressed to and response received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Cable and Wireless Worldwide plc;
- Everything Everywhere Limited;
- Gamma Telecoms Holdings Limited;
- KCOM Group plc;
- Post Office Ltd;
- TalkTalk Telecom Group plc;
- Telefonica O2 UK Limited; and
- Virgin Media Limited.

A11.21 Information request of 3 April 2013 concerning the provision of data necessary to conduct network cost modelling. Request addressed to and response received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Gamma Telecoms Holdings Limited;
- TalkTalk Telecom Group plc;
- Virgin Media Limited; and
- Vodafone Group plc.

A11.22 Information request of 7 May 2013 regarding update on information previously requested on narrowband calls traffic. Request addressed to and response received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Gamma Telecoms Holdings Limited;
- TalkTalk Telecom Group plc;
- Virgin Media Limited; and
- Vodafone Group plc.

A11.23 Information requests sent between 9 May and 16 May 2013 concerning the provision of data necessary to conduct network cost modelling. Request addressed to and response received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Gamma Telecoms Holdings Limited;
- TalkTalk Telecom Group plc;
- Virgin Media Limited; and
- Vodafone Group plc.

A11.24 Information request of 31 May 2013 regarding data on the financial impact of our network charge control proposals. Request addressed to and response received from:

- KCOM Group plc.

A11.25 Information request of 18 June 2013 concerning the provision of data necessary to conduct network cost modelling. Request addressed to and response received from:

- British Telecommunications plc.

A11.26 Information request of 13 September 2013 concerning the provision of data necessary to conduct network cost modelling. Request addressed to and response received from:

- British Sky Broadcasting Limited;
- British Telecommunications plc;
- Gamma Telecoms Holdings Limited;
- Talk Talk Telecom Group plc;
- Virgin Media Limited; and
- Vodafone Group plc.

Ofcom documents

A11.27 Review of the charge control on calls to mobiles (Ofel) – 26 September 2001
<http://www.ofcom.org.uk/static/archive/ofel/publications/mobile/ctm0901.pdf>

A11.28 The regulatory financial reporting obligations on BT and Kingston Communications (statement) – 22 July 2004
http://stakeholders.ofcom.org.uk/binaries/consultations/fin_reporting/statement/finance_report.pdf

- A11.29 Addressing the local call disadvantage (statement) – 30 July 2004
http://stakeholders.ofcom.org.uk/binaries/consultations/cps_option/statement/cps_statement.pdf
- A11.30 Review of the Universal Service Obligation (statement) – 30 June 2005
<http://stakeholders.ofcom.org.uk/binaries/consultations/uso/statement/statementreview.pdf>
- A11.31 Better policy making – 21 July 2005
http://stakeholders.ofcom.org.uk/binaries/consultations/better-policy-making/Better_Policy_Making.pdf
- A11.32 Ofcom's approach to risk in the assessment of the cost of capital (statement) – 18 August 2005
http://stakeholders.ofcom.org.uk/binaries/consultations/cost_capital2/statement/final.pdf
- A11.33 Review of BT's network charge controls (statement) – 18 August 2005
http://stakeholders.ofcom.org.uk/binaries/consultations/charge/statement/statement_ncc.pdf
- A11.34 End-to-end connectivity (statement) – 13 September 2006
http://stakeholders.ofcom.org.uk/binaries/consultations/end_to_end/statement/statement.pdf
- A11.35 Mobile call termination (statement) – 27 March 2007
http://stakeholders.ofcom.org.uk/binaries/consultations/mobile_call_term/statement/statement.pdf
- A11.36 Changes to BT's regulatory financial reporting and audit requirements – 30 May 2007
<http://stakeholders.ofcom.org.uk/binaries/consultations/obligations/statement/statement.pdf>
- A11.37 Complaint from Thus Plc and Gamma Telecoms Limited against BT about alleged margin squeeze in wholesale call pricing – 1 August 2008
http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_988/
- A11.38 Review of BT network charge controls (consultation) – 19 March 2009
http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/summary/reviewbtnc.pdf
- A11.39 Review of the fixed narrowband services wholesale markets (consultation) – 19 March 2009
http://stakeholders.ofcom.org.uk/binaries/consultations/review_wholesale/summary/fnwm.pdf
- A11.40 Fixed narrowband retail services markets (statement) – 15 September 2009
http://stakeholders.ofcom.org.uk/binaries/consultations/retail_markets/statement/statement.pdf
- A11.41 Review of BT's network charge controls (statement) – 15 September 2009
http://stakeholders.ofcom.org.uk/binaries/consultations/review_bt_ncc/statement/ncstatement.pdf

- A11.42 Review of the fixed narrowband services wholesale markets (statement and consultation) – 15 September 2009
http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/summary/main.pdf
- A11.43 Next Generation Networks (statement) – 28 January 2010
http://stakeholders.ofcom.org.uk/binaries/consultations/ngndevelopments/statement/ngn_statement.pdf
- A11.44 Review of the Fixed Narrowband Services Wholesale Markets (statement) – 5 February 2010
http://stakeholders.ofcom.org.uk/binaries/consultations/wnmr_statement_consultation/statement/statement.pdf
- A11.45 Wholesale mobile voice call termination (Volume 2 – consultation) – 1 April 2010,
http://stakeholders.ofcom.org.uk/binaries/consultations/wmctr/summary/wmvct_consultation.pdf
- A11.46 Review of the Retail and Wholesale ISDN30 Markets (statement) – 20 August 2010
<http://stakeholders.ofcom.org.uk/binaries/consultations/isdn30/statement/statement.pdf>
- A11.47 Review of the Wholesale Local Access Market (statement) – 7 October 2010,
http://stakeholders.ofcom.org.uk/binaries/consultations/wla/statement/WLA_statement.pdf
- A11.48 Retail bundling in Hull (statement) – 8 October 2010
<http://stakeholders.ofcom.org.uk/binaries/consultations/retail-bundling-in-hull/statement/statement.pdf>
- A11.49 Review of the wholesale fixed analogue exchange lines markets (statement) – 20 December 2010
<http://stakeholders.ofcom.org.uk/binaries/consultations/review-wholesale-fixed-exchange/statement/statement.pdf>
- A11.50 Wholesale mobile call termination: Guidance on dispute resolution in relation to fair and reasonable charges (statement) – 5 April 2011
<http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/guidance.pdf>
- A11.51 Fair and reasonable charges for fixed geographic call termination (statement) – 27 April 2011
<http://stakeholders.ofcom.org.uk/binaries/consultations/778516/statement/fair-reasonable-statement.pdf>
- A11.52 Wholesale charges for NTS and premium rate services (statement) – 20 July 2011
http://stakeholders.ofcom.org.uk/binaries/consultations/nts-retail-uplift/statement/NTSRU_statement.pdf
- A11.53 Wholesale mobile voice call termination (statement) – 15 March 2011
http://stakeholders.ofcom.org.uk/binaries/consultations/mtr/statement/MCT_statement.pdf
- A11.54 The National Telephone Numbering Plan – December 2011
<http://stakeholders.ofcom.org.uk/binaries/telecoms/numbering/numplan201210.pdf>

- A11.55 Consumer switching (consultation) – 9 February 2012
<http://stakeholders.ofcom.org.uk/binaries/consultations/switching-fixed-voice-broadband/summary/condoc.pdf>
- A11.56 Dispute relating to BT's Standard Interconnect Agreement 14 February 2012
http://stakeholders.ofcom.org.uk/enforcement/competition-bulletins/open-cases/all-open-cases/cw_01083/
- A11.57 Charge control review for LLU and WLR services (statement) – 7 March 2012
<http://stakeholders.ofcom.org.uk/binaries/consultations/wlr-cc-2011/statement/statementMarch12.pdf>
- A11.58 Simplifying non-geographic numbers (consultation) – 4 April 2012
<http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geographic-no/>
- A11.59 Fixed narrowband market review and network charge control (call for inputs) – 17 May 2012
<http://stakeholders.ofcom.org.uk/binaries/consultations/narrowband-market-review-call/summary/condoc.pdf>
- A11.60 Narrowband Market Review (Consultation on possible approaches to cost modelling) – 28 September 2012
<http://stakeholders.ofcom.org.uk/binaries/consultations/narrow-band-market-review/summary/condoc.pdf>
- A11.61 Fixed Access markets review – wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30 (call for inputs) – 9 November 2012
<http://stakeholders.ofcom.org.uk/consultations/fixed-access-markets/>
- A11.62 Consolidated version of General Conditions – as at 22 November 2012
<http://stakeholders.ofcom.org.uk/binaries/telecoms/ga/general-conditions22nov12.pdf>
- A11.63 The National Telephone Numbering Plan – 20 December 2012
<http://stakeholders.ofcom.org.uk/binaries/telecoms/numbering/numbering-plan201212.pdf>
- A11.64 Changes to BT and KCOM's regulatory and financial reporting 2012/13 update – 23 January 2013. <http://stakeholders.ofcom.org.uk/binaries/consultations/bt-kcom-2012-13/summary/condoc.pdf>
- A11.65 Review of the fixed narrowband services markets - 5 Feb 2013
http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/summary/NMR_Consultation.pdf
- A11.66 Simplifying non-geographic numbers – Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges (consultation) - 15 April 2013
<http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>
- A11.67 Fixed Access Market Review (consultation) - 3 July 2013
<http://stakeholders.ofcom.org.uk/consultations/fixed-access-market-reviews/>
- A11.68 Review of the Wholesale Broadband Access Markets (consultation) - 11 July 2013
<http://stakeholders.ofcom.org.uk/consultations/review-wba-markets/>

- A11.69 Fixed Access Market Reviews: Approach to setting LLU and WLR Charge Controls
- 11 July 2013 <http://stakeholders.ofcom.org.uk/consultations/llu-wlr-cc-13/>

Competition commission documents

- A11.70 Vodafone, O2, Orange and T-Mobile – reports on references under section 13 of the Telecommunications Act 1984 on the charges made by Vodafone, O2, Orange and T-mobile for terminating calls from fixed and mobile networks – December 2002
http://webarchive.nationalarchives.gov.uk/+http://www.competition-commission.org.uk/rep_pub/reports/2003/475mobilephones.htm#full
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A11.109 [✂]

Equality impact assessment

Introduction

- A12.1 Ofcom is required by statute to assess the potential impact of all our functions, policies, projects and practices on race, disability and gender equality.¹⁰¹³
- A12.2 We fulfil these obligations by carrying out an Equality Impact Assessment (EIA), which examines whether or not the remedies that we are imposing for the wholesale narrowband markets will have an adverse impact on equality.
- A12.3 In this way, the EIA assists 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.

Narrowband market review

- A12.4 The aim of this narrowband market review is to assess the state of competition in the retail and wholesale narrowband markets and, if any fixed CP is found to have SMP, to impose regulatory obligations designed to promote competition and to protect consumers.

Equality impact assessment

- A12.5 The intention behind our approach to regulating narrowband markets is to impose a set of regulatory obligations on CPs with SMP that will promote competition by requiring them to provide other CPs with access to their networks on regulated terms, and to protect consumers.
- A12.6 In order to achieve this, we have outlined in this statement (in addition to a number of general remedies) our decision to impose charge controls on BT. These controls relate to wholesale call origination rates, wholesale call termination rates (FTRs) and interconnect circuits. In addition, a set of temporary controls will apply to NTS call origination.
- *Wholesale call origination rates:* To be set on the basis of LRIC+ with an additional mark-up to recover common costs no longer recovered from setting FTRs at LRIC;
 - *FTRs:* To be set on the basis of LRIC;
 - *Interconnect circuit charges:* To be capped across the basket on the basis of a zero nominal increase for each charge control year; and
 - *temporary controls on NTS call origination:* The Retail Uplift is to be capped on the basis of RPI+0%, while the PRS Bad Debt Surcharge cap is to be maintained

¹⁰¹³ Ofcom has a general duty under the 2010 Equality Act to advance equality of opportunity in relation to age, gender, disability, ethnicity, religious belief, sexual orientation, gender reassignment and pregnancy and maternity.

on the same share of PRS retail revenues as now, until the new NTS regime is implemented.¹⁰¹⁴

- A12.7 These changes to wholesale prices will have an indirect effect on consumers at the retail level. As part of this EIA, it is important to determine whether or not the impact of these changes falls disproportionately on particular groups of consumers.

What effect will these changes have on retail prices?

- A12.8 Due to the complexity of competition at the retail level, it is difficult to predict in advance how retail offers will be changed, if at all, in response to the changes to charge controls at the wholesale level that we are implementing with this decision. This is because fixed CPs have discretion over the level and structure of their prices and are therefore likely to pursue a variety of retail strategies when confronted with regulatory changes at the wholesale level that happen alongside other changes in retail markets. In addition, it is also difficult to determine precisely how end consumers will respond to these changes.
- A12.9 As a result, we can only make broad inferences about the effect on consumers. We will therefore only consider the implications for consumers of the most likely reactions by CPs.
- A12.10 A consequence of the decision to set FTRs at LRIC based on an NGN model is that FTRs will fall significantly. LRIC-based FTRs allow only for the recovery of costs incremental to the provision of the wholesale call termination service to third-parties. Therefore, FTRs will no longer contribute to the recovery of common costs.
- A12.11 On the other hand, we have decided that wholesale call origination rates will be regulated at LRIC+ with an additional allowance to recover the common costs no longer recovered as a result of setting FTRs at LRIC. This means that the reduction in FTRs will be accompanied by an adjustment to wholesale call origination rates charged to third-party retailers. For total fixed-to-fixed traffic, the impact of these changes to FTRs should net-off to zero.
- A12.12 Despite this, net wholesale call revenues for fixed CPs may still decline to the extent that CPs also terminate traffic from mobile calls and international calls. CPs' precise exposure to revenue loss is thus determined by their relative balance of traffic from fixed and non-fixed sources. Our analysis suggests that fixed CPs might suffer a total revenue loss of approximately £68m per year as a result of declining FTR revenues received from mobile CPs and international calls, if there was no rebalancing of other (retail) tariffs via the waterbed effect (see Annex 9).
- A12.13 However, because all fixed CPs will suffer a similar reduction in wholesale call termination revenues, they would be expected to attempt to recoup some of their net revenue loss through retail prices for fixed subscribers. If there is a full waterbed effect, no change in other costs, and no change in the number of fixed lines or call volumes, we estimate this might impact fixed line and call retail bills by at most £2.04 annually.¹⁰¹⁵ This would represent less than a 1% average increase in

¹⁰¹⁴ Proposals for the new NTS regime were formulated in: Ofcom, *Simplifying non-geographic numbers- Policy position on the introduction of the unbundled tariff and changes to 080 and 116 ranges* (consultation) 15 April 2013 <http://stakeholders.ofcom.org.uk/consultations/simplifying-non-geo-no/>

¹⁰¹⁵ See Annex 9.

consumer bills, which is considerably less than current inflation levels based on either the consumer price index (CPI) or the retail price index (RPI).¹⁰¹⁶

- A12.14 Given the nature of competition at the retail level, which increasingly revolves around bundles of calls and access, we would expect most of the increase in retail prices to be felt through higher fixed bundle charges rather than a simple increase in the price of calls.
- A12.15 Finally, we do not envisage that the changes to regulation for any of the markets subject to *ex-ante* regulation, in particular our changes to charge controls, will have a significant impact on the structure of retail prices. First, the financial effects of our decisions are likely to be relatively limited in relation to the scale of the retail market (see above). Second, we have concluded that FTRs and wholesale call origination rates will remain regulated on the basis of per minute rates (as now). Third, our changes to charge controls for the NTS Retail Uplift are based on constant real charges (i.e. RPI+0%) and, for interconnect circuits, on constant nominal charges.
- A12.16 In light of these assumptions, we can make the following statements about the likely impact of our decisions on retail prices, if nothing else were to change:
- mobile-to-fixed call prices might be expected to fall to some degree following the decrease in the wholesale cost of providing this call service; and
 - fixed-to-fixed call prices (and/or other fixed retail prices) might be expected to increase to some degree due to the waterbed effect.

Breakdown of telephony users potentially affected

- A12.17 The effect of changes to wholesale charges on consumers will depend on how mobile and fixed CPs react with regard to changing retail prices. Because this is difficult to predict, and because a number of other factors will also affect retail price setting, it is unclear whether the changes in retail prices we might anticipate will necessarily take place during the period of this review.
- A12.18 Having said this, we can still attempt to disentangle the likely impact of our changes to charge controls on consumers into the following categories:

Mobile (only) users

- A12.19 People who exclusively use mobile services are likely to be better off under the new regulatory framework. This is because it will be cheaper for CPs to terminate mobile-to-fixed calls on the relevant fixed networks. Competition at the retail level should ensure that these savings are passed through to mobile consumers.

Fixed (only) users

- A12.20 In contrast, fixed subscribers who do not use mobile services may face some price increases. Wholesale call termination is an example of a two-sided market in which

¹⁰¹⁶ For June 2013, CPI annual inflation stood at 2.9% while RPI annual inflation (which is used within the charge control formula) stood at 3.3% (http://www.ons.gov.uk/ons/dcp171778_317813.pdf). Forecasts indicate that CPI will not drop below 2.2% p.a., and RPI will not drop below 2.9% p.a., for the duration of the control period. HM Treasury, Forecasts for the UK Economy, May 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/199018/201305_-_Forecasts_for_the_UK_economy.pdf.

there are two distinct sets of users – those who purchase call termination via the CP that serves them, and the terminating CP's own retail customers. In the presence of a waterbed effect, a reduction in FTRs would tend to cause prices on the 'other side' of the market to rise. Other things being equal, this amounts to a retail price increase for those who exclusively purchase fixed-line telephony, although our analysis in Annex 9 and in this annex indicates that this is likely to be very modest.

Mobile and fixed users

A12.21 As Table A12.1 below shows, the vast majority of people have access to both a fixed line and mobile services. This group of people may or may not benefit from the changes to charge controls, depending on their relative use of each service, the changes in the retail prices of each service and the specific way in which they purchase fixed voice services. As we do not have the detailed data needed to carry out such an exercise, we are unable to determine how many consumers in this group may benefit (and by how much) and how many could lose out. Any exercise of this nature would also be unlikely to generate robust results.

Table A12.1: Household penetration of fixed and mobile telephony (proportion of adults - per cent)

Fixed-only	Mobile-only	Fixed and Mobile
5%	15%	79%

Source: Figure 5.52, Ofcom CMR 2013

Vulnerable consumers

A12.22 We consider that the 5% of households who rely exclusively on fixed telephony are most vulnerable to our changes to charge controls at the wholesale level. This is because these consumers may face an increase in retail prices for fixed call services but would not benefit from any reduction in retail prices for mobile call services which may result from the imposition of LRIC for FTRs.

A12.23 However, the average increase in fixed line and call bills for consumers would be expected to be less than 1%, even when assuming a full waterbed effect.¹⁰¹⁷ This remains significantly lower than current RPI and CPI inflation.

A12.24 In addition, fixed line rental and calls are often sold together with broadband. For fixed-only consumers who purchase this 'dual-play' service, the percentage increase in their overall bundle price will be even lower.

A12.25 Among consumers on low incomes, who may spend significantly less than average on fixed telephony services, the possible impact of these changes may be felt more strongly. Some low-income consumers have the option of purchasing BT Basic,

¹⁰¹⁷ There has been greater research into the waterbed effect in mobile markets, as covered in our 2011 MCT Statement, in which we stated that we believed the waterbed effect was likely to be strong but incomplete. Paragraph 7.52, 2011 MCT statement.

which costs £4.95 a month (and includes a quarterly £4.50 call allowance).¹⁰¹⁸ It is therefore possible that very low-usage consumers only spend £4.95 a month on telecoms services. But even when we continue to assume a 100% waterbed effect, the potential bill increase for this group of people remains less than 4%.

- A12.26 Because we expect any possible increase in retail prices for fixed-only consumers to be limited, and in practice impossible to distinguish from other market developments, it is unlikely that our wholesale level remedies will have a material negative impact on any specific consumer group (regardless of their preferences for fixed or mobile telephony).
- A12.27 We have not therefore sought to assess whether or not the composition of each category in Table A12.1 is disproportionately skewed with respect to indicators such as gender, age, disability and ethnicity.

¹⁰¹⁸ Correct as of 5 August 2013. BT Basic is available for people on low incomes who are claiming income support, job seeker's allowance, employment support allowance or pension credit.

Annex 13

Regulatory framework

Introduction

- A13.1 This Annex provides an overview of the market review process, to give some additional context to and understanding of the matters discussed in the main body of this document and the legal instruments (statutory notifications) published at Annex 1, 2, 3 and 4.
- A13.2 Market review regulation is technical and complex, including the legislation and the recommendations and guidelines that we need to consider as part of the process. There may be many relevant documents depending on the market and/or issues in question. This overview does not purport to give a full and exhaustive account of all such materials that we have considered in reaching our preliminary views in these markets. Key aspects of materials relevant to this market review are, however, discussed in this document.

Market review concept

- A13.3 The concept of a market review refers to procedures under which we at regular intervals identify relevant markets appropriate to national circumstances, carry out analyses of these markets to determine whether they are effectively competitive and then decide on appropriate remedies (known as Significant Market Power (SMP) obligations or conditions). We explain the concept of SMP below.
- A13.4 In carrying out this work, we act in our capacity as the sector-specific regulator for the United Kingdom communications industries, particularly relating to our role as the regulator for telecommunications. Our functions in this regard are to be found in Part 2 of the Act¹⁰¹⁹. We exercise those functions within the framework harmonised across the European Union for the regulation of electronic communications by the Member States (known as the Common Regulatory Framework or the 'CRF'), as transposed by the Act. The applicable rules¹⁰²⁰ are contained in a package of five EC Directives, of which two Directives are immediately relevant for these purposes, namely:
- Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (the Framework Directive); and
 - Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities (the Access Directive).
- A13.5 The Directives require that NRAs (such as Ofcom) carry out reviews of competition in communications markets to ensure that SMP regulation remains appropriate and proportionate in the light of changing market conditions.
- A13.6 Each market review normally has three stages, namely:

¹⁰¹⁹ <http://www.legislation.gov.uk/ukpga/2003/21/contents>

¹⁰²⁰ The Directives have recently been reviewed and amendments were adopted on 19 December 2009. The amendments have been transposed into the national legislation and applied with effect from 26 May 2011.

- the procedure for the identification and definition of the relevant markets (the market definition procedure);
- the procedure for the assessment of competition in each market, in particular whether the relevant market is effectively competitive (the market analysis procedure); and
- the procedure for the assessment of appropriate regulatory obligations (the remedies procedure).

A13.7 These stages are normally carried out together.

Market definition procedure

A13.8 The Act provides that, before making a market power determination¹⁰²¹, we must identify the market, which is, in our opinion, the one which, in the circumstances of the United Kingdom, is the market in relation to which it is appropriate to consider making such a determination and to analyse that market.

A13.9 The Framework Directive requires that NRAs shall, taking the utmost account of the 2007 EC Recommendation and SMP Guidelines¹⁰²² published by the EC, define the relevant markets appropriate to national circumstances, in particular relevant geographic markets within their territory, in accordance with the principles of competition law.

A13.10 The 2007 EC Recommendation identifies a set of product and service markets within the electronic communications sector in which *ex ante* regulation may be warranted. Its purpose is twofold. First, seeking to achieve harmonisation across the single market by ensuring that the same markets will be subject to a market analysis in all Member States. Secondly, providing legal certainty by making market players aware in advance of the markets to be analysed. However, NRAs are able to regulate markets that differ from those identified in the 2007 EC Recommendation where this is justified by national circumstances taking account of the three cumulative criteria referred to in the 2007 EC Recommendation (the “three-criteria test”) and where the EC does not raise any objections.

A13.11 Under the three-criteria test, when identifying markets other than those set out in the Recommendation, the NRA needs to ensure that the following three criteria are cumulatively met:

- a) The presence of high and non-transitory barriers to entry. These may be of a structural, legal or regulatory nature;
- b) a market structure which does not tend towards effective competition within the relevant time horizon. The application of this criterion involves examining the state of competition behind the barriers to entry; and
- c) the insufficiency of competition law alone to adequately address the market failures concerned.

¹⁰²¹ The market power determination concept is used in the Act to refer to a determination that a person has SMP in an identified services market.

¹⁰²² Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2002:165:0006:0031:EN:PDF>

- A13.12 The SMP Guidelines make clear that market definition is not a mechanical or abstract process. It requires an analysis of any available evidence of past market behaviour and an overall understanding of the mechanics of a given sector. As market analyses have to be forward-looking, the Guidelines state that NRAs should determine whether the market is prospectively competitive, and thus whether any lack of effective competition is durable, by taking into account expected or foreseeable market developments over the course of a reasonable period. They clarify that NRAs enjoy discretionary powers that reflect the complexity of all the relevant factors that must be assessed (economic, factual and legal) when identifying the relevant market, and assessing whether an undertaking has SMP.
- A13.13 The SMP Guidelines also describe how competition law principles may be used by NRAs in their analyses. In particular, there are two dimensions to the definition of a relevant market: the relevant products to be included in the same market and the geographic extent of the market. Ofcom's approach to market definition follows that used by the United Kingdom competition authorities, which is in line with the approaches adopted by the EC.
- A13.14 While such principles are being used in identifying the *ex ante* markets, they will not necessarily be identical to markets defined in individual competition law cases. This may be the case, especially as the former is based on an overall forward-looking assessment of the structure and the functioning of the market under examination. Accordingly, the economic analysis carried out for the purpose of this review, including the identified markets, is without prejudice to any analysis that may be carried out in relation to any investigation pursuant to the Competition Act 1998¹⁰²³ (relating to the application of the Chapter I or II prohibitions or Article 101 or 102 of the EC Treaty¹⁰²⁴) or the Enterprise Act 2002¹⁰²⁵.

Market analysis procedure

Effective competition

- A13.15 The Act requires that we carry out market analyses of identified markets for the purpose of making or reviewing market power determinations. Such analyses are normally to be carried out within 2 years from the adoption of a revised recommendation on markets, where such recommendation identifies a market not previously notified to the EC, or within 3 years from the publication of a previous market power determination relating to that market.
- A13.16 In carrying out a market analysis, the key issue for an NRA is to determine whether the market in question is effectively competitive. The 27th recital to the Framework Directive clarifies the meaning of that concept. Namely, "[it] is essential that *ex ante* regulatory obligations should be imposed only where there is not effective competition, i.e. in markets where there are one or more undertakings with significant market power, and where national and Community competition law remedies are not sufficient to address the problem".
- A13.17 The definition of SMP is equivalent to the concept of dominance as defined in competition law. The Framework Directive requires, however, that NRAs must carry out market analysis taking the utmost account of the SMP Guidelines. The latter

¹⁰²³ <http://www.legislation.gov.uk/ukpga/1998/41/contents>

¹⁰²⁴ Previously Article 81 and Article 82 of the EC treaty, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2010:083:FULL:EN:PDF>

¹⁰²⁵ <http://www.legislation.gov.uk/ukpga/2002/40/contents>

emphasise that NRAs should undertake a thorough and overall analysis of the economic characteristics of the relevant market before coming to a conclusion as to the existence of significant market power.

- A13.18 In that regard, the SMP Guidelines set out, additionally to market shares, a number of criteria that can be used by NRAs to measure the power of an undertaking to behave to an appreciable extent independently of its competitors, customers and consumers, including (a) overall size of the undertaking; (b) control of infrastructure not easily duplicated; (c) technological advantages or superiority; (d) absence of or low countervailing buying power; (e) easy or privileged access to capital markets/financial resources; (f) product/services diversification (e.g. bundled products or services); (g) economies of scale; (h) economies of scope; (i) vertical integration; (j) highly developed distribution and sales network; (k) absence of potential competition; and (l) barriers to expansion. A dominant position can derive from a combination of these criteria, which taken separately may not necessarily be determinative.

Sufficiency of competition law

- A13.19 As part of our overall forward-looking analysis, we also assess whether competition law by itself (without *ex ante* regulation) is sufficient to address the competition problems identified. Aside from the need to address this issue as part of the three-criteria test, we also consider this matter in our assessment of the appropriate remedies which, as explained below, are based on the nature of the specific competition problems we identify.

Remedies procedure

Powers and legal tests

- A13.20 The Framework Directive prescribes what regulatory action NRAs must take depending upon whether or not the market in question has been found effectively competitive. Where a market has been found to be effectively competitive, NRAs are not allowed to impose SMP obligations and must withdraw such obligations where they already exist. On the other hand, where the market is found not to be effectively competitive, the NRAs must identify the undertakings with SMP on that market and then impose appropriate obligations.
- A13.21 NRAs have a suite of regulatory tools at their disposal, as reflected in the Act. Specifically, the Access Directive specifies a number of SMP obligations, including transparency, non-discrimination, accounting separation, access to and use of specific network elements and facilities, price control and cost accounting. When imposing a specific obligation, the NRA will need to demonstrate that the obligation in question is based on the nature of the problem identified, proportionate and justified in the light of the policy objectives as set out in Article 8 of the Framework Directive.
- A13.22 Specifically, for each and every proposed SMP obligation we explain why it satisfies the test that the obligation is: (a) objectively justifiable in relation to the networks, services, facilities, apparatus or directories to which it relates; (b) not such as to discriminate unduly against particular persons or against a particular description of persons; (c) proportionate to what the condition or modification is intended to achieve; and (d) in relation to what it is intended to achieve, transparent.

A13.23 Additional legal requirements may also need to be satisfied depending on the SMP obligation in question, for example, for price controls where the NRA's market analysis must indicate that the lack of effective competition means that the operator concerned might sustain prices at an excessively high level, or apply a price squeeze, to the detriment of end-users. In that instance, NRAs must take into account the investment made by the operator and allow him a reasonable rate of return on adequate capital employed, taking into account the risks involved, as well as ensure that any cost recovery mechanism or pricing methodology that is mandated serves to promote efficiency and sustainable competition and maximise consumer benefits. Where an obligation to provide third parties with network access is considered appropriate, NRAs must take into account factors including the feasibility of the proposed network access, the technical and economic viability of creating networks¹⁰²⁶ that would make the network access unnecessary, the investment of the network operator which is required to provide access¹⁰²⁷ and the need to secure effective competition¹⁰²⁸ in the long term.

A13.24 To the extent relevant to this review, we demonstrate the application of these requirements to the SMP obligations in question at Sections 5, 6 and 10 of this document. In doing so, we also set out our assessment of how, in our opinion, the performance of our general duties under section 3 of the Act is secured or furthered by our regulatory intervention, and that it is in accordance with the six Community requirements in section 4 of the Act. This assessment is also relevant to our assessment of the likely impact of implementing our proposals. A number of specific points should be noted in this regard.

Ofcom's general duties - section 3 of the Act

A13.25 Under the Act, our principal duty in carrying out functions is to further the interests of citizens in relation to communications matters and to further the interests of consumers in relevant markets, where appropriate by promoting competition.

A13.26 In so doing, we are required to secure a number of specific objectives and to have regard to a number of matters set out in section 3 of the Act.

A13.27 In performing our duties, we are also required to have regard to a range of other considerations, as appear to us to be relevant in the circumstances. In this context, we consider that a number of such considerations are relevant, namely:

- the desirability of promoting competition in relevant markets; and
- the desirability of encouraging investment and innovation in relevant markets.

A13.28 We have also had regard to the principles under which regulatory activities should be transparent, accountable, proportionate, consistent, and targeted only at cases in which action is needed, as well as the interest of consumers in respect of choice, price, quality of service and value for money.

¹⁰²⁶ Including the viability of other network access products, whether provided by the dominant provider or another person.

¹⁰²⁷ Taking account of any public investment made.

¹⁰²⁸ Including, where it appears to us to be appropriate, economically efficient infrastructure-based competition.

A13.29 Ofcom has, however, a wide measure of discretion in balancing its statutory duties and objectives. In so doing, we take account of all relevant considerations, including responses received during our consultation process, in reaching our conclusions.

European Community requirements for regulation - section 4 of the Act

A13.30 As noted above, our functions exercised in this review fall under the CRF. As such, section 4 of the Act requires us to act in accordance with the six European Community requirements for regulation.

A13.31 In summary, these six requirements are:

- to promote competition in the provision of electronic communications networks and services, associated facilities and the supply of directories;
- to contribute to the development of the European internal market;
- to promote the interests of all persons who are citizens of the European Union;
- to take account of the desirability of Ofcom carrying out its functions in a manner which, so far as practicable, does not favour one form of or means of providing electronic communications networks, services or associated facilities over another – i.e. to be technologically neutral;
- to encourage the provision of network access and service interoperability, to such extent as Ofcom considers appropriate for the purpose of securing efficient and sustainable competition, efficient investment and innovation, and the maximum benefit for customers of CPs;
- to encourage compliance with certain standards in order to facilitate service interoperability and secure freedom of choice for the customers of CPs.

A13.32 We considered that the first, third, fourth and fifth of those requirements are of particular relevance to the matters under review and that no conflict arises in this regard with those specific objectives in section 3 of the Act that we consider are particularly relevant in this context.

Impact assessment - section 7 of the Act

A13.33 The analysis presented in the whole of this document represents an impact assessment, as defined in section 7 of the Act.

A13.34 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 Ofcom has to carry out impact assessments where its 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 and publishing impact assessments in relation to the great majority of its policy decisions. For further information about Ofcom's approach to impact assessments, see the guidelines, Better policy-making: Ofcom's approach to impact assessment, which are on the Ofcom website:
http://stakeholders.ofcom.org.uk/binaries/consultations/better-policy-making/Better_Policy_Making.pdf

- A13.35 Specifically, pursuant to section 7, an impact assessment must set out how, in our opinion, the performance of our general duties (within the meaning of section 3 of the Act) is secured or furthered by or in relation to what we propose.
- A13.36 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. The EIA with respect to the proposals set out in this market review is set out in Annex 12. Unless we otherwise state in this document, it is not apparent to us that the outcome of our review is likely to have any particular impact on race, disability and gender equality. Specifically, and as explained in Annex 12, we are confident that the NCC changes outlined in this review will not be to the detriment of our aim of advancing equality of opportunity between different groups in society.
- A13.37 Nor are we envisaging any need to carry out separate EIAs in relation to race or gender equality or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we anticipate that our regulatory intervention will affect all industry stakeholders equally and therefore 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 United Kingdom 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.

Regulated entity

- A13.38 The power in the Act to impose an SMP obligation by means of an SMP services condition provides that it is to be applied only to a 'person' whom we have determined to be a 'person' having SMP in a specific market for electronic communications networks, electronic communications services or associated facilities (i.e. the 'services market').
- A13.39 The Framework Directive requires that, where an NRA determines that a relevant market is not effectively competitive, it shall identify 'undertakings' with SMP on that market and impose appropriate specific regulatory obligations. For the purposes of EC competition law, 'undertaking' includes companies within the same corporate group (*Viho v Commission* Case C-73/95 P [1996] ECR I-5447¹⁰²⁹), for example, where a company within that group is not independent in its decision making.
- A13.40 We consider it appropriate to prevent a dominant provider to whom a SMP service condition is applied, which is part of a group of companies, from exploiting the principle of corporate separation. The dominant provider should not use another member of its group to carry out activities or to fail to comply with a condition, which would otherwise render the dominant provider in breach of its obligations.

¹⁰²⁹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:61995CJ0073:EN:PDF>

EU consultation

Introduction

- A14.1 The measures we have adopted in this Statement have been subject to both a domestic consultation process and then an EU consultation process.
- A14.2 We have explained in the main body of this Statement that we have taken due account of all applicable guidelines and recommendations issued by the EC and BEREC relating to market identification and analysis, including SMP assessment and remedies, as relevant to our measures. In exercising our discretion as the NRA for the UK in light of such guidelines and recommendations, the EU consultation then plays a further important role in the development of consistent regulatory practices and the consistent application of the regulatory framework in order to contribute effectively to the development and completion of the internal market.
- A14.3 As our domestic consultation is conducted prior to the EU consultation, it also has the benefit of allowing the views of domestic respondents to be addressed and reflected for consideration in the EU consultation. We must take utmost account of any comments received from the EC, BEREC and other NRAs but we may then proceed to adopt our measures, except where our draft measure would, in the EC's view, create a barrier to the single market or if it has serious doubts as to its compatibility with Community law. In those exceptional cases, further procedures apply depending on whether the concerns relate to market identification or SMP findings, or remedies.
- A14.4 On 20 August 2013 we notified our proposals for EU consultation in our Draft Statement for the review of fixed narrowband services markets, inviting comments from the EC, BEREC and NRAs of other Member States.

Comments by the European Commission

- A14.5 On 20 September 2013, we received from the EC its comments in its Decision letter concerning Cases UK/2013/1495 and UK/2013/1496 in respect of our notified proposals.¹⁰³⁰ We received no other response from the EU consultation. The EC has not objected to our measures, but it has made two comments.
- A14.6 First, the EC reminds Ofcom that pursuant to the 2009 EC Recommendation, NRAs should ensure that termination rates are implemented at LRIC by 31 December 2012. The EC notes the practical issues identified by Ofcom, but given the implementation date set out in the 2009 EC Recommendation, invites Ofcom to re-assess whether the effective date for the new rates can be shortened and in the event that the date of 1 January 2014 is kept, to fully explain the reasons.
- A14.7 As explained in Section 11, we consider that the new LRIC rates for FTRs (and LRIC+ rates for call origination) should be introduced as soon as possible. However, having assessed the arguments afresh, we continue to believe that 1 January 2014 is the earliest date that the new FTRs could be accommodated. Our full reasoning for the 1 January 2014 date is set out in paragraphs 11.10 to 11.14 of

¹⁰³⁰ http://stakeholders.ofcom.org.uk/binaries/consultations/nmr-2013/statement/EC_letter.pdf

this statement, with additional context and stakeholder arguments set out in Annex 9.

- A14.8 Second, the EC notes that Ofcom proposes not to impose a non-discrimination obligation nor an ex ante price control on non-BT CPs, although in 2009, the EC had requested Ofcom to do so vis-à-vis all CPs. The EC acknowledges the arguments put forward by Ofcom for its approach, but argues that, in view of the smaller size of (certain) CPs, symmetric cost-based termination rates could also be achieved by setting charge controls using a single cost model for all CPs based on a hypothetical efficient operator. The EC emphasises that dispute resolution procedures might not be sufficient to remedy a potential market failure in a timely, efficient and transparent way. Such a measure could remedy the situation only once Ofcom has learned of a possibly abusive pricing behaviour, and in any case it would be binding only for the undertakings in litigation.
- A14.9 The EC therefore asks Ofcom to reconsider imposing an ex ante price control on all CPs, which is based on the costs of a hypothetical efficient operator. In the event that Ofcom does not impose ex ante charge controls on all CPs, the EC asks Ofcom to set out in further detail its reasons for not doing so. In addition, the EC asks Ofcom to monitor the termination markets continuously and to intervene without delay by way of the measures recommended by the EC above, should disputes over FTRs arise.
- A14.10 We have reconsidered our arguments, but do not believe that it is appropriate to regulate the prices of non-BT CPs by way of a charge control. We have provided further details that address the points raised by the EC. Our full reasoning is set out in paragraphs 6.118 to 6.136 of this Statement.

Annex 15

Glossary

21CN: BT's planned, but not implemented, next generation network upgrade.

Access Directive: Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities

Assumed Handover Point (AHP): the location where a call is handed over from the OCP to the TCP for the purposes of connecting the call to the end-user.

BT: British Telecommunications plc

CNPP *Calling Network Provider Pays*: Wholesale charges for terminating telephone calls set in such a way that the originating call provider pays the terminating call provider a charge to terminate the call. CNPP often occurs in markets where retail charges are set on a CPP basis.

CPP *Calling Party Pays*: Retail charges for telephone calls set in such a way that only the calling party (and not the called party) pays a charge when a call is made.

CAT: Competition Appeal Tribunal

CC: Competition Commission

CFI: Call for Inputs

Charge control: A control which sets the maximum price that a communication provider can charge for a particular product or service. Most charge controls are imposed for a defined period.

Codec *Coder-decoder*: A device which converts analogue signals into digital signals for transmission. Audio codecs used in telecommunications networks include Pulse Code Modulation (PCM) as defined in ITU-T standard G.711, which converts analogue audio signals to a 64kb/s digital signal, and conjugate-structure algebraic-code-excited linear prediction (CS-ACELP) as defined in ITU-T standard G.729, which converts analogue audio signals to a 8kb/s digital signal.

Common costs: Costs which are shared by all the services supplied by a firm.

Communications Act or “the Act”: Communications Act 2003

Cost orientation: The principle that the price charged for the provision of a service should reflect the underlying costs incurred in providing that service.

CP: Communications Provider

Carrier Pre-Selection (CPS): is the facility offered to customers which allows them to opt for certain defined classes of call to be carried by an operator selected in advance without having to dial a routing prefix or follow any other different procedure to invoke such routing.

CS: Carrier Selection (see IA)

Current cost accounting (CCA): An accounting convention, where assets are valued and depreciated according to their current replacement cost whilst maintaining the operating or financial capital of the business entity.

Digital Local Exchange (DLE): The telephone exchange to which customers are connected, usually via a concentrator.

EC: European Commission

2007 EC Recommendation: European 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 communications networks and services.

2009 EC Recommendation: European Commission Recommendation (2009/396/EC) of 7 May 2009 on the Regulatory Treatment of Fixed and Mobile Termination Rates in the EU.

ED: Economic Depreciation

End-user: The final consumer of a product or service.

Framework Directive – Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services.

Fully Allocated Cost (FAC): An accounting approach under which all the costs of the company are distributed between its various products and services. The fully allocated cost of a product or service may therefore include some common costs that are not directly attributable to the service.

FCP: Fixed Communications Provider

Fixed Termination Rate (FTR): The wholesale charge levied by FCPs for Fixed Call Termination.

Indirect Access (IA): is a facility which allows a customer to opt for calls to be carried by an operator which is different to the operator that provides the network to which the customer is connected, on a call by call basis, by dialling a routing prefix to invoke such routing.

IP Internet Protocol – Packet data protocol used for routing and carriage of messages across the internet and similar networks.

ISDN2: A digital telephone line service that supports telephony and switched data services. ISDN2 provides the calling or data capacity equivalent to two analogue telephone lines

ISDN30: A digital telephone service that provides up to the equivalent of 30 analogue lines over a common digital bearer circuit. These lines provide digital voice telephony, data services and a wide range of ancillary services

ISP: Internet Service Provider

ITC/ITT: Inter-tandem conveyance and transit

ITU-T: International Telecommunications Union - Telecommunications Standardisation sector

KCOM: KCOM Group PLC, formerly Kingston Communications

Local Loop: The access network connection between the customer's premises and the local serving exchange, usually comprised of two copper wires twisted together.

Local loop unbundling (LLU): A process by which a dominant provider's local loops are physically disconnected, or partially disconnected, from its network and connected to competing provider's networks. This enables operators other than the incumbent to use the local loop to provide services directly to customers.

Long Run Incremental Costs (LRIC) or pure LRIC: LRIC is defined as the long run avoidable cost of an operator carrying a particular increment of traffic. The increment in question is treated as the final traffic increment on the network.

Long Run Incremental Costs Plus (LRIC+): The long run (average) incremental costs plus an equi-proportionate mark-up for the recovery of shared and common costs. LRIC+ should be taken to mean the same as LRAIC+ (a term used by some other NRAs).

LTC/LTT: Local-tandem conveyance and transit

MCP: Mobile Communications Provider

Metallic Path Facility (MPF): a fully unbundled local loop allowing a CP to offer voice and data using its own equipment.

Mobile Call Termination (MCT): The service provided by a MCP to allow an OCP to connect a caller with the intended mobile call recipient on that MCP's network.

Modern Equivalent Asset (MEA): An approach to setting charges that bases costs on what is believed to be the most efficient available technology that performs the same function as the old technology.

Multiple Service Access Node (MSAN): A device typically installed in a telephone exchange (although sometimes in a roadside cabinet), which connects customers telephone lines to the core network, to provide telephony, ISDN, and broadband all from a single platform.

Mobile Termination Rate (MTR): The wholesale charge levied by MCPs for MCT.

NCC: Network Charge Control (see charge control)

Next generation network (NGN): A network that uses IP technology in the core and backhaul to provide multiple services over a single platform.

National Regulatory Authority (NRA): The relevant communications regulatory body for each country in the EU. Ofcom is the NRA for the United Kingdom.

NTNP: National Telephony Number Plan

NTS: Number Translation Services

Originating CP (OCP): The CP of the end-user making a call, i.e. the CP from which the call originates.

OECD: Organisation for Economic Co-operation and Development.

Ofcom: The Office of Communications.

packet-switched technology: A digital networking communications method that groups all transmitted data – regardless of content, type, or structure – into suitably-sized blocks, called *packets*. Packet switching features delivery of variable-bit-rate data streams (sequences of packets) over a shared network.

PAYG: pay as you go.

ppm: pence per minute.

Product Management, Policy and Planning (PPP): Overheads associated with marketing activities, customer service management, billing and finance activities directly related to the regulated service.

Public Switched Telephony Network (PSTN): The telephony network used to provide telephone calls using (or emulating) circuit-switching and using telephone numbers to identify subscribers or called locations, allowing all customers connected to the network to call all other customers.

Pure LRIC: Pure Long Run Incremental Costs

Regulatory Financial Statements (RFS): The financial statements that BT is required by Ofcom to prepare, have audited and publish.

Revised Standard Interconnection Agreement (SIA): BT's standard terms and conditions for the provision of interconnection and related services.

Shared Metallic Path Facility (SMPF): a shared unbundled local loop allowing a CP to offer data via its own switch, plus voice via BT equipment.

SMP: Significant Market Power

SMP Guidelines – European Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications networks and services (2002/C165/03).

SSNIP: Small but Significant Non-transitory Increase in Price.

Terminating CP (TCP): The CP of the end-user receiving a call, i.e. the CP from which the call terminates.

Time Division Multiplex (TDM): A method of putting multiple data streams in a single signal by separating the signal into many segments, each having a very short duration. Each individual data stream is reassembled at the receiving end based on the timing.

Time of day: The variation in call charge rates across daytime, evening and weekend calls.

United Kingdom: When referring to the United Kingdom this excludes the Hull Area except when referring to United Kingdom wide data.

Voice over Internet Protocol (VoIP): The traffic method of carrying voice calls on fixed and mobile networks by packetizing speech and carrying it using IP.

WACC: *Weighted Average Cost of Capital* – An estimated cost of capital for a hypothetical United Kingdom CP. For the purpose of this exercise, we use the Capital Asset Pricing Model (CAPM) to determine the WACC.

WFAEL: Wholesale fixed analogue exchanges lines

WLA: Wholesale Local Access

Wholesale Line Rental (WLR): The service offered by BT to other United Kingdom communications providers to enable them to offer retail line rental services in competition with BT's own retail services. Line rental is offered along with calls (and other service elements, such as broadband) to retail customers.