Review of BT network charge controls

Consultation on proposed charge controls in wholesale narrowband markets

Consultation

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Section 1

Summary

Introduction

1.1 This document explains Ofcom's proposals for network charge controls (NCCs).

1.2 NCCs cover the charges paid to BT by other Communications Providers (CPs) for certain interconnection and wholesale conveyance and switching services. These services enable CPs to deliver or convey calls using BT's network. Where a CP has significant market power (SMP) in an economic market, there is a need for regulation of services provided in that market. Current NCCs cover a number of services provided in wholesale markets in which BT has in the past been determined by Ofcom to have SMP. NCCs protect BT's wholesale customers from excessive pricing for these services, and provide BT with incentives for efficiency and cost reduction in provision of them.

1.3 The current NCCs will expire on 30 September 2009. Ofcom is undertaking a review of NCCs to establish new controls to replace the current ones when they expire. This document explains the analysis we have undertaken in the review and the proposals we are making for new NCCs. The NCC review is being managed in close conjunction with reviews of wholesale narrowband markets. Ofcom's proposals for consultation on the wholesale narrowband market reviews are contained in a separate document published today.[1] The wholesale narrowband market reviews will identify the wholesale markets in which BT has SMP and hence for which there is a need for regulatory remedies to be applied. This means that the wholesale narrowband reviews will define the scope of the next NCCs as well as other remedies which will be applied in wholesale narrowband markets. The proposals explained in this document are designed to apply to those wholesale conveyance services for which a need for NCCs is identified through the wholesale narrowband market reviews as well as associated technical areas and services.

1.4 The economic and market environment in which new NCCs will be set is different to that in previous NCC reviews. Technology change is likely to mean that some voice telephony traffic migrates from the public switched telephony network (PSTN) to next generation networks (NGNs)[2] during the life of the next control. Ofcom's approach to this is explained in this consultation document. Also, the volume of calls delivered using wholesale conveyance services provided over BT's network has declined and is forecast to continue on a downward trend. As a result we are forecasting that unit costs will rise during the period of the next NCC. Under the proposals set out in this document, NCC charges would consequently be allowed to rise.

[1] Review of the fixed narrowband services wholesale markets - Consultation on the identification of markets, determination of market power and remedies
http://www.ofcom.org.uk/consult/condocs/review_wholesale/

[2] BT's NGN programme is entitled '21st Century Network' (21CN) and referred to in this document as '21CN'.

Summary of proposals

NCC scope

1.5 The precise scope of the NCCs cannot be finalised until the narrowband wholesale market reviews are complete. Ofcom's wholesale narrowband market review proposals identify SMP and the need for NCCs as a remedy in the following markets:

- Wholesale call origination.
- Wholesale call termination.

1.6 In addition, Ofcom proposes to continue regulation of interconnection circuits and product management, policy and planning (PPP). Regulation of interconnection circuits is necessary to ensure effectiveness of the proposed remedies in the closely related wholesale call origination and termination markets. Although interconnect circuits have not been defined as a market themselves such regulation is allowed in these 'technical areas' where an appropriate link to a regulated market is established. The regulation of PPP derives from its status as an element of the services which are proposed to be covered by the new NCC.

1.7 This scope would mean that the new NCCs would not include some services which are included in the current NCC set in 2005. These services are single transit (ST), local-tandem conveyance (LTC), and Flat Rate Internet Access Call Origination (FRIACO). The reasons for the proposed removal of charge controls from these services are explained fully in Ofcom's consultation on the wholesale narrowband reviews and summarised in Section 3 of this document.

1.8 In this document Ofcom makes NCC proposals based on the proposed findings of the wholesale narrowband market reviews – i.e. the NCCs will cover wholesale call origination, wholesale call termination, interconnection circuits and PPP.

NCC duration

1.9 Ofcom is proposing a four year duration for the new NCCs. This means that they would run from 1 October 2009 to 30 September 2013. In developing this proposal, we have considered a number of factors.

1.10 We have considered the balance of the dynamic efficiency benefits of a longer period – giving BT the ability to earn returns above its cost of capital if it outperforms the NCCs and hence providing very strong incentives for innovation, productivity gains and cost reduction – and the allocative efficiency benefits of a shorter control – keeping the level of charges close to incurred costs.

1.11 We have also taken account of possible further investment in NGN platforms for voice services and migration from PSTN to NGN networks during the period.

1.12 We have also considered the potential impact of developments in the broader framework for regulation of call termination during the proposed period - in particular the treatment of mobile termination (Ofcom plans to publish its first consultation on the next review of the mobile termination market in Spring 2009), and the European Commissions's proposed Recommendation on Call termination which has been published in draft.

1.13 The analysis behind our proposal for a four year NCC is explained fully in Section 4.

Cost modelling

1.14 Ofcom has developed a cost model to establish the proposed NCC and underlying cost base for the next NCC period. Detailed documentation for the model is included in this consultation document at Annex 6 and the approach is also explained in Section 4. There are a number of key features to the model.

The hypothetical ongoing network

1.15 The next NCC period is likely to see the development of 21CN interconnection and wholesale conveyance services which are functionally equivalent to NCC services, and some migration from use of PSTN to 21CN wholesale services to provide calls. Ofcom has therefore considered how best to allow for this migration in its modelling.

1.16 Industry discussions on 21CN wholesale services are ongoing and the design of these services is still in development. There is currently insufficient information available on 21CN service components, underlying costs or charge levels to be able to make robust forecasts or assumptions in modelling 21CN services and migration from BT's current network.

1.17 Therefore Ofcom has developed a cost model based on use of a 'hypothetical ongoing' network. This approach is consistent with Ofcom's modelling in 2005 for the NCC and for the leased lines charge control[3]. In both cases, Ofcom has used a hypothetical ongoing network methodology to cope with uncertain costs and timing associated with technology change.

Cost standard

1.18 Ofcom is proposing to set the NCC using Fully Allocated Costs and Current Cost Accounting (FAC CCA) as the cost standard. This is the best available proxy for long run incremental costs plus an appropriate contribution to common costs (LRIC+). The cost data for this is taken from BT's Financial Statements and adjusted for the hypothetical ongoing model. This use of the FAC CCA cost standard is consistent with the current NCC and with both the leased lines charge control and Openreach Financial Framework.[4]

Adjustments for the hypothetical ongoing network

1.19 The hypothetical ongoing network is based on steady state PSTN costs. BT's Financial Statements provide a reliable source of PSTN cost data, but they are not representative of an ongoing network as they contain end-of-life costs for the PSTN (for example, with many assets largely depreciated on an accounting basis) and some capital investment for the 21CN. Therefore Ofcom has made adjustments to cost data from the Financial Statements to create a technology neutral basis for the hypothetical ongoing model. These adjustments are fully described and discussed in Annex 6.

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[3] A new charge control framework for wholesale traditional interface and alternative interface products and services http://www.ofcom.org.uk/consult/condocs/llcc/

[4] A New Pricing Framework for Openreach - Developing new charge controls for wholesale line rental, unbundled local loops and related services
http://www.ofcom.org.uk/consult/condocs/openreachframework/

Efficiency

1.20 Ofcom has used a number of sources to assess the efficiency of BT's network and appropriate targets for cost reduction through productivity gains during the period of the next NCC. Our analysis and methodology is fully explained in Section 4.

1.21 The result of our analysis is that we expect unit costs for given volumes over the 2009-2013 period to decline between 1-3% annually and this range is an input to our NCC model.

Recovery of costs under the next NCC

1.22 In this NCC review, Ofcom has identified that NCC services will not be contributing to common costs to the level of FAC at the start of the new NCC. The level of recovery below FAC is primarily the result of volume declines in the current NCC in excess of what was forecast when it was set in 2005. This raises questions about how to deal with recovery of common costs in the next NCC.

1.23 Ofcom has considered whether to set a glide path to ensure that charges cover the forward looking levels of FAC established by the NCC cost model at the end of the NCC period, or to provide for adjustments to charges in the first year of the NCC. We propose that glide paths from current charges to forward looking modelled FAC at the end of the NCC period is the most appropriate approach to common cost recovery during the next NCC period. This is consistent with the approach we have taken to align charges to underlying costs in previous NCCs. Details of our proposal are explained in Section 4 of this document.

Treatment of 21CN services and NGN interconnection

1.24 Ofcom expects new 21CN interconnection and wholesale conveyance services to be introduced during the life of the next NCC. Some of these services will be functionally equivalent to existing NCC services provided over the PSTN and hence there will be migration from PSTN to 21CN services over the period. Robust data is not currently available to enable the charges or underlying costs of these services to be included in our cost modelling.

1.25 As we do not have sufficient robust information on 21CN services or underlying costs, we are not proposing to apply the NCCs directly to them. We believe that, during the early stages of PSTN to 21CN voice migration, incentives for swift migration may act as a constraint on 21CN service pricing in that BT will wish to encourage voluntary migration by other CPs from PSTN to 21CN services, and so may be expected to set prices accordingly. However, it is important to understand that, whilst the proposed charge controls will not apply directly to 21CN services, 21CN services introduced in SMP markets (e.g. wholesale call origination, wholesale call termination) would be subject to other SMP remedies imposed under proposals in the current wholesale narrowband market review consultation. Requirements for price publication, non-discrimination and cost orientation would allow Ofcom to intervene if it is necessary to ensure that the prices for 21CN services are not anti-competitive in the relevant markets. In addition, Ofcom would have the ability to impose new remedies – e.g. new charge controls - if appropriate.

1.26 More generally, Ofcom will continue to work with industry as NGN interconnection arrangements develop. It is likely that full NGN deployment will give rise to economies of scale and scope across a wide range of capabilities and services, and that this will impact wholesale voice services. Whilst our modelling for the NCC does

not explicitly include 21CN components for the reasons we explain in this document, the arrangements we are proposing for the next NCC will not constrain the ability of BT and other CPs to benefit from economies of scale and scope as they develop and roll out their NGN platforms, and to pass these benefits on to wholesale and retail customers.

Ranges for values of X

1.27 Ofcom's modelling for the new NCC has produced a range of values for X. The modelling methodology, the scenarios we have modelled and the drivers and sensitivities for the X ranges are explained in Section 4 and Annex 6. Table 1.1 below shows the ranges for X values from our modelling together with the RPI-X values which apply in the current NCC.

Table 1.1: Proposed ranges for RPI+/-X

NCC basket	Proposed ranges for RPI+/-X, 2008 - 2013	RPI+/-X% in current NCC
Call termination	RPI+3.25% - RPI+10.5%	RPI-5%
Call origination	RPI+2.5% - RPI+9.5%	RPI-3.75%
Interconnection Services Basket (ISB)	RPI+1.5% - RPI+6.5%	RPI-5.25%
Product Management Policy and Planning (PPP)	RPI+0% - RPI+6.75%	RPI+0.75%
Local-tandem conveyance	n/a	RPI-0%
Single transit	n/a	RPI-11.5%
DLE FRIACO	n/a	RPI-8%
ST FRIACO	n/a	RPI-8.5%

Consultation schedule

1.28 This consultation closes on 28 May. Following the end of consultation Ofcom will review all responses received. If it is necessary to re-consult we will do so during the Summer. We expect to issue a final statement and legal notifications in late Summer.

Section 2

Introduction

Structure of this document

2.1 This document consists of 3 main sections setting out the purpose of this review of BT's Network Charge Controls ("NCCs"). These are supported by a number of annexes which contain more detailed information. The main body of the document is set out as follows.

2.2 In this Section we set out why we are conducting this review, the role of NCCs and a brief outline of their history.

2.3 In Section 3 we summarise the findings of Ofcom's review of fixed narrowband wholesale markets[5], specifically the relevant proposed market definitions and SMP findings which are relevant to our NCC proposals. We also look at remedies other than charge controls that have been proposed to address some of those findings.

2.4 Section 4 describes the scope of this NCC review and the markets for which further NCCs are deemed necessary. We set out our findings and our proposals for how the next NCC regime should operate together with a brief description of how we modelled the new levels of controls.

2.5 The associated Annexes, in addition to describing Ofcom's consultation policy and detailing how stakeholders should send us their comments, include:

- Annex 4 which collates the specific questions raised in this document for which stakeholders' views are being sought.
- Annex 5 contains the draft legal notifications necessary to implement the new controls.
- Annex 6 contains a detailed description of the model we have used to construct the proposed new NCCs.
- Annex 7 contains an impact assessment for our proposals.
- Annex 8 contains a description of the legal framework for our proposals.
- Annex 9 is a list of services covered by the proposed new NCC.
- Annex 10 is a glossary of terms.

Purpose of the document

2.6 This document is the means by which Ofcom presents its proposals for the future regulation of BT's charges to its wholesale customers in relation to a range of services provided over the fixed public narrowband network. BT's customers in this context are other networks that purchase interconnection and wholesale conveyance

[5] Review of the fixed narrowband services wholesale markets - Consultation on the identification of markets, determination of market power and remedies http://www.ofcom.org.uk/consult/condocs/review_wholesale/

services from BT. The use of charge controls is only one of a number of remedies for SMP in the relevant markets. These are identified, and their applicability discussed, in the "Review of the fixed narrowband wholesale voice services markets" consultation document and also summarised in Section 3 of this document.

NCC and Ofcom's Regulatory Principles

2.7 In considering the application of SMP remedies, Ofcom will follow its statutory duties under the Communications Act, explained in detail together with other elements of the legal framework for NCCs in Annex 8. In seeking to fulfil our objectives under Section 3 of the Communications Act, we will apply a number of regulatory principles. Specifically the principles which are relevant here include:

- Ofcom will operate with a bias against intervention, but with a willingness to intervene firmly, promptly and effectively where required.
- Ofcom will strive to ensure its interventions will be evidence-based, proportionate, consistent, accountable and transparent in both deliberation and outcome.
- Ofcom will always seek the least intrusive regulatory mechanisms to achieve its policy objectives.
- Ofcom will consult widely with all relevant stakeholders and assess the impact of regulatory action before imposing regulation upon a market.

2.8 NCCs are a remedy to BT's SMP in certain markets where BT would otherwise have the ability set excessive charges and thereby potentially harm competition in those markets.

2.9 Ofcom has relaxed a number of different controls where it is confident the markets are capable of supporting effective competition. In this case the evidence provided by the narrowband market review supports the need for continued intervention in a smaller range of wholesale markets than on previous occasions. In this way, through the imposition of fewer charge controls we are ensuring that regulation is only applied where it is clearly justified.

2.10 Ofcom is publishing this consultation to obtain the views from the widest possible range of stakeholders on its proposals to maintain regulatory control in certain wholesale markets.

Role of NCCs

2.11 NCCs are designed to prevent BT from unfairly exerting its SMP in wholesale markets by setting excessive charges thereby increasing its competitors' costs. Without controls BT could increase its profitability without discriminating between its wholesale customers and its own retail business, but this may have negative consequences for competitors and consumers. The NCCs operate alongside other remedies which are designed to protect competitors and consumers from the negative consequences of market distortions which could result from unfair exploitation by BT of its SMP.

2.12 NCCs operate using the RPI +/- X formula. This is effective in driving efficiency gains by BT in relevant wholesale markets.

History of NCCs

2.13 Network charge controls were first introduced by Ofcom's predecessor, Oftel, in 1997 in order to improve the way BT's wholesale charges were regulated and to create greater certainty about how charges were likely to change over time. Prior to 1997 Oftel determined interconnection charges each year based on incurred costs. This system ensured BT recovered its reasonably incurred costs. The main drawback was that it offered little real incentive for BT to continually improve its efficiency and thus drive down its costs.

2.14 The introduction of NCCs with an RPI-X type of control gave BT the incentive to increase its efficiency. A positive result of more than 11 years of charge controls is that wholesale charges in the UK are now the lowest in Europe according to the latest "Progress Report on the Single European Electronic Communications Market"[6]. This has had beneficial results in downstream markets.

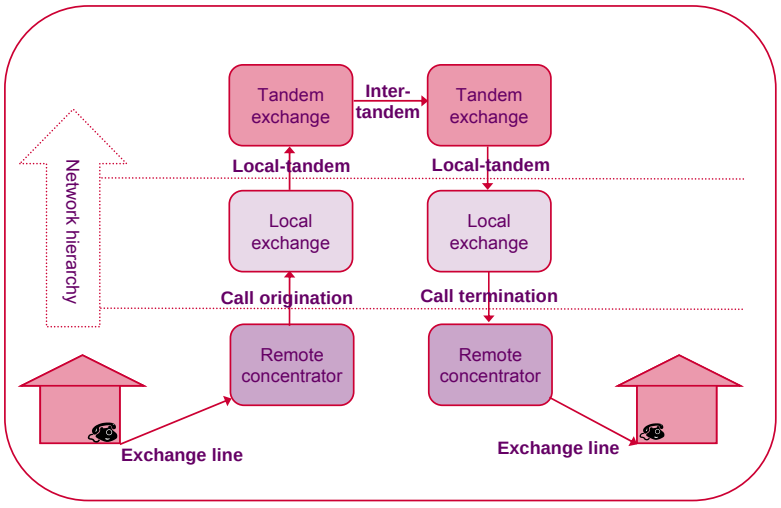
2.15 It should be remembered that BT is not alone in having SMP in the wholesale narrowband market. KCom (formerly Kingston Communications) is dominant in the Hull area. This is a relatively small market and Ofcom has concluded that it would be neither beneficial nor proportionate to impose charge controls on KCom.

Services to be considered

PSTN arrangements

2.16 The BT public narrowband network, or PSTN, is broken down into a number of segments which include exchange lines, call origination, conveyance and call termination. This allows the Communications Providers ("CPs") to purchase a range of wholesale products which enable them to compete with BT without having to build their own networks or replicate every part of BT's network. In this way they can originate and terminate calls on behalf of end users using a combination of segments of their own network and those purchased from BT or other communications providers. Figure 2.1 illustrates the segmentation of BT's network.

Figure 2.1 Segmentation of wholesale narrowband services



[6] See the most recent Progress Report on the Single European Electronic Communications Market at http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/annualreports/13th/index_en.htm

2.17 The following four services are also economic markets that relate to particular parts of BT's PSTN and which are currently included in the NCC:

- **call origination** – which is the conveyance of a call originating on a customer's exchange line from the remote concentrator to and over the local exchange;
- **call termination** - which is the conveyance of a call terminating on a customer's exchange line over and from the local exchange to the remote concentrator;
- **single transit** - which is the service BT provides at a single tandem exchange to switch a call from one network to another when a call originates and terminates on networks other than its own;
- **local-tandem conveyance and local-tandem transit** – which are services that convey traffic between a local and a tandem exchange.

2.18 The August 2005 NCC Review[7] found that BT had a dominant position, or significant market power ("SMP"), in all 4 of these markets. As a consequence charge controls were applied to each service for a period of 4 years. These controls expire on 30 September 2009 as a result of which Ofcom is currently reviewing these markets again to determine the extent to which BT retains SMP and has published its proposals in a separate consultation entitled "Review of the Fixed Narrowband Wholesale Services Market"[8]. When finalised, this latest review will determine which of these markets require the application of revised charge controls and other appropriate remedies. The proposed scope of new NCCs resulting from the narrowband market reviews is explained in Section 3.

Technology neutral arrangements

2.19 The next NCC period is likely to see the development of 21CN interconnection and wholesale conveyance services which are functionally equivalent to NCC services. Some migration from use of PSTN to 21CN wholesale services to provide calls is also likely. The wholesale narrowband market reviews have identified that some markets can be defined in a technology neutral way – i.e. spanning both PSTN and NGN/21CN services. Ofcom has also developed a technology neutral methodology for NCC cost modelling. This is explained fully in Sections 3 and 4.

[7] Review of BT's Network Charge Controls
http://www.ofcom.org.uk/consult/condocs/charge/statement/statement_ncc.pdf
[8] Review of the fixed narrowband services wholesale markets - Consultation on the identification of markets, determination of market power and remedies
http://www.ofcom.org.uk/consult/condocs/review_wholesale/

Section 3

Summary of proposed SMP decisions in narrowband wholesale markets

3.1 In a separate consultation document published today[9] Ofcom has explained proposals resulting from its review of fixed narrowband wholesale markets. The markets included in that review include wholesale conveyance services covered by the current network charge controls, specifically:

- Wholesale call origination.
- Fixed geographic call termination.
- Local-tandem conveyance and transit.
- Wholesale transit services.

3.2 The wholesale narrowband market review document contains a detailed explanation of Ofcom's findings and proposals in its analysis of market definition and the existence of significant market power in these markets.

3.3 The narrowband wholesale market review also identifies and explains the remedies which Ofcom believes are appropriate in these markets where we have identified SMP and presents the economic and policy rationale and legal justification for them. As NCCs are a specific remedy which has been applied to services in interconnection and wholesale conveyance markets, the narrowband wholesale market review identifies the need for the application of NCCs in SMP markets. However, it does not consider the detailed design and implementation of NCCs. Ofcom's proposals on this are explained in this document.

3.4 Hence, the scope of the proposed new NCCs is defined by the narrowband wholesale market reviews, and the detailed design of the NCCs is covered in this document. For ease of reference, the conclusions of the narrowband wholesale market reviews as they relate to NCC scope are summarised here.

Market definitions and SMP findings

Wholesale call origination

3.5 Ofcom has identified a continuing market for wholesale call origination. In defining this market Ofcom has considered the possible impact of deployment by BT of 21CN voice network architecture.

3.6 Ofcom has concluded that the market for call origination is technology neutral. It covers the network from the point of connection of the exchange line on a fixed narrowband network to the first point where access is available to other CPs for

[9] Review of the fixed narrowband services wholesale markets - Consultation on the identification of markets, determination of market power and remedies. http://www.ofcom.org.uk/consult/condocs/review_wholesale/

interconnection. This technology neutral definition is generic for call origination on both the PSTN and 21CN.

3.7 Ofcom has identified that BT has SMP in the national market for wholesale call origination outside of the Hull area, and the KCom has SMP in the market for wholesale call origination in Hull.

Fixed geographic call termination

3.8 Ofcom has identified markets for wholesale call termination. As for wholesale call origination, Ofcom has considered the possible impact of deployment by BT of 21CN voice network architecture.

3.9 Ofcom has concluded that the market for call termination is technology neutral. In terms of call routing, call termination is essentially the mirror image of call origination and hence the market also covers the network from the point of connection of the exchange line to the first point where access is available to other CPs for interconnection. This technology neutral definition is generic for call termination on both PSTN and 21CN or other NGN architectures.

3.10 Separate markets exist for termination on all fixed networks in the UK. Ofcom has identified that SMP exists in the provision of termination to geographic numbers on all of these networks and hence any CP which terminates this traffic has SMP. Ofcom has published a list of these terminating CPs in the narrowband wholesale market review document.

Local to tandem conveyance and transit

3.11 Local to tandem conveyance and transit comprises conveyance between the local exchange and the first tandem exchange along with switching at the tandem exchange. Unlike call origination and termination, the local to tandem layer of the network and hence the services which use it, is specific to BT's current network. BT's 21CN voice architecture will not include a local to tandem layer or anything equivalent and so this market will disappear in a fully deployed 21CN voice architecture.

3.12 Ofcom has found the local to tandem conveyance and transit market to be effectively competitive and therefore is proposing no further regulation in this market.

Wholesale transit services

3.13 Wholesale transit services provide switching and conveyance services between tandem exchanges. In the last market review covering these services[10], inter-tandem conveyance and transit were found to be competitive and hence regulation was removed from these services. In the current review of fixed narrowband wholesale services Ofcom is proposing that single transit falls within a broader competitive transit market and hence that regulation, including NCCs, should be removed from single transit.

[10] Review of BT's Network Charge Controls http://www.ofcom.org.uk/consult/condocs/charge/

Remedies

3.14 For those markets in which SMP has been identified Ofcom is proposing the following remedies.

Wholesale call origination

3.15 As a result of its SMP findings on both BT and KCom in call origination markets, Ofcom is proposing to impose conditions requiring provision of carrier pre-selection (CPS) and indirect access (IA).

3.16 In addition, Ofcom proposes that call origination on BT's network be subject to charge control.

Wholesale call termination

3.17 As a result of its SMP findings on all terminating CPs in call termination markets, Ofcom is proposing that the following remedies be imposed on all terminating CPs:

- Requirement to provide network access on fair and reasonable terms.

3.18 Ofcom proposes that the following remedies also be applied to call termination on BT's and KCom's networks:

- Requirement not to unduly discriminate.
- Requirement to set cost oriented charges.
- Requirement to publish a reference interconnection offer.
- Requirement to notify charges.

3.19 In addition, Ofcom proposes that a charge control be applied to BT's charges for call termination.

NCC scope

3.20 These conclusions from the narrowband wholesale market review mean that the proposed scope of the the new NCC is:

- Wholesale call origination on BT's network.
- Wholesale call termination on BT's network.

3.21 In addition, Ofcom has identified the need to impose charge controls on interconnection circuits – the circuits which provide the physical connection between interconnected networks. Interconnection circuits are a necessary facility for interconnection and hence are regulated as a 'technical area' needed for the fulfilment of BT's obligations under remedies imposed in SMP markets.

3.22 Ofcom also proposes to implement control of BT's charges for Product Management, Policy and Planning (PPP) activities related to regulated products. This includes administration overheads, marketing activities directly related to the regulated products, customer service management for these products and billing and finance

activities. Ofcom will also impose a control on PPP element of regulated wholesale conveyance charges.

Section 4

Proposals for network charge controls

4.1 This section contains Ofcom's main proposals for the next NCC comprising duration, our approach to cost modelling and treatment of 21CN services, and also includes questions for consultation on our proposals, assessment of our proposals against the legal tests for regulation which are fully explained in Annex 8, and explanation of how Ofcom has approached the European Commission's draft "Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU".

Approach

4.2 We will first set out the legal tests that apply to the imposition of a charge control as a remedy. We will then discuss the options we have considered and our proposals in developing the methodology for considering the framework for the control including its duration, the cost modelling methodology, treatment of next generation network (NGN) services and efficiency adjustments. In making our proposals for the control framework we will set out how our proposal is consistent with the legal tests. The next stage is to look at the how the charge control will be set within the proposed framework, i.e. how we propose that the charges will be fixed during the control period, and why that is consistent with the legal tests. Finally we consider the Commission's draft recommendation, how we have taken it into account in our analysis and proposals and how our decision relates to that recommendation.

Legal Framework

4.3 In setting any SMP Service condition, Ofcom has to ensure that the proposed condition complies with the various tests set out in the Communications Act ("the Act"), informed by the EC Communications Directives. The legal framework within which our proposals sit is set out in full at Annex 8.

4.4 As stated in the Summary at Section 1 and explained further in Section 3, the scope of this review derives its authority from the proposed SMP findings made in the Review of fixed narrowband services wholesale markets ("the wholesale review"),[11] the consultation for which was published on the same date as this consultation document. That review discussed whether charge controls should be applied as an appropriate remedy to SMP in various markets. It proposed that charge controls were an appropriate remedy, and discussed the legal tests justifying that proposal at Section 16 of the consultation document. This review is to make proposals about how those charge controls, as appropriate remedies, should be imposed.

4.5 In setting out how we consider the charge controls should work, we have been mindful of the need to ensure that our methodology remains consistent with the various obligations in the Act. Our proposals have to pass various tests, and we have to ensure that we are acting consistently with our duties under sections 3 and 4 of the Act.

[11] Review of the fixed narrowband services wholesale markets - Consultation on the identification of markets, determination of market power and remedies.
http://www.ofcom.org.uk/consult/condocs/review_wholesale/

Section 47

4.6 Section 47 of the Act requires that any condition set must be:

i. objectively justifiable;

ii. not such as to unduly discriminate;

iii. proportionate;

iv. transparent.

4.7 Section 47 is primarily considered in the wholesale review, as to whether a charge control is an appropriate remedy and whether it passes the tests set out in section 47 based upon the identified market failures. This review will, therefore, concentrate more on how the mechanics of the control satisfy the section 88 tests, as discussed below.

Section 88

4.8 Charge Controls, as a remedy, are authorised under section 87(9)(a) of the Act. Where a s87(9) remedy is proposed it must be compliant with section 88 of the Act.

4.9 Section 88(1) requires that such conditions must only be set where there is a relevant risks of adverse effects arising from price distortion and where the condition is appropriate for the purposes of:

i. promoting efficiency;

ii. promoting sustainable competition; and

iii. conferring the greatest possible benefits on end users.

4.10 In addition, under section 88(2), we must take account of the extent of the investment made by the Dominant Provider.

4.11 Section 88 is of particular importance when designing a charge control as the choices that are made in determining how the control shall operate will affect how we are able to justify the tests. It is important to ensure that the proposals made are such that the control remains appropriate for the purposes set out in s88(1)(b), and 88(2).

Sections 3 and 4

4.12 It may be that charge controls could be set in a number of ways, all of which pass the tests set out in sections 47 and 88. It is therefore important to consider the impact of any proposals against our general duties under section 3 of the Act and our obligations under the Community requirements, as set out in section 4.

4.13 Section 3 is set out in more detail at Annex 8, but the principle duty requires us to further the interests of citizens in relation to communication matters and to further the interests of consumers, where appropriate by promoting competition.

4.14 Section 4 obliges us to act in accordance with the six Community requirements. Article 8 of the Framework Directive sets out policy objectives and regulatory principles which member states shall take all reasonable measures to achieve.

Where there is conflict between our section 3 general duties and our obligations under section 4 the latter has precedence.

Overview of NCC environment

NCC service revenues

4.15 As explained in Section 3, the proposed new NCC will cover call termination, call origination, interconnection circuits and Product Management Policy and Planning (PPP). BT reported total revenues for these services in 2007/8 of £510 million of which £284 million was generated externally (i.e. revenue from other CPs for use of these services) and £225 million was internal revenue (i.e. revenue from other BT operating units for use of these services)[12].

Model Overview and values of X

Approach to modelling

4.16 This NCC will cover a period (2009 – 2013) when voice services and traffic are expected to migrate from PSTN to NGN platforms. However, the precise timing of this, the wholesale NGN services which will support voice, and their underlying costs are currently unknown. For this reason, Ofcom has been unable to explicitly model wholesale voice services for BT's 21CN in the next NCC period.

4.17 Ofcom has therefore adopted a technology neutral approach to modelling for this NCC review. We have developed a hypothetical ongoing network cost model (described in detail later in this section and in the methodological description at Annex 6). The model produces a forward looking efficient cost base and provides BT with incentives to minimise the potential inefficiencies which may arise as a result of the parallel running of the PSTN and 21CN.

4.18 Ofcom will continue to work with industry as NGN interconnection arrangements develop. It is likely that full NGN deployment will give rise to economies of scale and scope across a wide range of capabilities and services, and that this will impact wholesale voice services. Whilst our modelling for the NCC does not explicitly include 21CN components for the reasons we have explained, the arrangements we are proposing for the next NCC will not constrain the ability of BT and other CPs to benefit from economies of scale and scope as they develop and roll out their NGN platforms, and to pass these benefits on to wholesale and retail customers.

4.19 The ranges for X we are proposing for the next NCC period are shown in Table 4.1 below.

[12] BT Current Cost Financial Statements for 2008. http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2008/Regulatoryfinancialstatements2008.htm

Table 4.1: Proposed ranges for RPI+/-X in the next NCC

NCC basket	Proposed ranges for RPI+/-X, 2008 - 2013
Call termination	RPI+3.25% - RPI+10.5%
Call origination	RPI+2.5% - RPI+9.5%
Interconnection Services Basket (ISB)	RPI+1.5% - RPI+6.5%
Product Management Policy and Planning (PPP)	RPI+0% - RPI+6.75%

4.20 The next NCC would allow increases to charges across the period of the control. The primary driver of the increases to unit costs underlying these ranges is volume decline. There are two aspects to this:

- First, traffic volumes for NCC services have declined faster than were forecast when the current NCC was set in 2005.
- Second, traffic volumes for the NCC services are forecast to continue to decline over the life of the proposed new NCC.

Historic and forecast volume declines are illustrated in Figures 4.1 and 4.2 below respectively.

Figure 4.1: Indexed Volume Forecasts 2005 NCC (2004/05 = 100) and indexed actual network volumes

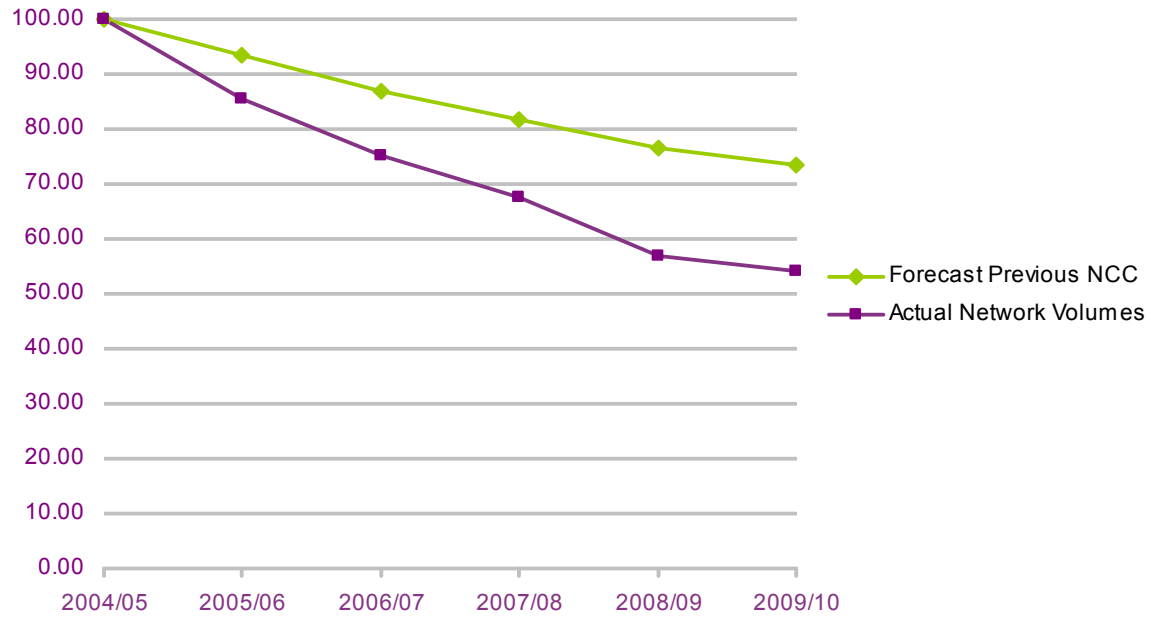
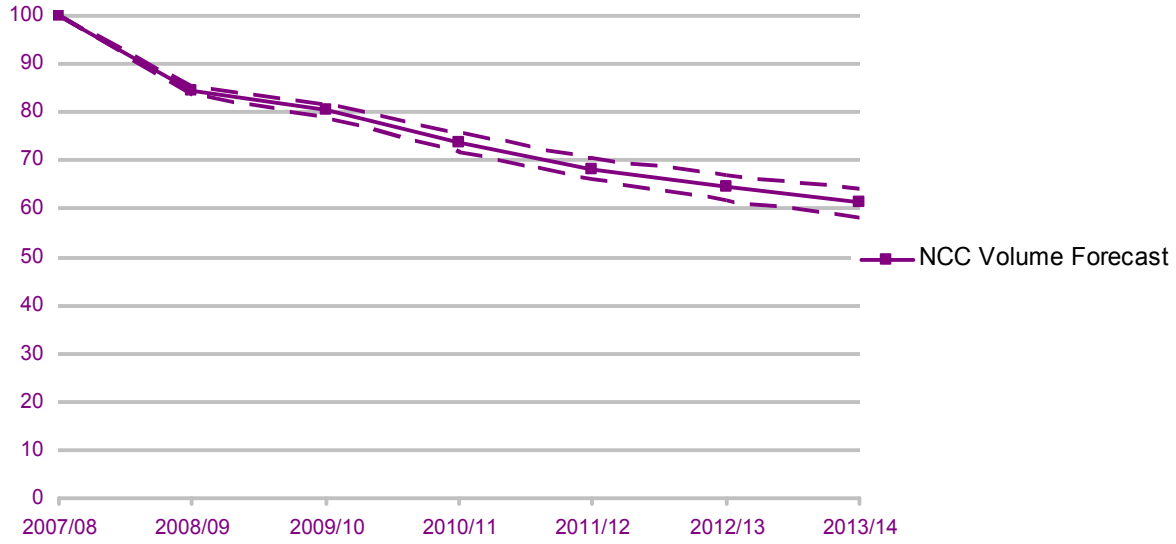


Figure 4.2 Indexed BT volume forecasts 2009 NCC (2007/08 = 100)



4.21 The historic decline in volumes means that unit costs at the start of the new NCC will be lower than were forecast in 2005, and this has resulted in charges falling below the level of fully allocated costs (FAC) established by the NCC model. This has a clear impact on the values for X we are proposing in the next NCC as they include an element to 'catch up' to FAC. In other words, the positive values of X are greater than they would have been had outturn volumes for the current NCC been closer to what was forecast at the setting of the current NCC.

Charge control framework - NCC duration

4.22 Ofcom proposes a four year period for the next NCC. As the current NCC ends on 30 September 2009, this means that the new NCC is proposed to run from 1 October 2009 to 30 September 2013. We have also considered options for a shorter or longer period. We have weighed a number of considerations in our analysis and these are described below.

Efficiency incentives

4.23 Ofcom believes that the proposed four year period creates appropriate dynamic efficiency incentives for BT. Dynamic efficiency concerns the ability of firms to innovate and make efficient investments including activities designed to reduce costs over time. Price caps generally provide strong incentives for dynamic efficiency because they allow regulated firms to earn profits in excess of the cost of capital if they are able to manage costs below the level established by the RPI +/- X formula which sets the regulated prices. These incentives can drive innovation and investment. Other things being equal, incentives for dynamic efficiency will be stronger in a longer than a shorter price cap because a longer period gives the firm more opportunity to enhance its profitability through innovation and cost reduction.

4.24 In designing a price cap, incentives for dynamic efficiency must be considered alongside the benefits of allocative efficiency. Allocative efficiency is achieved when prices are aligned with underlying resource costs. As explained above, prices can diverge from costs over the life of a price cap if the costs of price-capped services

deviate from the rate base established by the RPI +/- X formula. However, in establishing price caps, regulators are able to ensure that allocative efficiency objectives are also met through the review mechanism and periodic setting of new controls. Hence price caps, if set correctly, have inbuilt safeguards for both dynamic and allocative efficiency.

4.25 Ofcom believes that a four year NCC effectively balances dynamic efficiency incentives and allocative efficiency benefits achieved through establishing a closer alignment of charges with costs. We believe this represents an appropriate balance between dynamic and allocative efficiency and an equitable distribution of the benefits of efficient price levels between BT and its wholesale customers.

4.26 In developing proposal on NCC duration, we have also considered options for shorter or longer control periods. We believe that the current uncertainty around NGN investment, service development, migration and underlying costs militates against a control period longer than 4 years. For the reasons explained below – in paragraphs 4.33 – 4.35 – we consider that 2012/13 will be an appropriate time to review this. Therefore Ofcom has rejected the option of a NCC period longer than 4 years.

Option of an 18 month control

4.27 In our assessment of shorter control periods, we have considered in particular the option of an 18 month control to cover the period 1 October 2009 to 31 March 2011. This consideration was driven by the following three primary factors:

- Synchronisation with the charge control on mobile termination rates.
- Better visibility of NGN services, costs and migration.
- The draft European Commission Regulation on call termination.

These factors are discussed below.

Synchronisation with the charge control on mobile termination rates

4.28 Charge controls on mobile termination rates in the UK expire in March 2011. Ofcom will shortly commence a review of mobile termination markets which will ultimately establish the framework for regulation of mobile termination rates after the ending of the current controls. We plan to publish an initial consultation document on this in Spring 2009.

4.29 Ofcom has considered whether it would be desirable for the regulation of fixed and mobile termination to be synchronised If an 18 month control was set for this NCC review this would allow for synchronisation in 2011. There may be potential advantages to synchronisation if, for example, fixed and mobile voice (access, calls and packages) were close substitutes.

4.30 In its proposals for fixed narrowband retail markets and fixed narrowband wholesale markets, Ofcom has identified some substitution between fixed and mobile calls and limited substitution between fixed and mobile access, but this substitution is not sufficient to indicate that fixed and mobile services are part of the same economic market and we do not expect that they will become part of the same market over the proposed four year period of the next NCC. It would also follow that the degree of

substitution would be likely to be less at the 18 month point in the control compared to the position at the end of the control.

4.31 Further we have also considered that the control period should apply to all of the markets under the remit of the NCC review. Fixed call termination is only part of the NCC, so any advantages of synchronising the fixed call termination market to the mobile call termination market have been assessed in light of the consequence of having a short control period across the NCC as a whole.

4.32 Ofcom, having reviewed the currently available evidence, is of the view that the mobile and fixed markets retain individual characteristics so that at the present time, any argument to shorten the NCC to 18 months to synchronise the regulatory frameworks for fixed and mobile termination charges does not outweigh the other considerations that point towards a 4 year control.

Better visibility of NGN services, costs and migration

4.33 As is explained in this document Ofcom does not currently have sufficient information on NGN and 21CN voice services, prices or underlying costs to be able to include them in NCC modelling. When they are introduced, 21CN services will therefore be outside of the direct scope of the next NCC.

4.34 Ofcom has considered the case for setting a shorter NCC specifically to enable a new control to be set using information on 21CN. BT is currently reviewing the development of its 21CN voice services and hence the timeframes for service development, roll-out and migration from PSTN to 21CN wholesale voice platforms is unclear. To set a new NCC in 2011 would require the next NCC review, including cost modelling, to take place in 2010. Given the current status of NGN and 21CN voice development, Ofcom is not convinced that materially better information would be available to us for a review in 2010.

4.35 Having considered this issue, we believe that the case for a four year NCC is strengthened by the current lack of robust data on NGN and 21CN voice services. We consider it more likely that such information will be available for a NCC review ahead of the ending of controls in 2013 than it will be for a review ahead of the ending of controls in 2011.

The draft European Commission Regulation on call termination

4.36 The European Commission has developed a draft 'Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU'.[13]

4.37 The Recommendation seeks to create a uniform approach to the regulation of voice call termination rates across the EU. In particular it recommends the adoption of a uniform cost accounting methodology and the use of a cost model which assumes the core network for fixed networks to be NGN based.

4.38 In developing its proposals for the next NCC Ofcom has fully taken into account the draft Recommendation; had the Recommendation been finalised we consider that our analysis would have satisfied the obligation to take '*utmost account*' of Commission Recommendations. This is explained fully at paragraphs 4.176 – 4.190

[13] See http://europa.eu/information_society/policy/ecomm/doc/library/public_consult/termination_rates/termination.pdf

below. The draft Recommendation has been particularly relevant to the question of duration since the Recommendation, if adopted in its current draft form, will apply a transitional period for application of the Recommendation in Member States. The length of the transitional period is not yet clear and Ofcom understands that the Commission is considering a number of options. However, it is likely that the end date for a four year NCC (i.e. 30 September 2013) would be later than the ending of the transitional period.

4.39 Therefore one of the factors we have considered in assessing the benefits of a shorter NCC period is the flexibility this may provide to make methodological changes to NCC cost modelling in line with the Recommendation before the ending of the transitional period.

4.40 Ofcom's analysis of the draft Recommendation explains that, whilst we have fully considered the draft Recommendation, we consider that the current circumstances of UK fixed termination markets require that a different approach to cost modelling than that contained in the draft Recommendation should be adopted for the period of the next NCC. However, despite the differences between our cost modelling methodology and that described in the draft Recommendation, we believe that our approach will result in an outcome for fixed termination which is consistent with the Commission's objectives as set out in the draft Recommendation. In connection with this it is particularly relevant to note that BT's termination rates are currently the lowest in Europe[14].

4.41 In these circumstances, Ofcom does not consider it appropriate to shorten the NCC to manage consistency with the draft Recommendation.

4.42 Ofcom believes that a four year duration is appropriate for the NCC taking account of all of these factors. However, Ofcom is also mindful of its obligation under Section 84 of the Communications Act 2003 to re-examine the markets at appropriate intervals. Should there be a material change within the wholesale markets that underpin the NCCs, Ofcom would consider whether it would be appropriate for a review of a market, and remedies imposed, to be undertaken. In making proposals under both the Wholesale review and this review we have considered issues on a forward looking basis, taking into account relevant matters that we have sufficient clarity on during the review period. Ofcom will continue to carefully follow and evaluate developments in order to ensure that any regulation imposed as a result of the 2009 narrowband reviews remains effective in addressing problems with markets. Where a development affects the efficiency of our regulation we will seek to address any concern, noting our obligation to review markets where it is appropriate to do so. Such a statement is simply a restatement of the position set out in the Act, and is not intended to signal an intent to re-open controls during the NCC period; on the contrary, the proposal for a 4 year NCC period is made on the basis of providing sufficient stability within markets for both BT and other CPs.

***Question 4.1**: Do you agree with Ofcom's proposal to set a four year NCC from 1 October 2009 – 30 September 2013?*

[14] See the most recent Progress Report on the Single European Electronic Communications Market at http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/annualreports/13th/index_en.htm

Charge control framework - approach to modelling

The technology neutral model

4.43 In order to set the NCC we need to adopt a cost modelling framework to establish the appropriate relationship between projected costs and volumes. We then use this model, together with assumptions on volumes and other model inputs to calculate BT's efficient unit costs for the charge controlled services. Combining this information with BT's charges at the start of the control period allows us to set a NCC which will align charges to efficient unit costs..

4.44 During the next charge control period it is possible that there will be a major change in BT's network. BT will be moving its customers from the current PSTN to the new generation 21CN. Potentially, a significant proportion of this migration could occur during the next charge control period.

4.45 Modelling the co-existence of two platforms for some time and the migration from one platform to the other would require a very complicated methodology that would need to take into account cost drivers on both platforms. Also, this very complicated model would require, as inputs, volume projections on each platform.

4.46 However, there are two obstacles to modelling these two networks running in parallel:

- First, there is considerable uncertainty over 21CN costs, replacement services, and migration patterns.
- Second, explicitly modelling two different networks might distort incentives with regard to the efficient migration of traffic and services from one network to the other.

4.47 BT's 21CN is not yet operational. Further, the characteristics of new and replacement services are not yet known. This makes it impossible to build a model that reliably reflects relationships between volumes and costs on the 21CN.

4.48 The scale and timing of migration of services from the legacy network to BT's 21CN is not known. The uncertainty about volumes on each of the individual networks means that cost forecasts for individual networks could be unreliable. To put it differently: there is already some uncertainty regarding total volume projections (because forecasting is intrinsically subject to uncertainty). If we introduce an additional degree of uncertainty by splitting these volume projections between two networks this introduces the risk of additional inaccuracy in determining efficient unit costs and hence charges.

4.49 Moreover, modelling the costs of two networks in parallel operation and using these to set regulated charges has undesirable incentive properties. If the traffic sensitive costs of the PSTN are higher than for the 21CN, BT has an ex-ante incentive to report a slower rate of migration to the 21CN than is actually efficient and achievable. (This is because slower forecast migration results in higher forecast PSTN volumes, higher forecast unit costs and thus higher regulated charges.) This can give rise to two problems ex-post (i.e. during the control period):

4.50 First, BT has an incentive to migrate quicker than reported ex-ante so that it can enjoy higher returns during the control period (i.e. assuming 21CN traffic sensitive costs are lower than PSTN traffic sensitive costs). While it is desirable that BT has an incentive to outperform its charge controls, it is also desirable that BT's customers and competitors (i.e. other CPs) are able to benefit from cost reductions.

4.51 Second, there is a risk that if BT migrates more quickly ex-post than anticipated ex-ante, this may adversely affect CPs which planned their own investment and migration plans on the basis of the slower ex-ante planned rate of migration. This could unduly disadvantage BT's competitors who were not able to bring forward the capital expenditure and operational activities necessary to benefit from the lower anticipated operating costs of NGN technology.

4.52 We are not in a position to determine the most efficient migration path, and this is a task which can most appropriately be addressed by BT and other CPs. Therefore, we should provide appropriate incentives for BT to manage the migration from one network to the other efficiently.

4.53 To overcome the above incentive problems which flow from incorporating ex-ante reported migration into charge controls and given that we are not able to build a reliable 21CN cost model in any case, we propose to use a technology neutral model which is not dependent on the platform BT uses to deliver wholesale narrowband voice services. This approach is also consistent with the general approach to market analysis, which is to focus on services rather than technologies, since it is the former rather than the latter which concerns consumers.

4.54 The technology neutral model, of course, is not entirely hypothetical. Our cost model is designed around proven technology used to deliver the relevant wholesale narrowband voice services, i.e. BT's PSTN network. However, the cost model is hypothetical in that it assumes:

- First, as noted previously, that all traffic is carried on this network throughout the control period (which in later years of the control period we do not expect to be the case);

- Second, we assume that the capital costs (i.e. depreciation and cost of capital employed) and operating costs of the network are at the efficient levels that would be expected if the network were in an ongoing environment, i.e. not heavily depreciated PSTN assets due to running down of the PSTN and scarcely depreciated 21CN assets due to say inefficient delay in introducing 21CN services or an inefficiently long period of parallel running of the PSTN and 21CN.

4.55 In practice, this means that we have made adjustments to BT's reported costs in order to build forecasts of efficient ongoing PSTN costs over the 2009-2013 period (i.e. assuming that BT had not started building its 21CN). The following paragraphs explain these adjustments.

Adjustment to BT's costs in order to have a hypothetical ongoing model

4.56 We have developed a cost model assuming a hypothetical ongoing network based on PSTN components. The base year cost data should reflect this ongoing network. Ofcom believes that the costs reported in BT's financial statements do not reflect this hypothetical ongoing network. In the absence of new PSTN assets, the PSTN components have become heavily depreciated. We believe that the reported capital costs of PSTN components are below the level we would expect for an ongoing

network. The cost of these components needs to be adjusted to move them to an ongoing basis. The reported costs also include the costs associated with 21CN components even though these are not used to deliver narrowband voice services.

4.57 Recent cost information provided by BT (for example its financial statements for 2007/ 08) are not representative of an ongoing network. This is because they show the costs of some 21CN assets not yet in use, and also show the operating and capital cost profiles for PSTN assets which are at the end of their economic lives. Therefore in order to obtain relevant starting values for a hypothetical ongoing network using the cost information from BT's financial statements for 2007/08, it would be necessary to make adjustments to remove those elements which are not representative of an ongoing network and, in some cases, replace them with data which would reflect the costs of an ongoing network. Specifically, we would need to exclude any additional costs associated with investing in the 21CN from our cost modelling. This means that we would not include any costs of capital or operating expenditure that we identify as incremental to 21CN (relative to the costs of the hypothetical continuing network). It would also be necessary to add in to the model capital expenditure estimates BT would still have to undertake to support relevant demand on an ongoing efficient PSTN network as well as taking out from observed operating costs that element which reflects the maintenance of heavily depreciated network. Making these adjustments would be complex and involve some subjective judgement.

4.58 An alternative method is to use the base year costs from the previous NCC model. At the time these costs were considered to be representative of an ongoing network. Adjusting these costs for outturn network volumes, expected efficiency savings and asset price changes should give a reasonable estimate of costs for an ongoing network in the current base year (i.e. 2007/08) . It is this methodology that Ofcom has pursued in setting the ongoing network base year costs

4.59 A detailed description of these adjustments can be found in Annex 6.

***Question 4.2**: Do you agree with Ofcom's proposal to use a hypothetical ongoing network model to establish the technology neutral cost base for the next NCCs?*

***Question 4.3**: Do you agree with Ofcom's proposed methodology for the hypothetical ongoing model, including the use of adjusted base year costs from the previous NCC model to create a stable network from which to model costs?*

Hypothetical costs vs. actual costs

4.60 There are three reasons why the costs we model with the hypothetical ongoing cost model might be different from BT's actual costs over the 2009-2013 period:

- First, due to the greater productive efficiency of the new generation network actual unit cost of different products in a steady state might be below the modelled cost levels.

- Second, running two parallel networks might result in a situation where both networks are operating at levels where unit costs are higher than would be the case if all traffic were carried on a single network. In this case actual unit costs might be higher than the modelled unit costs for the period in question.

- Third, BT is currently in the process of rolling out its 21CN infrastructure. This will entail high initial capital expenditure. If 21CN capital investments are substantially higher than the capital expenditure necessary to maintain the PSTN then this might result in costs higher than modelled (assuming the operating cost savings of the 21CN were not sufficient in the period to offset the higher capex).

4.61 As a result of the three effects above there is a possibility that initially BT might incur higher costs than projected by the technology neutral model while later BT's actual costs are likely to be below those implied by the technology neutral model.

4.62 The difference between actual and hypothetical ongoing costs depends on the following factors:

- **The relative efficiency of the 21CN compared to the PSTN**: It is expected that the investment in new technology will result in cost reductions. Indeed, investment in a competitive market would only be made if the new platform offered equivalent services at lower cost or the possibility of providing a wider set of services. Even in the second case it would be unlikely that the cost of equivalent services is higher than on the old platform (and would, probably, question the cost allocation methodology of common costs of the new network). This means that projected costs in the hypothetical ongoing model, as we have implemented it, are likely to be above actual 21CN costs in the long-term.

- **The rate of migration**: This is a variable BT can influence. If migration is swift the inefficiencies from running two parallel networks will be more limited than otherwise. In this case, the risk of actual unit costs being higher than those projected by the technology neutral model is minimised. However, if the two networks are running in parallel for a long time, actual unit costs may be higher than projected by our model.

- The proportion of infrastructure shared between BT's PSTN and 21CN and the extent to which BT's 21CN investment costs are offset by the phasing out of PSTN components. If the proportion of shared infrastructure is high and 21CN capital costs are largely offset by the drop in PSTN capital investment then actual unit costs will not be significantly higher than costs projected by the hypothetical ongoing model. On the other hand, if network components are largely different and/or the initial 21CN investments are not offset by decreasing PSTN capital expenditures initially actual costs might be considerably higher than those implied by the technology neutral model.

4.63 As explained above, it is possible that BT will initially incur higher total costs than those projected by the hypothetical ongoing model but later will be more efficient than our model would suggest because it is reasonable to expect that in the long term deployment of 21CN will result in lower unit costs for voice services. The point at which BT's actual costs fall below the costs projected by the technology neutral model will depend on the rate of migration. This is influenced by BT. If migration starts early in the charge control period and is quick, BT will enjoy a longer period where actual costs are below the technology neutral hypothetical costs. This creates incentives for BT to manage migration swiftly. This results in a better long-term deal for end-users in the form of greater efficiency and lower long-term prices (e.g. at the end of the next NCC) than would otherwise be the case.

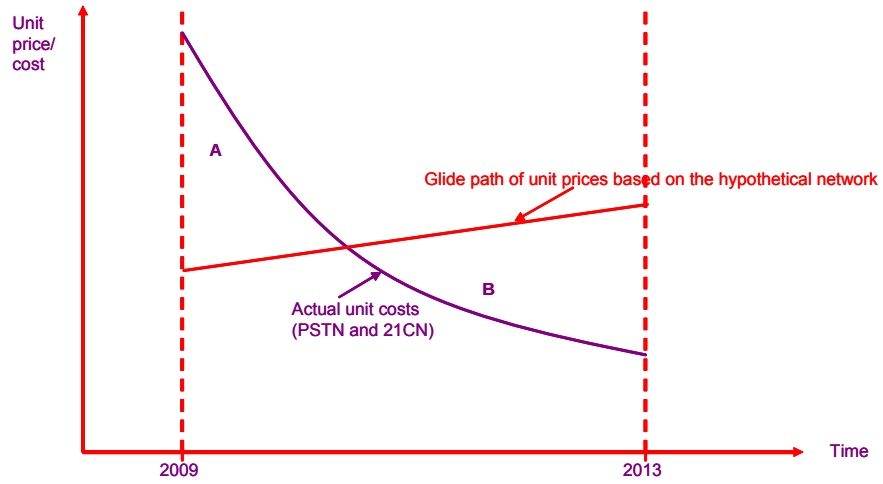
Recovery of 21CN costs

4.64 Our forecast efficiency gains are based in part on past trends for the PSTN unit costs (data for both BT and comparable US companies). The model does not include the efficiency gains which BT may enjoy after moving to the 21CN as Ofcom has insufficient data on the underlying costs of 21CN wholesale voice services. Therefore, if BT is successful in rolling out its 21CN investment, it may well benefit from higher returns than otherwise over the control period. In our view, the expected reduction in costs gives BT the incentive to make this investment, just as it would in a competitive market.

4.65 However, a large part of the efficiency savings of the 21CN platform relies on sufficient customers migrating from the old to the new network. If it takes some time for customers to migrate to the 21CN, cost savings will initially be smaller relative to the hypothetical network in our model.

4.66 We illustrate these issues below with an example. The following chart shows a possible unit cost profile for the BT network and its position compared to the glide path of network charges determined from our hypothetical ongoing cost model. (Note the chart is not drawn to scale and the position of the graphs is merely illustrative.)

Figure 4.3 Cost recovery during the NCC period



4.67 The graph shows the period of the network charge control (2009-2013). The vertical axis measures monetary units: the unit costs and the regulated charges. The horizontal axis measures time. The continuous red line illustrates how the glide path of regulated unit charges (as implied by the hypothetical ongoing model) might look.

4.68 In contrast, the purple line shows the possible path of unit costs for BT's actual network. As we do not know the costs of BT's 21CN this is a hypothetical cost curve. Initially, because of the high set-up costs of the 21CN and the inefficiencies of running two parallel networks, actual unit costs may be above the costs of the ongoing hypothetical network. However, once a sufficient number of subscribers is migrated onto the new network and BT starts realising the economies of scale and scope of the 21CN, actual unit costs fall below the network charges implied by the hypothetical ongoing network cost model.

4.69 BT is able to recover its costs within the control period if area A in Figure 4.3 is smaller than area B (in present value terms). The size of the two areas largely depends on the timing and rate of migration from BT's PSTN onto the 21CN and on the actual unit costs of the two networks. It is inefficient for BT to make its initial

21CN investment and then not to migrate customers quickly onto the new network. We have endeavoured to design the NCC for 2009-2013 to provide BT with undistorted incentives to migrate to the least cost technology in the most efficient time, while at the same time seeking to ensure appropriate protection for BT customers and competitors (i.e. other CPs).

4.70 If BT's payback implied by actual unit costs being different from regulated charges based on the hypothetical ongoing network ends up requiring a longer timeframe than the four years of the present NCC, this creates a degree of risk, which might impact on BT's future investment decisions.

4.71 One response to this risk might be to offer some regulatory assurances to guarantee that Ofcom would impose a glide path and not make any starting charge adjustments to align to forward looking costs (in the context of a new NCC in 2013) in the event that actual investment costs are not recovered in the current NCC period.

4.72 Clearly, however, it is not possible for Ofcom to make commitments or fetter its discretion on future possible regulation by committing in advance to a particular charge control design. Any decisions would have to be made, at the time, taking into account all relevant factors and in line with our relevant statutory duties.

4.73 An alternative solution to introduce a greater degree of certainty might be to extend the duration of the current charge control. However, we explained above, in paragraphs 4.22 – 4.42, why we think a timeframe of four years provides the right balance between our regulatory duties and objectives taking account of the specific factors associated with the charge control.

4.74 When setting new charge controls, Ofcom has normally sought to bring prices down to cost over the duration of the charge control by means of a glide path. We have given particular weight to the need to preserve efficiency incentives which, regulating prices down to costs by means of one-off adjustments might undermine (particularly if efficiency savings rely on longer-term investments). Therefore, our preferred approach is to focus any starting charge adjustments only where there are particular regulatory concerns that might outweigh the benefits of the glide path approach.

Question 4.4*: Do you agree with Ofcom's proposed approach to efficiency as regards BT's 21CN in proposing these charge controls?*

CCA FAC cost standard

4.75 In 1997 and 2001 Oftel set BT's network charge controls using long-run incremental cost plus an equal proportionate mark-up (LRIC+EPMU) to set the relevant charge caps. In the 2005 charge control, Ofcom decided to set the network charge control using current cost accounting (CCA) fully allocated cost (FAC) as the basis for setting the charge caps. The decision to use LRIC+EPMU before 2005 and CCA FAC in 2005 was not based on any claimed intrinsic superiority of either of the cost methodologies, although both were regarded as superior to historic cost accounting (HCA) FAC.

4.76 The technology neutral model that is used to set charge controls for the 2009-2013 period is a CCA FAC cost model. The paragraphs below discuss the advantages and disadvantages of CCA FAC and LRIC+EPMU and explain why we decided to use the former.

4.77 Economic theory provides guidance on how to set regulated charges in order to maximise economic welfare[15]. If there are no fixed and common costs, prices should simply be set equal to marginal cost for each service. If there are fixed and common costs, which is the case with telecommunications firms, setting regulated charges at marginal cost would not allow the firm to recover its costs. Therefore, regulated charges should be set at marginal cost with an appropriate mark-up.

4.78 Again, economic theory guides us on how welfare maximising mark-ups should be calculated if prices are set on a per unit basis (e.g. pence per minute charges rather than two-part tariffs). That is, fixed and common costs should be recovered from services according to how sensitive consumers are to price changes for each of those individual services. In particular, if consumers are less sensitive about changes in the price of a specific service, then this service should be allocated a greater proportion of fixed and common costs. Setting these welfare-maximising mark-ups is known as Ramsey pricing.

4.79 Unfortunately, Ramsey pricing requires a lot of information; not only about the costs of all services that the regulated company provides, but also about the demand for each service. In particular, we would need to estimate both own- and cross-price elasticities of demand for every service[16]. The estimation of price elasticities is complex and often contentious. This is the reason why, although acknowledging the theoretical superiority of Ramsey prices, regulators have not used this methodology to set regulated charges.[17]

4.80 Therefore, Oftel and Ofcom have more typically used LRIC+EPMU or CCA FAC to allocate fixed and common costs. While these are theoretically inferior to Ramsey pricing, they are more feasible to implement because they do not require sophisticated demand information.

4.81 LRIC includes all the long-run costs (both capital and operating costs) causally related to the supply of a defined increment: for example the total volume of a given service. It differs from the short-run marginal cost, by including service specific fixed costs (e.g. capital costs). Setting prices in relation to short-run marginal cost would therefore tend to underestimate the long run costs of supplying telecommunications services, whereas prices that are derived from incremental costs will reflect the actual costs of supply. Moreover, short-run marginal costs are likely to be very volatile depending on whether the increment in question triggers additional investment in capacity or not.

4.82 LRIC based costing methodologies are also considered to give appropriate signals to competitors whether they should buy the service from the incumbent or build their own infrastructure to provide the service themselves. Competitors that are more efficient, i.e. can provide the service at a lower cost will build their own infrastructure while others will buy the service from the incumbent.

4.83 Use of a LRIC model allows us to determine a cost floor to use as a first-stage test for analysing whether a service is priced in an anticompetitive manner. A LRIC

[15] Economic welfare is defined as the sum of consumer surplus (i.e. difference between willingness-to-pay and price actually paid) and producer surplus (i.e. economic profits).
[16] The own-price elasticity of demand measures the percentage change in demand for a given percentage change in prices. The cross-price elasticity measures the percentage change in demand to a given percentage change in the price of another service.
[17] For example, after detailed consideration of the issue, the Competition Commission in 2002 rejected using Ramsey pricing to set mobile termination rates – see for example paragraph 1.6 of http://www.competition-commission.org.uk/rep_pub/reports/2003/fulltext/475c1.pdf

model can also be used to identify cost ceilings to determine whether prices are potentially excessive for recovery of common costs: i.e. stand alone cost (SAC) defined as LRIC plus all relevant common costs is the maximum that would need to be charged for cost recovery if all other services sharing those common costs were priced at LRIC (i.e. not subsidised). The use of CCA FAC for cost modelling does not allow us to define these floors and ceilings.

4.84 Any LRIC model will need to deal with common cost recovery. EPMU for common costs is arbitrary and is used because of its simplicity. The FAC cost allocation may also have problems: when common cost recovery is linked to revenues, FAC can potentially distort profitability analysis because high revenue services shoulder a greater burden of common costs. Neither LRIC+EPMU nor FAC has any conceptual advantage over the other in terms of common cost allocation.

4.85 However, we believe that in this case CCA FAC is more transparent and reliable than LRIC+EPMU. CCA FAC data is based on BT's audited regulatory financial statements whereas LRIC+EPMU data are produced more irregularly and are not audited. CCA FAC is also consistent with the other charge controls currently being determined by Ofcom for other areas of BT's business such as leased lines[18] and Openreach.[19] Consistency across the regulation of different services in BT ensures that all common costs are properly accounted for.

4.86 Finally, CCA FAC was used to set the 2005 network charge controls. Thus, using CCA FAC for the 2009 network charge controls ensures continuity of the costing methodology. Therefore, for reasons of greater reliability, consistency and continuity, we propose to model BT's costs on a CCA FAC basis.

***Question 4.5**: Do you agree with Ofcom's proposal to use a FAC CCA methodology to establish the cost base for the next NCC?*

Charge control framework - basket design

4.87 A charge control basket is defined as the group of products and services that are subject to the same charge control restrictions. Combining services under a single basket means that the maximum increase in prices allowed by the value of RPI+/-X% for that basket would apply to an appropriate weighted average of prices across all services taken together.

4.88 It is important that we apply the charge control in the least interventionist way we can, consistent with achieving our regulatory objectives. There are many narrowband wholesale services that are charge controlled. Some of them are genuinely different services, e.g. call origination, termination, interconnection circuit rentals. And then there are those services that are differentiated, for example, by time of day. If we applied a different charge cap on all of these individual services it would result in a very complex set of charge control arrangements and might constrain unduly BT's scope to price efficiently. With this in mind, the default position would be to combine services into wider baskets unless there are good reasons not to do so.

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[18] A new charge control framework for wholesale traditional interface and alternative interface products and services http://www.ofcom.org.uk/consult/condocs/llcc/

[19] A New Pricing Framework for Openreach - Developing new charge controls for wholesale line rental, unbundled local loops and related services
http://www.ofcom.org.uk/consult/condocs/openreachframework/

4.89 It is generally efficient to reflect differences in demand (in particular, the responsiveness of demand to price) or costs in relative prices. We think that BT would generally be better placed than Ofcom to do this. In particular, there may be costs which are common across a number of different services. If we applied separate controls on each and every service (for example, down to the time of day level), we would have to decide on the efficient allocation of common costs between these multiple services. This would require yet more detailed modelling of costs and information on the demand for individual services in order to arrive at an "efficient" allocation of those costs between services. This is not likely to be a practical or desirable proposition. This means that there are likely to be benefits to allowing BT to vary relative prices within quite broad baskets.

4.90 Identifying a large number of service specific controls would give BT reduced scope to respond to changing demand or changing costs. For example, if there are changes in relative costs or demand conditions over time, especially in ways not forecast when the charge control was set, then having broad baskets would allow BT to reflect these changes in its prices.

4.91 Therefore, the use of wider baskets would give BT greater flexibility to respond to changing market conditions, and this may lead to more efficient pricing. Wherever appropriate, we seek not to constrain BT's pricing behaviour unduly by having baskets which are too narrowly defined.

4.92 On the other hand, if competitive conditions between services are different and the services shared the same basket, BT would have an incentive to concentrate price cuts on the most competitive services offset by price increases for the least competitive services, which could adversely affect competition. This can be avoided by placing more competitive services in a separate basket to less competitive services.

4.93 However, where there are some differences in competitive conditions between services, but we nonetheless deem it desirable for these services to be in a single basket, the scope for anti-competitive pricing can be reduced by using sub-baskets or safeguard caps. For example, an appropriate sub-cap could be applied to the less competitive services. By limiting the maximum increase in the price of the less competitive services, the ability to make potentially anti-competitive cuts in more competitive markets is reduced.

4.94 When identifying the appropriate network charge control baskets we have to consider issues along two dimensions:

- **First, how to structure the baskets of PSTN services where BT has SMP?** Which ones should go into one basket and is there a need for sub-caps? In practice, it means that we have to examine all the current charge control baskets and identify any changes in circumstances that would warrant a re-design of these charge control baskets.

- **Second, what to do with NGN services supplied in SMP markets where PSTN services are charge controlled?** Should they also be charge controlled? Should they be placed in separate baskets or together with the PSTN services?

4.95 We first focus on existing PSTN services and then address the question of 21CN wholesale narrowband services.

PSTN services

4.96 The services we consider when setting network charge controls are currently in the following baskets:

- Call termination;
- Call origination;
- PPP; and
- ISB.

4.97 We need to consider whether we want to keep the same basket structure or want to define more or fewer baskets. We would need to change these baskets if there were changes to the competitive conditions that affect the services in them.

4.98 Call termination and origination were placed in separate baskets over the last two NCCs, although between 2001 and 2005 the same values of X were used. The main cost components (the local processor and concentrator, and conveyance between them) are the same for both origination and termination. However, the differences between the two services are material. Origination includes intermediate services (operator assistance and emergency service) which are not included in termination.

4.99 Further, competitive conditions are very different for the two services: while origination might become more competitive in the future, termination is likely to stay a bottleneck. Therefore, we propose to keep the current separate baskets for call termination and origination.

4.100 PPP and ISB services were placed in the same charge control basket in 2001. However, for PPP, the appropriate BT charge was reassessed in July 2004 and a sub-cap of RPI+0% was applied on the revised PPP charge within the overall cap on ISB and PPP. Differing competitive conditions were found for PPP and ISB services, implying that the combined basket for ISB and PPP was no longer appropriate. Indeed, a separate ISB and PPP cap was applied for 2005-9. We believe that for the 2009-2013 period these services should remain in separate baskets. The wholesale narrowband market review[20] has revealed no indication of a change in competitive conditions for these services.

4.101 We have considered whether there is any need to separate services within the PPP and ISB baskets. The PPP basket is a simple basket which contains the same service differentiated by time of day. We believe that this basket should be unchanged.

4.102 We have considered the question of splitting the ISB basket. The basket comprises of connection and rental charges of three different interconnection links, the rearrangements of these interconnect links, and ISI transmission links. The interconnection links in the basket are Customer Sited Interconnect (CSI), Intra Building Circuits (IBC), and Interconnection Extension Circuits (IEC). The rental charges are further disaggregated as fixed and per km rental charges for CSI ad IEC.

[20] Review of the fixed narrowband services wholesale markets - Consultation on the identification of markets, determination of market power and remedies.
http://www.ofcom.org.uk/consult/condocs/review_wholesale/

4.103 The charge for connections is only made once at the time of connection, whereas the charge for rental of the interconnect circuit is annual. The cost for operators in purchasing an interconnect link is therefore composed of a one-off charge and an ongoing charge, and BT can choose to recover more or less from each of the one-off and ongoing component as long as each individual charge is set within the acceptable floor and ceiling. Caps on individual charges would require a level of regulatory oversight that may not be proportionate to the perceived benefits of such individual sub-caps.

4.104 There might be a case for applying sub-caps on rentals of interconnect circuits. The fact that CPs have largely built their interconnecting PSTN infrastructure might, in theory, allow BT to raise the price of rentals while at the same time lowering connection charges. However, current connection revenues constitute only about 20% of ISB basket revenues. As basket weights are based on prior financial year revenues, the small proportion of connection revenues compared to rental revenues(and hence high weight on rentals) limits BT's ability to raise rental charges within the ISB basket.

4.105 Therefore, we think that the ISB basket should continue to comprise the same group of interconnection circuit services as before, because in spite of the potentially differing competitive conditions BT's opportunity to price anti-competitively is limited by the existing basket structure.

4.106 BT disaggregates the prices of services within the call origination, call termination and PPP baskets by time of day gradient. For the avoidance of doubt, the NCC does not establish charges disaggregated for the time of day gradient and the compliance model works by ensuring average charges do not exceed the cap. We want to allow BT to use the network tariff gradient as a peak-load pricing mechanism to reflect traffic profiles and demand elasticities at the wholesale level. We believe that BT is better placed to set these charges than Ofcom because they have more information on wholesale demand than we do.

4.107 To conclude, we propose to keep the same structure of PSTN baskets as during the current (2005-2009) NCC for those services that will continue to be charge controlled going forward.

Question 4.6: *Do you agree that product management, policy and planning and interconnection circuits should be subject to separate controls?*

Question 4.7: *Do you agree that there is no need to introduce sub-caps on rental charges in the ISB basket?*

Treatment of 21CN services

4.108 As a general principle, regulators should be reluctant to regulate completely new services in order to foster innovation. The reason for this is that the lack of regulation allows operators to enjoy returns on the innovation and thus gives more incentives to innovate in future. However, in the case of some 21CN voice services the situation will be different. In many cases we believe that the planned 21CN services are very similar to existing PSTN services in the sense that the final consumer will largely not notice if 21CN or PSTN wholesale services are being used to deliver a voice call. Therefore, regulation of 21CN narrowband wholesale services cannot be excluded on economic grounds.

4.109 We believe that the price of PSTN wholesale narrowband services will not constrain the prices of 21CN wholesale voice services in the long run. Initially, if migration is voluntary, CPs will only switch to the 21CN services if they are cheaper than equivalent or similar PSTN services. However, once CPs have migrated and have made the necessary investment to support NGN interconnection, it is unlikely that they would switch back to PSTN services if relative prices were lower for these.

4.110 Moreover, if migration happens on a planned basis (forced migration) then the ability of PSTN prices to constrain 21CN prices is further diminished. Therefore, again, we cannot exclude the regulation of new services in SMP markets subject to NCCs on the grounds that PSTN prices will act as a constraint on their pricing.

4.111 However, based on the information we have on BT's planned 21CN services we cannot, at present, impose charge controls on future 21CN services. We do not have a detailed enough description of the services that would allow us to determine which services fall in SMP markets and what regulated charges should be.

4.112 We cannot, at present, place BT's 21CN voice services into price control baskets. But we still want to make sure that BT will not price these services anti-competitively. Therefore, we have proposed in the wholesale narrowband review consultation to impose cost-orientation obligations on BT in pricing their 21CN voice services where these fall within SMP markets.

4.113 To summarise, even though we think that it would be desirable, we are not in a position to set charge controls for 21CN narrowband voice services which fall in SMP markets where existing services are charge controlled. However, the regulatory treatment of these services will be considered when the details of such services become clearer. At this point the only form of regulation we propose for BT's 21CN wholesale voice services is cost orientation, where the services fall within SMP markets.

Question 4.8: *Do you agree that Ofcom is not in the position to regulate BT's 21CN wholesale voice services at this point?*

Charge control framework - efficiency adjustments

4.114 The efficiency factor is a key input in our cost model. The efficiency factor captures how much we expect BT's unit costs to fall for a given level of output over the charge control period. The key driver of increased cost efficiency is productivity growth which measures how much BT's output will grow for constant inputs or, equivalently, the extent to which the same output can be delivered using fewer inputs.

4.115 We want to set NCCs in a way that encourages BT to operate as efficiently as possible. One of the main benefits of the price controls as opposed to rate of return regulation is that it creates incentives on the charge controlled firm to increase its efficiency, by allowing it to keep any profits that it earns by realising greater efficiency savings then those assumed in the cost forecasting model.

4.116 We expect all BT's inputs to become more productive over time. Productivity gains are not limited to particular cost types but they can be different for different cost components such as labour costs and capital expenditures. However, it is not possible to identify separate productivity trends for different cost types with the information we have about BT's operations. Therefore, we seek to estimate an

average efficiency adjustment factor that we apply to both operating and capital expenditures.

4.117 We expect BT to become more efficient over the next charge control period. However, it does not mean that we necessarily expect falling unit costs. Efficiency gains are defined "other things being equal", so if BT's outputs (volumes) stayed the same we would expect to see falling unit costs. However, with falling volumes, unit costs increase due to loss of economies of scale. Sometimes this unit cost increase counteracts the unit cost decrease due to productivity improvements. In this case, applying our efficiency adjustment means that unit costs do not increase as much as they would without productivity gains.

4.118 There are two types of efficiency adjustments:

- *catch-up adjustment*: the cost inefficiency of BT relative to an efficient comparator at the beginning of the control period, and
- *frontier shift adjustment*: annual cost reductions with constant volumes driven by overall sector productivity improvement.

4.119 In some third party studies discussed later in this section US Local Exchange Carriers (LECs) are considered to be appropriate comparators to BT. This means that the best of these companies are considered to be at the production frontier. BT's efficiency is compared to this frontier and the catch-up adjustment is simply the percentage by which BT's costs are above the costs of a hypothetical identical company that operates on this frontier.

4.120 If BT is among the best of the LECs in terms of efficiency or if it is more efficient than the best LECs then BT is considered to be at the production frontier and thus there is no need to apply a catch-up adjustment.

4.121 Ideally, we would like to have catch-up estimates for the set of services that are covered under the charge control. However, to our knowledge, there are no catch-up estimates for BT's core network only. The reason for this is that it would be very difficult to find comparator companies to BT Wholesale. The LECs would not be good comparators because access and core network costs are not separated in their accounts. Any attempt to separate the costs of LEC's for access and core for the purposes of such an exercise would not be robust or reliable. Therefore, we propose to use catch-up estimates for the whole BT network.

4.122 The necessary catch-up adjustment is established at the beginning of the control period based on analysis of historic data for BT and the comparator companies. However, the production frontier is changing all the time as inputs get more productive. So, if we want to set an efficiency benchmark for BT, we also need to establish the annual shift in the cost frontier.

4.123 Frontier shift estimations are typically based on historical cost trends. We expect past cost reductions to indicate how the production frontier will change over time. Past frontier shifts can be calculated using data for a larger set of companies or using data only for BT. Using data for several companies helps us to smooth out any fluctuations in BT's costs. Using data for BT only, on the other hand, ensures that we calculate a trend that gives a more BT-specific prediction for the future. Also, using BT's historical data we can concentrate on the set of services that are covered by the network charge controls

4.124 As explained above, we use a technology neutral model to set BT's charges over the 2009-2013 period. The technology neutral model is based on BT's PSTN but its operating and capital costs are adjusted in order to reflect the costs of a hypothetical ongoing network. These cost adjustments are explained in detail in Annex 6.

4.125 This hypothetical ongoing model does not have the exact same cost structure as BT's current network. This means that BT's relative efficiency (the catch-up factor) and frontier shift estimates are reflective of the current BT network and not necessarily of the hypothetical ongoing network. If we analysed the efficiency of the hypothetical network we might arrive at different conclusions than if we undertook an efficiency analysis of BT's network with heavily depreciated PSTN assets and 21CN investment costs. This problem needs to be taken into account when interpreting efficiency factor estimates from the available sources.

4.126 We have four sources we can rely upon to set efficiency gains for the period 2009-2013:

- Ofcom employed the consultancy NERA to undertake a comparative efficiency study to examine the efficiency of BT's network relative to appropriate comparator companies, principally the US Local Exchange Carries (LECs). This study was originally commissioned as part of Ofcom's work on the Openreach Financial Framework. NERA's main report was completed in March 2008 and was published with the Leased Lines Charge Control consultation document in December 2008[21]. This study uses stochastic frontier analysis, a well-known econometric technique, to estimate BT's relative efficiency. However, in the report, frontier shift estimates are not explicitly covered.

- BT submitted a report by the consultancy Deloitte (completed also in March 2008) as a response to the Ofcom consultation 'A new pricing framework for Openreach'. The Deloitte report is also based on stochastic frontier analysis. The variables and data used in their analysis are slightly different from the ones NERA used in their March 2008 report. The results of this paper were cited in the second Ofcom consultation document on the Openreach Financial Framework. NERA also referred to the Deloitte study in an additional paper they prepared in May 2008 (see discussion below). We do not refer to the detailed results of the original Deloitte paper as the report is confidential but we do refer below to the results cited in the Ofcom Leased Lines Charge Control consultation document and in the NERA studies.

- NERA prepared an additional note in May 2008 discussing the Deloitte study. This note was also published together with their main report in December 2008[22]. We think that this note reconciles the differences between the NERA and Deloitte approaches and thus provides a reliable source of efficiency estimates.

- The 2005 NCC consultation range of efficiency adjustments may also be used as a source. Obviously, catch-up estimates obtained in 2004-2005 are no longer relevant as BT's relative efficiency is likely to have changed since then. Frontier shift for the 2005 NCC consultation was calculated using BT's historical cost data (1999/2000 to 2003/2004) net of catch-up over the same period. As we will

[21] The Comparative Efficiency of BT Openreach, a Report for Ofcom, Nera, 17 March 2008, http://www.ofcom.org.uk/consult/condocs/llcc/efficiency.pdf

[22] Comments on the Deloitte paper on "The efficiency of BT's network operations", Nera, 6 May 2008, http://www.ofcom.org.uk/consult/condocs/llcc/operations.pdf

explain below, these estimates remain a useful source of information because of the lack of reliable numbers for later periods.

4.127 Further, Ofcom's consultation document on the leased lines charge control contains an estimate of frontier shift for leased lines. Although the leased lines calculations were not done for network charge controlled services, the estimate can be used to cross-check the efficiency range we propose to use. The leased lines consultation document sets a different efficiency range for Alternative Interface Symmetric Broadband Origination ("AISBO") services and Traditional Interface Symmetric Broadband Origination ("TISBO") services. We only consider the range estimated for TISBO services as these services have a trunk transmission element while AISBO services do not.

4.128 The March 2008 NERA study concludes that the BT network is on or above the upper decile of US LECs in terms of efficiency. This means that BT is efficient as it is on the production frontier and that there is no need for a catch up adjustment. This study does not deal directly with frontier shift estimations.

4.129 Deloitte's conclusions are similar to NERA's in terms of catch-up adjustment. They find that BT is on the upper decile and therefore there is no need for a catch-up adjustment. They calculate frontier shift within a stochastic frontier analysis framework and also perform a total factor productivity analysis to estimate frontier shift. They estimate frontier shift to be in the range of 0.5-1.1%.

4.130 NERA's May 2008 note again suggests that the BT network is 2-5% more efficient than the upper decile of US LECs and thus there is no need for a catch-up adjustment. NERA also estimate frontier shift using data for BT and the LECs and conclude that the expected frontier shift is somewhere in the range of 2-3% per annum. The lower end of the range is obtained using a total factor productivity analysis, while stochastic frontier analysis implies a range of 2.5-3% per annum.

4.131 In 2005 we consulted on a range of 2.5-4.5% for annual efficiency adjustments. This range included both catch-up and frontier-shift adjustments. Given that catch-up estimates at the time ranged between 0.8-3.8% and that catch-up was allowed over four years, the implied annual frontier shift was somewhere in the range of 1.5-4.3% per annum.

4.132 The December 2008 Ofcom consultation document regarding the leased lines charge control does not propose to adjust for catch-up (based on the NERA study). They calculate frontier shift for TISBO services based on BT historical opex trends. They conclude that frontier shift is expected to be in the range of 0-5% per annum.

4.133 As discussed above, the available sources on BT's relative efficiency identify that there is no need to use a catch-up adjustment because it appears that the BT network is on the production frontier. Both the NERA and Deloitte studies use data on the actual BT network that is different from the hypothetical ongoing network. However, the base period of our hypothetical ongoing model is largely the continuation of the charge control model used for setting the charge controls for the period 2005-2009, but assuming that BT achieves the efficiency target then set and with actual volumes rather than forecast volumes. Therefore, we think that the conclusions of the NERA and Deloitte reports can reasonably be used in our assessment of efficiency for the hypothetical ongoing network.

4.134 For the estimation of future frontier shift we have to find the balance between estimates that are relevant to the core network and estimates that reflect a

hypothetical ongoing network environment. For example, in principle we could use BT reported actual data for 2004-2008 to calculate past changes in costs and strip out any catch-up achieved in the period. However, BT's reported data for the past four years does not reflect the hypothetical ongoing network.

4.135 Therefore, we believe that for the frontier shift estimation it is more appropriate to use either data for a larger set of telecommunications operators or BT data that reflects an ongoing network environment. The NERA and Deloitte studies fall into the first category. The estimates used for the 2005 NCC consultation fall into the second category. We believe that the period for which the efficiency calculations were based in the 2005 NCC statement (1999/2000 to 2003/2004) may be representative of the hypothetical ongoing PSTN, although they clearly relate to a period from sometime ago and may be less reliable indicators of the future as a result. In particular, productivity trends indicate (see NERA May 2008) that productivity growth slowed down in recent years. Therefore, it seems likely that annual frontier shift will be more modest in 2009-2013 than it was during the 1999-2004 period.

4.136 The frontier shift estimates from the above three sources range between 0.5% (Deloitte) to around 4.3% (approximate number based on the 2005 NCC consultation document). On the one hand, NERA's note on Deloitte's study finds that the frontier shift estimates appear to be too low and that improving the applied methodology would result in higher numbers. This is why we expect frontier shifts to be at least 1% per year.

4..137 On the other hand, the 4.3% per annum frontier shift estimate is at the high end of a range that reflects productivity improvements over a four year period starting in 1999. NERA in their May 2008 note argue that productivity growth slowed down after 2000, so the 4.3% value might be too high as a proxy for the 2009-2013 period. In light of this, we believe that it is prudent to set the high end of our frontier shift estimates at 3%.

4.138 In summary, we expect that unit costs for given volumes over the 2009-2013 period will decline between 1-3% annually for the hypothetical ongoing model. All of this decline will come from frontier shift. Our range is consistent with the estimates of the leased lines charge control consultation document.

Question 4.9: *Do you agree with our proposed efficiency adjustment range of 1 – 3% annually?*

Charge control framework - compliance and mechanics of the NCC

NCC compliance

4.139 The requirements which Ofcom proposes to ensure that BT provides data to demonstrate compliance with the NCC are set out in detail in the draft Notifications at Annex 5. They provide that BT must provide NCC all compliance data to Ofcom within three months of the end of each NCC year. Ofcom expects BT to proactively adhere to the arrangements to provide data and to provide robust and appropriately sourced information for this purpose.

Question 4.10: *Do you agree with Ofcom's proposal that BT be required to provide all data necessary to monitor compliance with the NCC within three months of the end of each NCC year?*

RPI as the appropriate index for price control

4.140 Ofcom's (and before it Oftel's) approach to indexation in both retail and wholesale price caps has been to use the RPI measure of inflation. We recognise that there are alternatives measures of inflation – e.g. the consumer price index (CPI) which focuses more than RPI on household consumption of goods, and RPI-X which calculates the RPI excluding mortgage interest payments.

4.141 In our view RPI remains an appropriate means by which to index-link this set of charge controls. RPI remains a widely used measure of general inflation and is the index typically used to set price caps in other sectors subject to economic regulation.

4.142 We consider that RPI remains the appropriate means by which to index-link this NCC and this would be consistent with previous charge controls and price caps.

4.143 The RPI measure used for the NCC compliance model will be the change in RPI for the 12 months ending on 30 June prior to the start of the charge control year – e.g. for the NCC year 1 October 2009 - 30 September 2010, the RPI for 1 July 2008 – 30 June 2009 will be used.

Use of prior year revenue weights

4.144 As in previous price caps and charge controls, Ofcom proposes to use prior financial year revenue weights to calculate charge changes in the NCC compliance model. Whilst the use of prior year weights has the disadvantage that it does not use contemporaneous data, an alternative based on current year estimates would require subsequent reconciliation to outturn revenues and hence likely retrospective adjustment. Ofcom believes that this complexity would detract from the transparency and predictability of the charging framework for NCC services.

Provision for Carry-Over

4.145 Another feature of previous and existing price and charge controls has been the ability of BT to use the 'credit' created by setting charges below NCC requirements within a given year towards NCC compliance in the following year. This approach avoids any perverse incentive to manipulate the timing of charge changes just to make NCC compliance easier in subsequent years. For this reason, for the new NCC Ofcom intends to retain the ability for BT to carry-over the credit from charge changes into subsequent NCC years.

Question 4.11: *Do you agree with Ofcom that NCC charges should be set using RPI as the measure of inflation for indexation, prior year revenue weights to calculate charge changes, and with provision for carry over?*

Charge Control Framework – Legal Tests

4.146 We have set out above that our proposed control will be a four year control based upon a hypothetical on-going network model, using FAC CCA as the cost standard. We have confirmed that basket design will be such that only PSTN products will be included within baskets.

4.147 In order for this charge control to be adopted we have to be satisfied that such an approach is consistent with our requirements under the Act. As explained at paragraph 4.8 – 4.10 above we have to ensure that the design of the charge control fulfils the conditions in section 88(1)(b) and 88(2) as the way the condition is set will, in part, determine whether it promotes efficiency, sustainable competition, provides benefits to end users and appropriately takes into account investment.

Appropriate to promote efficiency

4.148 We have discussed above the individual aspects of the control, and consider that each aspect of the control is appropriate for the purposes of promoting efficiency. A four year control period is the appropriate period for creating dynamic efficiency incentives. The proposed hypothetical ongoing network costs model should provide efficient migration incentives to BT's 21CN which we expect to be a more efficient network. The modelling, itself, has taken into account BT's scope to achieve further cost efficiency over the control period on a hypothetical ongoing network basis.

Appropriate to promote sustainable competition

4.149 We have set out the reasons for establishing the control, the aim of which is to constrain prices at a level that promotes competition. We consider that the RPI +/- X charge controls applied over an appropriate period of four years, achieve this aim. However, it remains important for the basis of our modelling to be clear. The use of the FAC CCA cost methodology is based on the use of the most reliable figures available.

Appropriate to confer the greatest possible benefits on end users

4.150 We consider that the charge control proposed will achieve the aim of regulating prices at a level that promotes competition, whilst providing a number of incentives for the Dominant Provider to become more efficient, including reducing its own costs by migrating onto a next generation network. This forward movement in technology and the continued promotion of sustained competition should ensure that the methodology is appropriate for the purposes of conferring the greatest benefits on end users of the services.

Taking into account investment

4.151 We are required, under section 88(2), to take into account BT's investment. In our proposed control we have specifically explained our rationale for use of the FAC CCA cost methodology, its reliability relative to other methodologies and that it allows a reasonable contribution to common costs. We have also set out in detail the difficulties in assessing the impact of migration to 21CN during the life of the control. In particular we have taken into account at paragraphs 4.64 to 4.74 the issue of cost recovery in relation to 21CN. We consider that the efficiency and migration incentives that we have built into the control are such that it satisfies the section 88(2) requirement.

General Duties

4.152 Throughout the process we have borne in mind our general duties under section 3 and duties fulfilling Community obligation under section 4. In particular we have sought to propose a charge control that furthers the interests of consumers by promotion of competition. We have also taken account of the need to be transparent, accountable, proportionate and consistent as set out in section 3(3). We consider

that the proposed charge control is set on a clearly defined basis and remains consistent with the principles applied in the last charge control regime (2005 to 2009), with which industry is familiar, and, as described above, has worked in reducing UK termination rates to the lowest in Europe for example.

Setting cost orientated charges under the next NCC

4.153 The next step in proposing a charge control after the analysis of the methodology is to asses how the target charges for the end of the control period, produced by the model, should be achieved. The details of the modelling and its data inputs are discussed in detail at Annex 6. The cost analysis indicates that current charges as set under the 2005-2009 charge control are below our estimates for hypothetical ongoing network costs based on a CCA FAC standard, and we also estimate that unit costs will rise during the period of the control due to falling volumes.

4.154 It is therefore important to consider how to align current NCC charges with the modelled FAC level during the next charge control period. We consider that there are two viable alternative approaches to this. They are:

Approach A: Alignment of charges to FAC at the end of the NCC period. This would require a glide path from the starting charge to FAC over the four year life of the control.

Approach B: Alignment of charges to FAC in the first year of the NCC. This would require increases to charges in the first year of the NCC such that they cover modelled FAC.

Ofcom's view on both of these approaches and its proposal is explained below.

Approach A

4.155 Approach A would align charges to FAC at the end of the NCC period. Our modelling for Approach A has produced the following base case values for X for NCC services. (NB Ranges for X and the assumptions underlying them are explained in Annex 6.)

	Range for RPI+/-X
Termination	RPI+3.25% - RPI+10.5%
Origination	RPI+2.5% - RPI+9.5%
PPP	RPI+0% - RPI+6.75%
ISB	RPI+1.5% - RPI+6.5%

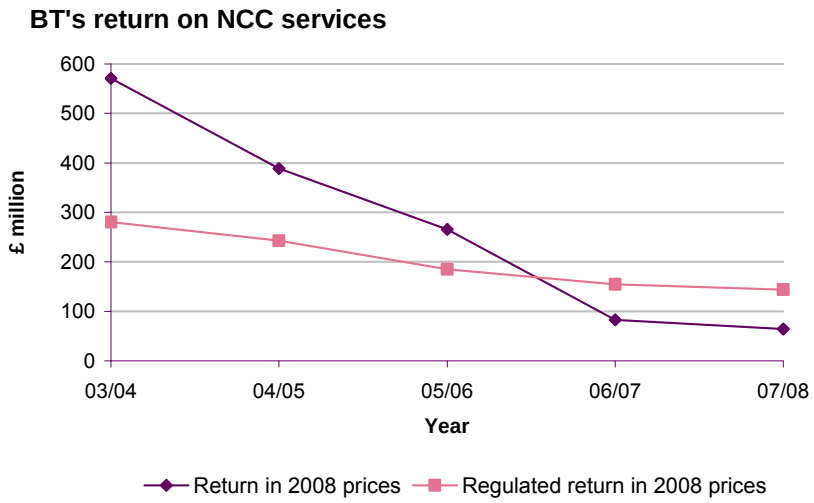
Dynamic efficiency advantages of glide paths over one-off adjustments

4.156 In previous NCCs and price caps Ofcom has favoured glide paths to FAC over one-off adjustments. Glide paths avoid discontinuities in prices over time and lead to a more stable and predictable background against which investment and other decisions may be taken, by both suppliers and customers in the telecoms market. This approach also has greater incentives for dynamic efficiency as it allows the firm to retain the benefits of cost reductions for longer. Also, if gains from increased efficiency were expected to be removed at the start of new control period, there would be a reduced incentive to improve efficiency towards the end of a control period. On the other hand, allocative efficiency is partially compromised as charges and costs will differ for a longer period of time.

4.157 Similarly, as noted above one-off adjustments are potentially dilutive of incentives for dynamic efficiency. For example, a rapid rise in charges would signal to BT that cost increases would be followed by price rises, reducing the incentive to control costs. Also, one-off adjustments upwards could create an expectation that other one-off adjustments – up or down – will be made in future, and this could also have adverse effects on incentives.

4.158 The positive incentives of glide path NCCs have worked well for BT and interconnected CPs in the past. BT's charges for interconnection services are the lowest available anywhere in the European Union[23] whilst BT has reported profits in excess of its weighted average cost of capital for NCC services of around £310 million[24] (in 2008 prices) since 2003. With normalisation adjustments to exclude 21CN costs and exceptionals this figure would rise considerably. This is shown in the chart below.

Figure 4.4: BT's return on NCC services



Recovery of common costs

4.159 Because the starting charges for the new NCC will be below modelled FAC, BT would not be recovering FAC for NCC services on average across the life of the NCC.

4.160 This raises issues about the contribution of NCC services to common costs since, as explained elsewhere in this document, the FAC CCA cost base used by Ofcom for NCC modelling is a proxy for LRIC plus an appropriate contribution to common costs. Therefore, it is important to understand if BT is able to recover its common costs from all services that contribute to the same common costs as NCC services. Conceptually, this could be a problem if the NCC services were all of, or a large part of, the product portfolio of BT's core network services. However, in reality, BT

[23] See the most recent Progress Report on the Single European Electronic Communications Market at http://ec.europa.eu/information_society/policy/ecomm/library/communications_reports/annualreports/13th/index_en.htm

[24] Returns on NCC services in excess of BT's cost of capital between 2003/2004 and 2007/2008 were: £226 million, £113 million, £69 million, a loss of £69 million, and a loss of £80 million consecutively (all in current prices). These have been converted to 2008 values using ONS financial year inflation data.

supplies a wide range of network services and so is able to recover common costs across a broad range of regulated and non-regulated services. BT's regulatory Financial Statements show that, in 2007/8, BT's regulated access and wholesale markets reported returns of 13.5%, significantly above its cost of capital. These reported returns are likely to be higher if current cost normalisation and 21CN cost adjustments were applied. This shows that, in the current NCC BT is able to recover a reasonable proportion of its common costs even though NCC services are charged at a level below the modelled FAC. We are mindful that section 88(2) of the Act requires us to take account of the extent of the relevant investment. We consider that we have taken account of this, ensuring that the service is at least incrementally profitable and gliding towards FAC at the end of the period.

4.161 Under the proposals contained in this document the scope of the NCC will be reduced (with the removal of local to tandem conveyance, single transit and FRIACO). Also BT is likely to introduce new 21CN services during the life of the NCC. Therefore we believe that BT will have more opportunities to recover common costs from all core network services in the new NCC.

Approach B

4.162 Our modelling for Approach B has produced the following base case values for year one adjustments to charges and subsequent X values for NCC services.

	Range for year 1 adjustment
Termination	+25% - +34.75%
Origination	+18.75% - +28%
PPP	+0% - +8.75%
ISB	+2% - +6.5%%

4.163 Following such a year one adjustment values of X to continue alignment of charges to FAC would be:

	Range for RPI+/-X
Termination	RPI-3.25% - RPI+3.25%
Origination	RPI-2.75% - RPI+3.5%
PPP	RPI+3% - RPI+6%
ISB	RPI+1.5% - RPI+6.75%

4.164 Approach B would ensure that all NCC services were forecast to make a contribution to common costs throughout the NCC period at a level consistent with a FAC contribution. As explained above, this would be important if the NCC services were all of, or a large part of, the product portfolio of BT's access and core network services. However, in fact, BT provides a broad portfolio of services including broadband and leased lines as well as narrowband services (of which the NCC services are a sub-set). Ofcom is required under s88(2) to take account of extent of the relevant investment, however, as described above we do not consider that this requires that all charge control are set to achieve a minimum FAC contribution from the start of the NCC.

4.165 Were Ofcom to implement Approach B it would constitute a change to Ofcom's approach to alignment of charges to costs in previous price caps and NCCs. At the start of previous price caps and NCCs, BT has enjoyed levels of profitability above

the cost of capital for controlled services. In these circumstances, Ofcom and its predecessor (Oftel) always opted for glide paths rather than one-off adjustments to align charges to costs. This ensured that the strong incentives for dynamic efficiency in price caps were not diluted by one-off adjustments at the start of new control periods.

4.166 Ofcom believes that the use of one-off adjustments to align charges to FAC in situations of common cost recovery below FAC would be equally as dilutive of incentives for dynamic efficiency as they would be in situations where charges are above FAC.

4.167 Ofcom will assess each NCC or price cap on its merits balancing the evidence in each case. However, we believe it would be undesirable to create an asymmetric model of regulation whereby over-recovery of costs is corrected in price caps via glide paths and under-recovery via one-off adjustments. This would distort downstream competition and be detrimental to consumer welfare. Different treatment of over and under recovery would not be consistent as required by our duties under Section 3 of the Communications Act. Acting consistently does not mean that we cannot change our approach to an issue where there are good reasons to do so.

Setting Charges - Legal Tests

4.168 We have considered whether the two approaches outlined above meet the tests in section 88. We are of the view that both of the approaches are justifiable. One of the key differences between the approaches relates to how efficiency is viewed. Approach A places greater weight on dynamic efficiency, whilst Approach B places more weight on allocative efficiency. Both approaches therefore promote efficiency in the wider sense and would satisfy the need set out in section 88(1).

4.169 The associated question of promotion of sustainable competition and conferring benefits on end users will depend upon the consistency of treatment afforded to setting charges. Ofcom has set charges on a glide path basis in the past, however this does not mean that this should necessarily be taken forward if a change to our approach is justified on the evidence. Both Approach A and Approach B, therefore can satisfy the section 88(1)(b)(ii) and (iii) requirements if they reflect a consistency of approach going forward.

4.170 We have also considered section 88(2), and consider that both approaches satisfy the requirement of the section to take account of BTs investment.

4.171 As both options are viable, in the sense that they meet the statutory tests set out in Section 88, we must look to our general duties to see which approach may fit better with our wider approach to regulation. We discuss our proposed approach below and our reasons, including a consideration of our duties, for choosing it.

Setting Charges - Proposed Approach

4.172 Ofcom has considered each of the options explained here. On balance, we believe that the better approach for the new NCC is to align charges to FAC at the end of the NCC period using a glide path as set out in Approach A. The primary reasons for this conclusion are:

- We believe that the incentives for dynamic efficiency of price caps are stronger with glide paths than one-off adjustments. This suggests that Approach A will be better suited to promoting competition and our duties under section 3 including

s3(4)(b) promoting competition; (d) encouraging investment and innovation; and Community obligations 4(3)(a); 4(7) and 4(8).

- NCC services cover DLRIC, and as such they ensure that the controlled service will be incrementally profitable. Common costs not recovered against the controlled service up to a FAC level can be adequately recovered elsewhere across the BT product portfolio.

- In previous price caps and NCCs Ofcom has favoured glide paths to correct recovery of costs above FAC and we do not believe it is appropriate to create an asymmetric framework for regulation by applying one-off adjustments in this case. This would not be consistent treatment of charge controls. We are, under section 3(3), required to have regard to the principle of consistency in performing our duties.

- Although the adoption of Approach B would not necessarily create an asymmetric framework for regulation if Ofcom changed its approach to setting charges, we consider that the arguments in favour of Approach B are not sufficient to justify a change of approach and, noting our obligation to regulate in a consistent manner, we consider it appropriate to continue to set charges using glide paths.

4.173 For all of the reasons set above we consider that the setting of charges to follow a glide path (Approach A), is the most appropriate way to set this NCC. Specifically, we have set out that the approach both satisfies the legal requirements under section 88, and is the more consistent approach when considering our duties under sections 3 and 4 of the Act.

Question 4.12: *Do you agree with Ofcom that NCC charges should be aligned with modelled FAC at the end of the NCC period using a RPI+X glide path?*

DLRIC floors

4.174 Ofcom believes that the minimum level of cost recovery for NCC services is long run incremental costs (LRIC). Some of our modelling – though not the base case – has raised the possibility that some NCC services could have starting charges below the distributed LRIC (DLRIC) floors published by BT in their regulatory Financial Statements. Whilst the DLRIC floors are not subject to audit scrutiny, they are the best available proxy for LRIC for NCC services and Ofcom therefore believes that charges for all NCC services should be no lower than the DLRIC floors normalised for one-off or exceptional events such as current cost valuation effects and the inclusion of costs not relevant to a hypothetical ongoing network approach to costing (such as 21CN). In the event that this is the case, the new NCC will allow Year 1 increases to services to the level of the DLRIC floors.

Question 4.13: *Do you agree with Ofcom that, in the event that starting charges for the next NCC are below DLRIC floors, the NCC should allow increases in the first year of the NCC to align charges to DLRIC floors?*

Proposal

4.175 In summary we are proposing that Network Charge Control be set on the following basis:

a. For a 4 year control period.

b. Using a hypothetical ongoing network cost methodology.

c Using CCA FAC cost methodology.

d. Not including 21CN services in the control.

e. Using a glide path approach from current charges to charges equal to unit FAC in the final year of the control.

We consider that the above approach complies with the requirements of the Act and is appropriate for addressing the market failure identified in the wholesale market review.

The EC Recommendation on call termination

4.176 The European Commission has consulted on its draft 'Recommendation on the regulatory treatment of fixed and mobile termination rates in the EU'. Ofcom understands that the recommendation is due to be finalised and will be published in the first half of 2009.

4.177 The recommendation seeks to create a uniform approach to the regulation of voice call termination rates across the EU. In particular it recommends the adoption of a uniform cost accounting methodology and the use of a cost model which assumes the core network for fixed networks to be next generation based.

4.178 The Commission recognises that time will be required for NRAs to put recommended costs models in place, balancing the need for consumers to derive maximum benefit from efficient cost-based termination rates and applies a transitional period for the adoption of the recommendation. The date on which the transitional period will end has not finally been decided.

4.179 Ofcom's has fully considered the draft recommendation. We consider that the current circumstances of UK fixed termination markets requires that a different approach to cost modelling than that contained in the draft Recommendation should be adopted for the period of the next NCC. However, despite difference between our cost modelling methodology and that described in the draft Recommendation, we believe that our approach will result in an outcome for fixed termination which is consistent with the Commission's objectives as set out in the draft Recommendation. In connection with this it is particularly relevant to note that BT's termination rates are the lowest in Europe.

4.180 Our analysis of the draft recommendation related to Ofcom's proposals is explained below. The recommendation is also discussed in connection with the proposed duration of the NCC at paragraphs 4.36 – 4.42 above.

Cost Accounting Methodology

4.181 Ofcom explains in paragraphs 4.75 – 4.86 above that it believes LRIC plus a reasonable contribution to common costs to be the appropriate cost standard for setting the NCC, and hence we have pursued this approach for interconnection and wholesale conveyance services in the current and previous NCCs. We have explained that we are proposing the use of adjusted FAC CCA cost data to set the

next NCC because this is the most reliable data we have to create a proxy for LRIC+ EPMU.

4.182 In light of the draft EC recommendation we have considered use of a LRIC cost basis for call termination. However, reliable data to establish a LRIC cost base is not available. Whilst BT published LRIC information in its Financial Statements, these are un-audited and so cannot be regarded as being as reliable as audited FAC CCA data.

4.183 In addition, Ofcom has considered the implications of regulating fixed call termination using a different cost standard to other elements of the NCC. This would be the case for example if Ofcom were to establish a LRIC cost base for call termination but use a LRIC+ approach for other NCC services. This raises questions about the treatment of common costs which would need to be recovered from services other than termination. Ofcom does not wish to de-link the regulation of call termination on BT's network from that of other NCC services, and so we believe that for the next NCC it is appropriate to maintain a consistent cost accounting methodology across all NCC services.

4.184 The UK has actively contributed to the Commission's consultation and discussion on the draft recommendation. Ofcom understands and supports the Commission's objective to ensure that termination rates are set at an efficient level which will not have distorting effects in downstream markets. As previously stated, we believe that BT's rates for termination on its network – being the lowest in Europe - are consistent with this objective.

Model Build

4.185 The draft recommendation includes reference to the use of cost models being based on NGN technology.

4.186 We have discussed our approach to technology neutral modelling at paragraphs 4.43 – 4.59. We have recognised that the period of the control will be likely to see some shift from PSTN to NGN technology. However, as explained, interconnection and wholesale conveyance services for NGNs in the UK are not yet fully developed and Ofcom does not have sufficient robust data on these services, their underlying costs nor the timing of migration of traffic to base the next NCC on a NGN cost model.

4.187 Ofcom's preferred approach to handle the transition from PSTN to NGN services for wholesale voice conveyance and interconnection services is to use a technology neutral model. We believe that this approach will enhance incentives for dynamic efficiency and, in particular, efficient investment in NGNs and migration of traffic from PSTN to NGN networks. The technology neutral approach also avoids the need to explicitly model migration and is not prone to manipulation by BT reporting migration to be slower than is actually achievable. Our approach seeks to minimise the effects of inefficiencies which could arise through the parallel running of PSTN and NGN during the phase of simultaneous PSTN decommissioning and NGN build out.

NCC duration

4.188 We have discussed the appropriateness of imposing a four year control in detail at paragraph 4.22 – 4.42, specifically taking into account the draft recommendation. Ofcom believes that the benefits of a four year control outweigh any potential advantage of shortening the control to allow greater flexibility for methodological

changes in line with the recommendation before the ending of the transitional period. In particular, Ofcom believes that incentives for dynamic efficiency and preservation of allocative efficiency benefits are appropriately balanced in a four year NCC.

Summary on the EC Recommendation

4.189 In summary, Ofcom has taken account of the draft recommendation and, in doing so we have noted the following concerns expressed by the Commission:

- the main potential competition concern is of excessive pricing;
- that termination rates can be asymmetrical between differently sized operators;
- that termination rates set above efficient costs can create competitive distortions; the further rates move away from cost, the greater the competitive distortions;
- that high termination rates tend to lead to high retail prices for originating calls, decreasing consumer welfare;
- that regulated termination rates should be brought down to the costs of an efficient operator as soon as possible.

4.190 We consider that the approach that we are proposing, whilst it does not adopt all of the guidance offered by the recommendation, does address and meet the concerns expressed by the Commission. In particular we have 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.

Annex 1

Responding to this consultation

How to respond

A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 28 May 2009**.

A1.2 Ofcom strongly prefers to receive responses using the online web form at http://www.ofcom.org.uk/consult/condocs/review_bt_ncc/, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.

A1.3 For larger consultation responses - particularly those with supporting charts, tables or other data - please email chris.taylor@ofcom.org.ukattaching your response in Microsoft Word format, together with a consultation response coversheet.

A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Chris Taylor
Floor 4
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7981 3594

A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.

A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

Further information

A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Chris Taylor on 020 7981 3594.

Confidentiality

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, www.ofcom.org.uk, ideally on receipt. If you think your response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.

A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at http://www.ofcom.org.uk/about/accoun/disclaimer/

Next steps

A1.11 Following the end of the consultation period, Ofcom intends to publish a statement in Summer 2009.

A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: http://www.ofcom.org.uk/static/subscribe/select_list.htm

Ofcom's consultation processes

A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.

A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at consult@ofcom.org.uk . We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.

A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash
Ofcom
Sutherland House
149 St. Vincent Street
Glasgow G2 5NW

Tel: 0141 229 7401
Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

Annex 2

Ofcom's consultation principles

A2.1 Ofcom has published the following seven principles that it will follow for each public written consultation:

Before the consultation

A2.2 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

During the consultation

A2.3 We will be clear about who we are consulting, why, on what questions and for how long.

A2.4 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.

A2.5 We will consult for up to 10 weeks depending on the potential impact of our proposals.

A2.6 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.

A2.7 If we are not able to follow one of these principles, we will explain why.

After the consultation

A2.8 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

Annex 3

Consultation response cover sheet

A3.1 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, www.ofcom.org.uk.

A3.2 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.

A3.3 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.

A3.4 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at www.ofcom.org.uk/consult/.

A3.5 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

Cover sheet for response to an Ofcom consultation

BASIC DETAILS

Consultation title:

To (Ofcom contact):

Name of respondent:

Representing (self or organisation/s):

Address (if not received by email):

CONFIDENTIALITY

Please tick below what part of your response you consider is confidential, giving your reasons why

Nothing ☐ Name/contact details/job title ☐

Whole response ☐ Organisation ☐

Part of the response ☐ If there is no separate annex, which parts?

If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?

DECLARATION

I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.

Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here. ☐

Name Signed (if hard copy)

Annex 4

Consultation questions

***Question 4.1**: Do you agree with Ofcom's proposal to set a four year NCC from 1 October 2009 – 30 September 2013?*

***Question 4.2**: Do you agree with Ofcom's proposal to use a hypothetical ongoing network model to establish the technology neutral cost base for the next NCCs?*

***Question 4.3**: Do you agree with Ofcom's proposed methodology for the hypothetical ongoing model, including the use of adjusted base year costs from the previous NCC model to create a stable network from which to model costs?*

***Question 4.4**: Do you agree with Ofcom's proposed approach to efficiency as regards BT's 21CN in proposing these charge controls?*

***Question 4.5**: Do you agree with Ofcom's proposal to use a FAC CCA methodology to establish the cost base for the next NCC?*

***Question 4.6:** Do you agree that product management, policy and planning and interconnection circuits should be subject to separate controls?*

***Question 4.7:** Do you agree that there is no need to introduce sub-caps on rental charges in the ISB basket?*

***Question 4.8:** Do you agree that Ofcom is not in the position to regulate BT's 21CN wholesale voice services at this point?*

***Question 4.9:** Do you agree with our proposed efficiency adjustment range of 1 – 3% annually?*

***Question 4.10:** Do you agree with Ofcom's proposal that BT be required to provide all data necessary to monitor compliance with the NCC within three months of the end of each NCC year?*

***Question 4.11:** Do you agree with Ofcom that NCC charges should be set using RPI as the measure of inflation for indexation, prior year revenue weights to calculate charge changes, and with provision for carry over?*

***Question 4.12:** Do you agree with Ofcom that NCC charges should be aligned with modelled FAC at the end of the NCC period using a RPI+X glide path?*

Question 4.13: *Do you agree with Ofcom that, in the event that starting charges for the next NCC are below DLRIC floors, the NCC should allow increases in the first year of the NCC to align charges to DLRIC floors?*

Annex 5

Draft Notifications

NOTIFICATION OF PROPOSALS UNDER SECTIONS 48(2) AND 80 OF THE COMMUNICATIONS ACT 2003

Proposals for the setting of SMP services conditions to be imposed upon BT as a result of the proposed market power determinations made under the [date of Notification] Review of the fixed narrowband services wholesale markets.

Background

1. On 28 November 2003, the Director General of Telecommunications ("the Director") published a *Review of the fixed narrowband line, call origination, conveyance and transit markets*[25]; and a *Review of fixed geographic call termination markets*[26].

2. On 29 December 2003, Ofcom took over the functions and responsibilities under the Communications Act 2003 relating to the EC Communications directives from the Director.

4. On 30 July 2004, Ofcom published a *Review of BT's product management, policy and planning (PPP) charge*[27] , setting a new SMP condition in relation to BT.

5. On 10 February 2005, Ofcom published *Modifications to BT's SMP services conditions AA4, BA4 and PA1*[28]

6. On 18 August 2005, Ofcom published a *Review of BT's Network Charge Controls*[29] which reviewed the markets for local-tandem conveyance / transit and inter-tandem conveyance / transit. The review found the market for inter-tandem conveyance / transit to be competitive; no finding of SMP was made and SMP conditions relating to that market were revoked.

7. On 19 March 2009 Ofcom published a consultation document entitled *Review of the fixed narrowband wholesale markets* ("the wholesale review") which included at Annex 8 a Notification containing proposals for identifying markets, making market power determinations and the setting of SMP services conditions. In particular the Notification to the review identified, at paragraph 8, various markets, where it proposed that BT held SMP and a charge control was an appropriate remedy.

8. The wholesale review also proposed continued regulation, by way of charge control, of the Product Management, Policy and Planning ("PPP") charge, as an administrative charge related to SMP markets and interconnection circuits as a necessary technical area to an SMP market.

Proposals

[25] Review of the fixed narrowband line, call origination, conveyance and transit markets
[26] Review of fixed geographic call termination markets
[27] Review of BT's product management, policy and planning (PPP) charge.
[28] Modifications to BT's SMP services conditions AA4, BA4 and PA1.
[29] Review of BT's Network Charge Controls

9. Ofcom hereby makes, in accordance with sections 48(2) and 80 of the Communications Act 2003 ("the Act"), the following proposals for the setting of SMP service conditions ("SMP conditions").

10. Ofcom proposes SMP conditions implementing charge controls be set for the following markets and areas as identified and proposed by the wholesale review:

(a) call origination – 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 communication provider;

(b) call termination - the conveyance of all signals (including relevant control signals) terminating on a customer's exchange line to the first point in the network where those signals can be accessed by another communication provider.

(c) PPP

(d) interconnection circuits

11. Ofcom is proposing to set the following conditions:

(a) in relation to the services market identified in paragraph 10(a), SMP condition AA4, set out in Schedule 1 to this Notification;
(b) in relation to services market identified in paragraph 10(b), SMP service condition BA4 set out in Schedule 2 to this Notification;
(c) in relation to the areas identified in paragraphs 10(c) and 10(d), SMP service condition PA1 set out in Schedule 3 to this Notification.

12. The effect of, and Ofcom's reasons for making the proposals to set the SMP conditions set out in Schedules 1, 2 and 3 to this Notification are contained in Section 4 of the consultation document accompanying this Notification.

Ofcom's duties and legal tests

13. In considering whether to make the proposals set out in this Notification, Ofcom are, in accordance with section 86 of the Act, proposing those SMP conditions by reference to the proposed market power determinations made in relation to the identified services markets made in the *Review of the fixed narrowband wholesale markets*. Further Ofcom consider that the proposed SMP service conditions referred to in paragraph 11 of this Notification comply with the requirements of sections 45 to 47, 87 and 88 of the 2003 Act as appropriate and relevant to each of those SMP service conditions.

14. In making all of the proposals referred to in paragraphs 10 and 11 of 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.

Making representations

15. Representations may be made to Ofcom about any of the proposals set out in this Notification and the accompanying explanatory statement by no later than 28 May 2009.
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16. Copies of this Notification and the accompanying explanatory statement have been sent to the Secretary of State for Business, Enterprise and Regulatory Reform in accordance

with section 50(1)(a) of the Act, as well as the European Commission and to the regulatory authorities of every other member State in accordance with sections 50(3) and 81 of the Act.

Interpretation

17. Save for the purposes of paragraph 2 of this Notification and 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.

18. 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 736 of the Companies Act 1985 as amended by the Companies Act 1989;

SCHEDULE 1

Setting of SMP services conditions AA4 as a result of the market power determination proposed by Ofcom in the [final statement Review of the fixed narrowband services wholesale markets] in respect of the services market for call origination in the United Kingdom but excluding the Hull Area in which it has been proposed that BT is a person having significant market power.

1. In Schedule 1 to Annex 8 of the [final statement Review of the fixed narrowband services wholesale markets], there shall be set the following SMP services condition AA4, inserting it after Condition AA3.

"Condition AA4

Charge control – Call Origination

AA4.1 Without prejudice to the generality of Condition AA3, and subject to paragraphs AA4.2, AA4.4 and AA4.5, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (determined in accordance with paragraphs AA4.3) in the aggregate of charges for Call Origination Services is not more than the Controlling Percentage (determined in accordance with paragraph AA4.6).

AA4.2 For the purpose of complying with paragraph AA4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all individual Charge Changes during any Relevant Year shall be no more than that which it would have accrued had all of those Charge Changes been made at 1 April in the Relevant Year in question. The Dominant Provider shall be deemed to have satisfied this obligation where, by example in the case of a single Charge Change in the Relevant Year in question, the following formula is satisfied:

$RC(1-D) \leq TRC$

where:

RC is the revenue change associated with the single Charge Change made in the Relevant Year in question, calculated by the relevant Percentage Change immediately following the Charge Change multiplied by the revenue accrued during the Relevant Financial Year;

TRC is the target revenue change required in the Relevant Year in question to achieve compliance with paragraph AA4.1, calculated by the Percentage Change required in the Relevant Year in question to achieve compliance with paragraph AA4.1 multiplied by the revenue accrued from the provision of the services or categories of services specified in paragraphs AA4.1(a) to AA4.1(g) during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year in question, calculated as:

(i) for any Relevant Year other than the Leap Year the date on which the Charge Change takes effect, expressed as a numeric entity on a scale ranging from 1 October = -182 to 30 September = 182, divided by 183.

(ii) for the Leap Year, the date on which the Charge Control takes effect expressed as a numeric entity on a scale ranging from 1 October = -183 to 30 September = 182, divided by 183.

AA4.3 The Percentage Change shall be calculated for the purposes of complying with paragraph AA4.1 by employing the following formula:

$$C_t = \frac{\sum_{i=1}^{n}\left[R_i \frac{(p_{t,i} - p_{0,i})}{p_{0,i}}\right]}{\sum_{i=1}^{n} R_i}$$

where:

C_t is the Percentage Change in the aggregate of charges for the services in the category of services in question at a particular time t during the Relevant Year;

n is the number of individual services that form part of (or are comprised in) the provision of Call Origination Services;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the individual service i that forms part of (or is comprised in) the provision of Call Origination Services where i is a unique number from 1 to n for each of the n individual services in the provision of Call Origination Services;

$p_{0,i}$ is the published charge made by the Dominant Provider for the individual service i that forms part of (or is comprised in) the provision of Call Origination Services immediately preceding the beginning of the Relevant Year; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the individual service i that forms part of (or is comprised in) the provision of Call Origination Services at time t during the Relevant Year.

AA4.4 Where the Percentage Change in the Relevant Year in question is less than the Controlling Percentage (the “Excess”) then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph AA4.6, but increased by the absolute value of the Excess.

AA4.5 Where the Percentage Change in the Relevant Year in the Relevant Year in question is more than the Controlling Percentage (the “Deficiency”) then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph AA4.6, but decreased by the absolute value of the Deficiency.

AA4.6 Subject to paragraphs AA4.4 and AA4.5, the Controlling Percentage in relation to any Relevant Year in question is the amount of the change in the Retail Prices Index in the period of 12 months ending on 30th June immediately before the beginning of that Year expressed as a percentage (rounded to two decimal places) of that Index as at the beginning of that period increased by [X] percentage points :

AA4.7 Where:

(a) the Dominant Provider makes a material change (other than to a Charge) to any Charge Controlled Service for which a Charge is charged;

(b) The Dominant Provider makes a change to the date on which its financial year ends; or
(c) there is a material change in the basis of the Retail Prices Index,

paragraphs AA4.1 to AA4.6 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 paragraph AA4.7, a material change to the Charge Controlled Service includes (but is not limited to) the introduction of a new product and/or service wholly or substantially in substitution for an existing Charge Controlled Service.

AA4.8 The Dominant Provider shall record, maintain and supply to Ofcom in writing, 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 by performing the calculation of the Percentage Change. The data shall include:

(a) pursuant to Condition AA4, the calculated percentage change relating to Call Origination Services;
(b) pursuant to Condition AA4.2, calculation of the revenue accrued as a result of all relevant individual charge changes during any Relevant Year compared to the target revenue change;
(c) All relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions AA4.3;
(d) All relevant revenues accrued during the Relevant Financial Year in respect of Call Origination Services;
(e) Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider;
(f) The relevant published charge at the start of the Relevant Year;
(g) Other data necessary for monitoring compliance with the charge control.

AA 4.9 If it appears to Ofcom that the Dominant Provider is likely to fail to secure that the Percentage Change does not exceed the Controlling Percentage for the last relevant year beginning on 1 October 2012 and ending on 30 September 2013, the Dominant Provider shall make such adjustment to any of its charges for the provision of Call Origination Services and by such day in that Relevant Year (or if appropriate in Ofcom's opinion, by such day that falls after the end of that Relevant Year) as Ofcom may direct for the purpose of avoiding such a failure;

AA4.10 Paragraphs AA4.1 to AA4.9 shall not apply to such extent as Ofcom may direct.

AA4.11 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

AA4.12 In this Condition:

(a) "Charge" means for the purposes of paragraph AA4.7, the charge (being in all cases the amounts offered or charged by the Dominant Provider) to a Communications Provider for the Charge Controlled Service;
(b) "Charge Change" means a change to any of the charges for the provision of Call Origination Services;
(c) "Charge Controlled Service" means a product or service which forms part of or is comprised in) the provision of Call Origination Services;
(d) "Controlling Percentage" is to be determined in accordance with paragraph AA4.6
(e) "Leap Year" means the Relevant Year beginning on 1 October 2011 and ending on 30 September 2012;
(f) "Ofcom" means the Office of Communications

(g) “Percentage Change” has the meaning given to it in paragraph AA4.3;
(h) “Relevant Financial Year means the period of 12 months ending on 31 March immediately preceding the Relevant Year in question;
(i) “Relevant Year means any of the four periods of 12 months beginning on 1 October starting on 1 October 2009 and ending on 30 September 2013;
(j) “Retail Prices Index” 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.

SCHEDULE 2

Setting of SMP services conditions BA4 as a result of the market power determination proposed by Ofcom in the [final statement Review of the fixed narrowband services wholesale markets] in respect of the services market for call termination in the United Kingdom but excluding the Hull Area in which it has been proposed that BT is a person having significant market power.

1. In Schedule 2 to Annex 8 of the [final statement Review of the fixed narrowband services wholesale markets], there shall be set the following SMP services condition BA4, inserting it after Condition BA3.

"Condition BA4

Charge control – Call Termination

BA4.1 Without prejudice to the generality of Condition BA3, and subject to paragraphs BA4.2, BA4.4 and BA4.5, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (determined in accordance with paragraphs BA4.3) in the aggregate of charges for Call Termination Services is not more than the Controlling Percentage (determined in accordance with paragraph BA4.6).

BA4.2 For the purpose of complying with paragraph BA4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all individual Charge Changes during any Relevant Year shall be no more than that which it would have accrued had all of those Charge Changes been made at 1 April in the Relevant Year in question. The Dominant Provider shall be deemed to have satisfied this obligation where, by example in the case of a single Charge Change in the Relevant Year in question, the following formula is satisfied:

$RC(1-D) \leq TRC$

where:

RC is the revenue change associated with the single Charge Change made in the Relevant Year in question, calculated by the relevant Percentage Change immediately following the Charge Change multiplied by the revenue accrued during the Relevant Financial Year;

TRC is the target revenue change required in the Relevant Year in question to achieve compliance with paragraph BA4.1, calculated by the Percentage Change required in the Relevant Year in question to achieve compliance with paragraph BA4.1 multiplied by the revenue accrued from the provision of the services or categories of services specified in paragraphs BA4.1(a) to BA4.1(g) during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year in question, calculated as:

(i) for any Relevant Year other than the Leap Year the date on which the Charge Change takes effect, expressed as a numeric entity on a scale ranging from 1 October = -182 to 30 September = 182, divided by 183.

(ii) for the Leap Year, the date on which the Charge Control takes effect expressed as a numeric entity on a scale ranging from 1 October = -183 to 30 September = 182, divided by 183.

BA4.3 The Percentage Change shall be calculated for the purposes of complying with paragraph BA4.1 by employing the following formula:

$$C_t = \frac{\sum_{i=1}^{n}\left[R_i \frac{(p_{t,i} - p_{0,i})}{p_{0,i}}\right]}{\sum_{i=1}^{n} R_i}$$

where:

C_t is the Percentage Change in the aggregate of charges for the services in the category of services in question at a particular time t during the Relevant Year;

n is the number of individual services that form part of (or are comprised in) the provision of Call Termination Services;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the individual service i that forms part of (or is comprised in) the provision of Call Termination Services where i is a unique number from 1 to n for each of the n individual services in the provision of Call Termination Services;

$p_{0,i}$ is the published charge made by the Dominant Provider for the individual service i that forms part of (or is comprised in) the provision of Call Termination Services immediately preceding the beginning of the Relevant Year; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the individual service i that forms part of (or is comprised in) the provision of Call Termination Services at time t during the Relevant Year.

BA4.4 Where the Percentage Change in the Relevant Year in question is less than the Controlling Percentage (the “Excess”) then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph BA4.6, but increased by the absolute value of the Excess.

BA4.5 Where the Percentage Change in the Relevant Year in question is more than the Controlling Percentage (the “Deficiency”) then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph BA4.6, but decreased by the absolute value of the Deficiency.

BA4.6 Subject to paragraphs BA4.4 and BA4.5, the Controlling Percentage in relation to any Relevant Year in question is the amount of the change in the Retail Prices Index in the period of 12 months ending on 30th June immediately before the beginning of that Year expressed as a percentage (rounded to two decimal places) of that Index as at the beginning of that period increased by [X] percentage points:

BA4.7 Where:

(a) the Dominant Provider makes a material change (other than to a Charge) to any Charge Controlled Service for which a Charge is charged;
(b) The Dominant Provider makes a change to the date on which its financial year ends; or
(c) there is a material change in the basis of the Retail Prices Index,

paragraphs BA4.1 to BA4.6 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 paragraph BA4.7, a material change to the Charge Controlled Service includes (but is not limited to) the introduction of a new product and/or service wholly or substantially in substitution for an existing Charge Controlled Service.

BA4.8 The Dominant Provider shall record, maintain and supply to Ofcom in writing, 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 by performing the calculation of the Percentage Change. The data shall include:

(a) pursuant to Condition BA4, the calculated percentage change relating to Call Termination Services;
(b) pursuant to Condition BA4.2, calculation of the revenue accrued as a result of all relevant individual charge changes during any Relevant Year compared to the target revenue change;
(c) All relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions BA4.3;
(d) All relevant revenues accrued during the Relevant Financial Year in respect of Call Termination Services;
(e) Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider;
(f) The relevant published charge at the start of the Relevant Year;
(g) Other data necessary for monitoring compliance with the charge control.

BA 4.9 If it appears to Ofcom that the Dominant Provider is likely to fail to secure that the Percentage Change does not exceed the Controlling Percentage for the last relevant year beginning on 1 October 2012 and ending on 30 September 2013, the Dominant Provider shall make such adjustment to any of its charges for the provision of Call Termination Services and by such day in that Relevant Year (or if appropriate in Ofcom's opinion, by such day that falls after the end of that Relevant Year) as Ofcom may direct for the purpose of avoiding such a failure;

BA4.10 Paragraphs BA4.1 to BA4.9 shall not apply to such extent as Ofcom may direct.

BA4.11 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

BA4.12 In this Condition:

(a) "Charge" means for the purposes of paragraph BA4.7, the charge (being in all cases the amounts offered or charged by the Dominant Provider) to a Communications Provider for the Charge Controlled Service;
(b) "Charge Change" means a change to any of the charges for the provision of Call Termination Services;

(c) "Charge Controlled Service" means a product or service which forms part of or is comprised in) the provision of Call Termination Services;
(d) "Controlling Percentage" is to be determined in accordance with paragraph BA4.6
(e) "Leap Year" means the Relevant Year beginning on 1 October 2011 and ending on 30 September 2012;
(f) "Ofcom" means the Office of Communications
(g) "Percentage Change" has the meaning given to it in paragraph BA4.3;
(h) "Relevant Financial Year means the period of 12 months ending on 31 March immediately preceding the Relevant Year in question;
(i) "Relevant Year means any of the four periods of 12 months beginning on 1 October starting on 1 October 2009 and ending on 30 September 2013;
(j) "Retail Prices Index" 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."

SCHEDULE 3

Setting of SMP services conditions PA1 as a result of the market power determination proposed by Ofcom in the [final statement Review of the fixed narrowband services wholesale markets] in respect of the services markets for call origination and call termination in the United Kingdom but excluding the Hull Area in which it has been proposed that BT is a person having significant market power.

1. The following SMP services condition PA1 shall be set:

"Condition PA1

Charge control – PPP and Interconnection Circuits

PA1.1 Without prejudice to the generality of Condition AA3 and BA3, and subject to paragraphs PA1.2, PA1.4 and PA1.5, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (determined in accordance with paragraphs PA1.3) in:

(a) the aggregate of charges for PPP per call per minute; and
(b) the aggregate of charges for Interconnection Circuits

in each of sub-paragraphs (a) and (b) above is not more than the Controlling Percentage (determined in accordance with paragraph PA1.6).

PA1.2 For the purpose of complying with paragraph PA1.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all individual Charge Changes during any Relevant Year shall be no more than that which it would have accrued had all of those Charge Changes been made at 1 April in the Relevant Year in question. The Dominant Provider shall be deemed to have satisfied this obligation where, by example in the case of a single Charge Change in the Relevant Year in question, the following formula is satisfied:

$RC(1-D) \leq TRC$

where:

RC is the revenue change associated with the single Charge Change made in the Relevant Year in question, calculated by the relevant Percentage Change immediately following the Charge Change multiplied by the revenue accrued during the Relevant Financial Year;

TRC is the target revenue change required in the Relevant Year in question to achieve compliance with paragraph PA1.1, calculated by the Percentage Change required in the Relevant Year in question to achieve compliance with paragraph PA1.1 multiplied by the revenue accrued from the provision of the services or categories of services specified in paragraphs PA1.1(a) to PA1.1(g) during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year in question, calculated as:

(i) for any Relevant Year other than the Leap Year the date on which the Charge Change takes effect, expressed as a numeric entity on a scale ranging from 1 October = -182 to 30 September = 182, divided by 183.

(ii) for the Leap Year, the date on which the Charge Control takes effect expressed as a numeric entity on a scale ranging from 1 October = -183 to 30 September = 182, divided by 183.

PA1.3 The Percentage Change shall be calculated separately for each of:

(i) the category of service specified in paragraph PA1.1(a); and
(ii) the category of service specified in paragraph PA1.1(b),

by employing the following formula:

$$C_t = \frac{\sum_{i=1}^{n}\left[R_i \frac{(p_{t,i} - p_{0,i})}{p_{0,i}}\right]}{\sum_{i=1}^{n} R_i}$$

where:

C_t is the Percentage Change in the aggregate of charges for the provision of services in the category of services in question at a particular time t during the Relevant Year;

n is the number of individual services that form part of (or are comprised in) the provision of services in the category of services in question;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the individual service i that forms part of (or is comprised in) the provision of services in the category of services in question where i is a unique number from 1 to n for each of the n individual services in the provision of Call Origination Services;

$p_{0,i}$ is the published charge made by the Dominant Provider for the individual service i that forms part of (or is comprised in) the provision of services in the category of services in question immediately preceding the beginning of the Relevant Year; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the individual service i that forms part of (or is comprised in) the provision of services in the category of services in question Services at time t during the Relevant Year.

PA1.4 Where the Percentage Change in the Relevant Year in question is less than the Controlling Percentage (the “Excess”) then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph PA1.6, but increased by the absolute value of the Excess.

PA1.5 Where the Percentage Change in the Relevant Year in the Relevant Year in question is more than the Controlling Percentage (the “Deficiency”) then the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph PA1.6, but decreased by the absolute value of the Deficiency.

PA1.6 Subject to paragraphs PA1.4 and PA1.5, the Controlling Percentage in relation to any Relevant Year in question is the amount of the change in the Retail Prices Index in the

period of 12 months ending on 30th June immediately before the beginning of that Year expressed as a percentage (rounded to two decimal places) of that Index as at the beginning of that period:

(a) in respect of PPP per call minute, increased by [X] percentage points; and
(b) in respect of Interconnection Circuits, increased by [X] percentage points.

PA1.7 Where:

(a) the Dominant Provider makes a material change (other than to a Charge) to any Charge Controlled Service for which a Charge is charged;
(b) The Dominant Provider makes a change to the date on which its financial year ends; or
(c) there is a material change in the basis of the Retail Prices Index,

paragraphs PA1.1 to PA1.6 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 paragraph PA1.7(a), a material change to the Charge Controlled Service includes (but is not limited to) the introduction of a new product and/or service wholly or substantially in substitution for an existing Charge Controlled Service.

PA1.8 The Dominant Provider shall record, maintain and supply to Ofcom in writing, 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 by performing the calculation of the Percentage Change. The data shall include:

(a) pursuant to Condition PA1, the calculated percentage change relating to each category of service listed in paragraphs PA1.1(a) and PA1.1(b);
(b) pursuant to Condition PA1.2, calculation of the revenue accrued as a result of all relevant individual charge changes during any Relevant Year compared to the target revenue change;
(c) All relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions PA1.3 including for each specific service *i*;
(d) All relevant revenues accrued during the Relevant Financial Year in respect of the specific service;
(e) Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider;
(f) The relevant published charge at the start of the Relevant Year;
(g) Other data necessary for monitoring compliance with the charge control.

PA 1.9 If it appears to Ofcom that the Dominant Provider is likely to fail to secure that the Percentage Change does not exceed the Controlling Percentage for the last relevant year beginning on 1 October 2012 and ending on 30 September 2013, the Dominant Provider shall make such adjustment to any of its charges for the provision of services in the category of services in question and by such day in that Relevant Year (or if appropriate in Ofcom's opinion, by such day that falls after the end of that Relevant Year) as Ofcom may direct for the purpose of avoiding such a failure;

PA1.10 Paragraphs PA1.1 to PA1.9 shall not apply to such extent as Ofcom may direct.

PA1.11 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

PA1.12 In this Condition:

(a) "Charge" means for the purposes of paragraph PA1.7, the charge (being in all cases the amounts offered or charged by the Dominant Provider) to a Communications Provider for the Charge Controlled Service;
(b) "Charge Change" means a change to any of the charges for the provision of services in the category of services in question;
(c) "Charge Controlled Service" means a product or service which forms part of or is comprised in) the provision of services in the category of services in question;
(d) "Controlling Percentage" is to be determined in accordance with paragraph PA1.6
(e) "Leap Year" means the Relevant Year beginning on 1 October 2011 and ending on 30 September 2012;
(f) "Ofcom" means the Office of Communications
(g) "Percentage Change" has the meaning given to it in paragraph PA1.3;
(h) "Relevant Financial Year means the period of 12 months ending on 31 March immediately preceding the Relevant Year in question;
(i) "Relevant Year means any of the four periods of 12 months beginning on 1 October 2009 and ending on 30 September 2013;
(j) "Retail Prices Index" 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.

PA1.13 For the purposes of interpreting this Condition:

(a) Except for references made to identified services markets in paragraph PA1.13 and except insofar as the context otherwise requires or as defined in paragraph PA1.11, words or expressions shall have the meaning ascribed to them in Part 1 of Schedule 1 or (as the case may be) Part 1 of Schedule 2 to the [final statement Review of the fixed narrowband services wholesale markets] and otherwise any word or expression shall have the same meaning as it has been ascribed in the Communications Act (c. 21);
(b) headings and titles shall be disregarded;
(c) the interpretation Act 1978 (c. 30) shall apply as if the Notification were an Act of Parliament

PA1.14 The Conditions shall apply to each of the following markets and to Interconnection Circuits:

(a) call origination - 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;
(b) call termination - the conveyance of all signals (including relevant control signals) terminating on a customer's exchange line to the first point in the network where those signals can be accessed by another communications provider,

in each market of which the Dominant Provider has been determined to have significant market power."

Annex 6

NCC Financial Model

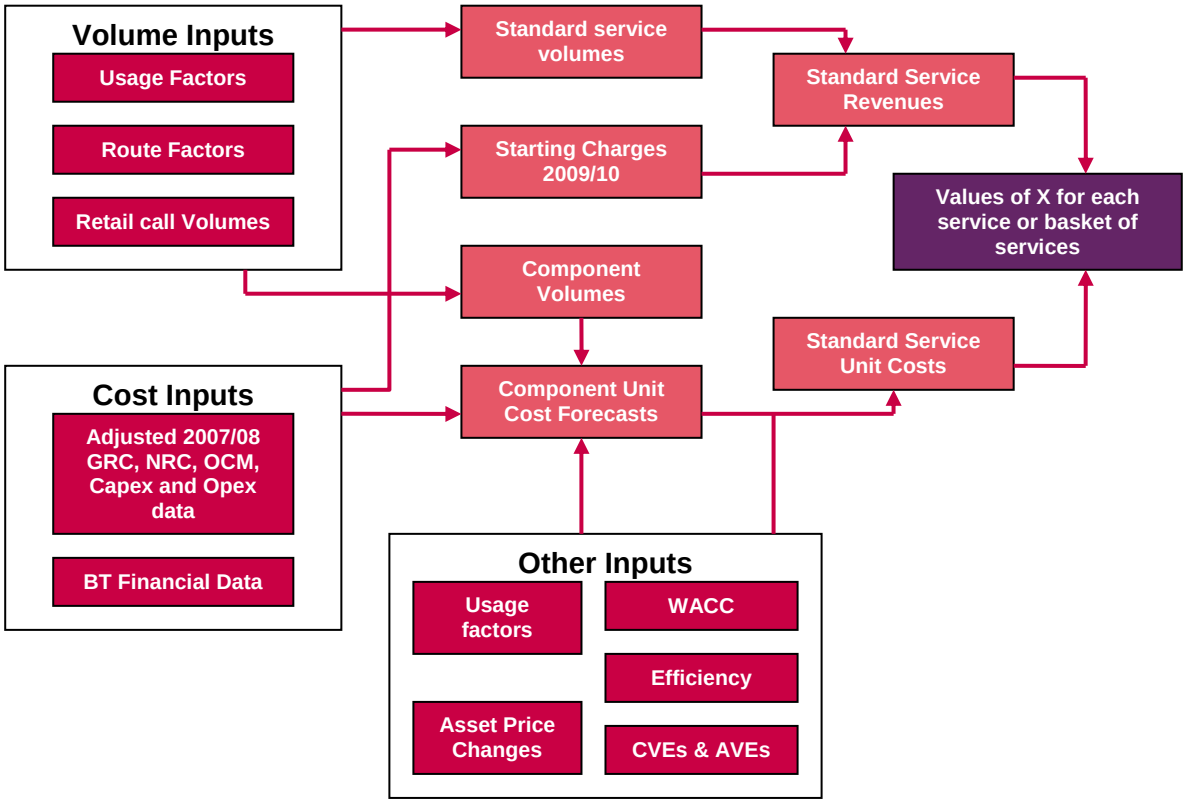
Introduction

A6.1 The following annex outlines Ofcom's cost modelling methodology. The Ofcom model is used to determine the values of X covered by the Network Charge Control (NCC) over the period 2009/10-2013/14. The remainder of this annex contains:

- Key Model Calculations;
- Hypothetical ongoing network base year adjustments;
- Capital and operating cost calculations; and
- Key inputs and the sensitivity analysis.

A6.2 The structure of the model is illustrated below. The input and data assumptions are used to forecast the unit cost of each component. These component costs are used to determine the standard service costs. The standard service X factor is set so that costs and revenues are equal in the final year of the charge control. Alternative approaches for initial one-off adjustments are also considered.

Figure A6.1 The NCC model structure



Key Model Calculations

A6.3 The model performs five key calculations:

- Calculation of network component volumes using call volume forecasts by call type;
- Calculation of total network capital costs;
- Calculation of total network operating costs;
- Calculation of total capital and operating unit costs by service type; and
- Calculation of the value of X for each regulated service.

The calculations are described in detail in the following paragraphs. Calculations are all performed in real terms with a base year of 2007/08.

Calculations of network component volumes

A6.4 Network component volumes are calculated as the product of call volumes by call type (for each type of call that passes over BT's network) and the associated routing factor by PSTN network component type.

Calculation of Capital Costs

A6.5 The total capital costs are calculated in three stages:

- The "steady state", i.e. no volume growth, level of costs is forecast;
- The "additional", i.e. caused by volume change, level of costs is forecast; and
- Total network costs are obtained by summing the "steady state" and "additional" costs.

Hypothetical ongoing network base year adjustments

A6.6 As has been discussed in Section 4, Ofcom is modelling a hypothetical ongoing network based on PSTN components. The base year costs are the starting costs for our hypothetical ongoing network model. It is these base year costs that are used to determine the standard service cost forecasts. These base year costs should reflect an ongoing network. In previous charge controls starting values of Gross Replacement Cost (GRC), Net Replacement Cost (NRC) and Operating Capability Maintenance (OCM) were taken from BT's regulatory financial statements (RFS). In principle we would wish to use the most recent cost data for our cost modelling. However, we are concerned that the most recent 2007/08 RFS data is not suitable for modelling a hypothetical ongoing network.

A6.7 In the absence of new PSTN assets, the PSTN components have become heavily depreciated. Ofcom believes that the reported level of costs for PSTN assets do not reflect an ongoing network. As such, some adjustment must be made to base year data to reflect an ongoing network. The level of GRC is higher than we would expect given the decrease in volumes during the previous charge control. If an asset has an asset volume elasticity (AVE) of greater than 0 a decrease in volumes

will cause a decrease in GRC (see section A6.38 for a discussion of AVEs). However, the level of NRC is lower than we might expect for an ongoing network. BT's RFS also include the cost of 21CN components. The Ofcom hypothetical ongoing network cost model is based on PSTN components so the cost of these 21CN components must be removed.

A6.8 The 21CN components can be easily removed by only including the PSTN component costs in the model. Due to the depreciated nature of the PSTN, the costs associated with its components are not robust. In particular, we would expect the reported NRC to be too low and the operating costs to be higher than would be appropriate for an ongoing network. Although BT's reported costs require adjustments if they are to reflect an ongoing network, the size of these adjustments is by no means clear.

A6.9 Adjustments could be made to the NRC by setting an ongoing network NRC/GRC ratio and determining the NRC values from the GRC. However, this adjustment would require the GRC to be at the correct level. As stated above we believe the GRC is above the level appropriate given the decline in volumes over the previous charge control period. As such, we believe it is not appropriate to adjust base year costs in this way.

A6.10 An alternative approach is to set the base year costs from the previous NCC data. The base year data used in setting the current charge control was assumed to be at a hypothetical ongoing level. By adjusting these costs for volumes, efficiency and asset price changes we have estimated base year values for 2007/08 for a hypothetical ongoing network. Details on these adjustments are outlined below.

NRC/GRC Ratio

A6.11 Ofcom has referred back to the previous NCC's base data to determine the hypothetical ongoing level of costs. The ratio between NRC and GRC at the start of the previous charge control was assumed to be at a hypothetical ongoing network level. Ofcom believes that NRC should be adjusted so that the ratio of NRC to GRC is the same as at the start of the previous charge control. The NRC in the 2007/08 base year is therefore derived from the base year GRC and application of this "ongoing network" NRC/GRC ratio.

Base Gross Replacement Cost

A6.12 The base year GRC will also be determined from base year data in the previous NCC charge control. The base year GRC figure is taken from the previous NCC model. This GRC figure is adjusted downwards to account for the observed decline in volumes (as opposed to the then forecast decline), falling asset prices, and efficiency savings based on the target set in 2005.

Base Operating Capability Maintenance

A6.13 Due to the depreciated state of the PSTN, the base reported value for OCM depreciation is also very low. If the reported OCM values were used the calculation of asset lives by the ratio of GRC to OCM would produce unrealistic results.To be consistent with the approach to NRC and GRC the OCM will be determined from the asset lives used in the previous charge control period which better reflect an ongoing network.

Base Capital Expenditure

A6.14 Given the adjustments made to GRC, NRC and OCM it would be inconsistent not to also adjust the capital expenditure to reflect a hypothetical ongoing network. In a steady state (i.e. zero volume change), and if actual asset lives have been correctly adjusted, then capital expenditure should be equal to OCM depreciation. Base year capital expenditure is therefore set to equal base year adjusted OCM.

Base Operating Costs

A6.15 Just as the capital costs need a hypothetical ongoing network adjustment, so do the operating costs. It is reasonable to expect that as the PSTN declines the cost of maintaining that network will increase. The result of higher maintenance costs are operating costs that are above the hypothetical ongoing network level. From the data received fro BT there is no robust way to adjust the reported operating costs to reflect a hypothetical ongoing network.

A6.16 To adjust the base operating costs to the hypothetical ongoing level, and for consistency with the capital costs, the previous NCC model base values are used. These values are adjusted for the observed decline in volumes as opposed to the forecast decline and efficiency based on the target set in 2005 to give base values for operating costs in this charge control.

A6.17 The result of these adjustments are a slightly lower 2007/08 unit cost than those reported by BT in its RFS. However, the unit costs are higher than they would be if the PSTN base costs were left unadjusted (i.e. if 21CN costs are excluded but capital costs and operating costs are not adjusted to reflect a realistic sustainable ongoing network).

Table A6.1 Comparison of 2007/08 unit costs

	BT Reported Unit Costs (2007/08) PPM	Modelled Unit Costs (2007/08) PPM	Unadjusted PSTN Components Unit Costs (2007/08) PPM
Termination	0.203	0.196	0.157
Origination	0.214	0.208	0.171
PPP	0.010	0.008	0.007
ISB[30]	94.43	69.46	52.99

Capital Cost Calculations

Table 6.2 Abbreviations used in cost forecast

Abbreviation	Description
GRC (t)	The value of Gross Replacement Cost (GRC) in year t (taken as a year-end figure)

[30] The ISB value is a weighted charge across all ISB services. As such, it should only be considered an indicative figure and does not relate to any particular ISB service. We calculate the ISB base year costs using a different methodology to the main model. A description of these calculation can be found in section A6.30.

NRC (t)	Net Replacement Cost in year t
Capex (t)	Capital expenditure in year t
Disp (t)	Disposals in year t
OCM dep (t)	Operating Capability Maintenance depreciation in year t
NCA (t)	Net Current Assets in year t
Eff	Efficiency factor, the percentage reduction in costs arising from efficiency gains
ChP(t)	The change in price of an asset at time t

A6.18 The hypothetical ongoing network adjustments lead to the following capital cost calculations:

Table A6.3 Steady State Calculations

Calculation	Description
Gross replacement cost (GRC)	The base year (2007/08) GRC values by asset type and component type are the volume adjusted values from the previous NCC model. The forecasts are calculated as the addition of: a) the previous year GRC multiplied by the asset price trend; and b) the difference between the current year capital expenditure and the current year disposals. GRC(t) = GRC(t-1)*(1+ChP(t)) + (Capex(t) – Disp(t))
Operating capability maintenance (OCM) depreciation	The base year (2007/08) OCM depreciation is calculated by dividing the GRC by the average asset lives in the previous charge control. OCM dep(t) = GRC(t)/asset life
Capital expenditure (capex)	The base year capital expenditure is equal to the OCM depreciation. The forecasts are calculated by multiplying the previous year capex value by the real asset price change and the assumed year on year efficiency gain. Capex(t) = Capex(t-1) * (1+ChP(t)) * (1-Eff)
Disposals	It is assumed that in the base year (2007/08) disposals are equal to capex. The forecasts are calculated by inflating prior year values by the real asset price trend. Disposals(t) = Disposals(t-1) * (1+ChP(t))
Net replacement cost (NRC)	The base year (2007/08) NRC values by asset type and component type are volume adjusted values from the previous NCC model. The forecast are calculated as the addition of the previous year NRC multiplied by the asset price trend and the difference between the current year capex and the current year OCM depreciation. NRC(t) = NRC(t-1) * (1+ChP(t)) + (Capex(t) – OCM dep(t))
Net current asset (NCA)	The base year (2007/08) NCA values by component type are set to zero. NCA is assumed to be zero for the period of the charge control. Given the adjustments that we have

	made to base year costs it would not be appropriate to use reported NCA. Given that we would not expect NCA to vary in a material way with volumes. In addition to this, the actual value of NCA has fluctuated between positive and negative values during the previous charge control. The average of the NCA values is close to zero. We have decided for the purpose of a hypothetical ongoing model that NCA should be set at zero for the duration of the modelled period.

Additional capital cost calculations

A6.19 The additional elements of the calculations are caused by changing volumes relative to the steady state. If volumes decline these values will be negative, if volumes increase these values will be positive.

A6.20 The base year always has the additional capital costs set to zero. Due to the way the model is designed, in the base year there is no volume growth and so no additional capital costs.

Table A6.4 Additional capital and depreciation costs associated with volume growth

Calculation	Description
Additional Capex	The forecasts are calculated as the product of: a) the previous year total GRC multiplied by the asset price trend; b) and the AVE and the component volume change. Add Capex(t) = Total GRC(t-1) *(1 + ChP) * AVE * % change vol(t)
Additional GRC	The forecast is calculated as the addition of: a) the product of the previous year additional GRC and the asset price trend; and b) the current year additional capex. Add GRC(t) = Add GRC(t-1) * (1+ChP(t)) + Add Capex(t)
Additional OCM	The forecast is calculated by dividing the current year additional GRC by the average asset life. Add OCM dep(t) = Add GRC(t) / asset life
Additional cumulative OCM depreciation	The forecast is calculated by multiplying the previous year additional cumulative depreciation by the asset price trend, and then adding the current year additional OCM depreciation. Cumulative Add OCM dep(t) = Cumulative Add OCM dep(t-1) * (1+ ChP(t)) + Add OCM dep(t)
Additional NRC	The forecast is calculated by subtracting the additional cumulative OCM depreciation from the additional GRC.

	NRC(t) = Additional GRC(t) – Additional cumulative OCM dep(t)

A6.21 Using the steady state and additional costs calculations the total capital and depreciation costs can be determined. The total capital cost calculations are described in Table A6.5. NCA does not vary with volumes and so additional NCA calculations are unnecessary. An additional disposals calculation would only be necessary if any components that had additional capex also had asset lives shorter than the modelling period. If this was the case then some of the asset purchased via additional capex would fully depreciate before the end of the modelling period and would require disposal (additional disposals). This is not the case for any component.

Table A6.5 Total capital and depreciation costs

Calculation	Description
Total GRC	Sum of the steady state GRC and additional GRC. Total GRC(t) = ss GRC(t) + add GRC(t)
Total capex	Sum of the steady state capex and additional capex. Total Capex(t) = ss Capex(t) + add Capex(t)
Total NRC	Sum of steady state NRC and additional NRC. Total NRC(t) = ss NRC(t) + add NRC(t)
Total OCM depreciation	Sum of steady state and additional OCM depreciation. Total OCM(t) = ss OCM dep (t) + add OCM dep (t)
Total return on capital	Sum of steady state NCA plus total NRC, multiplied by the real pre tax cost of capital. Real return on capital(t) = (ss NRC(t) + add NRC(t) + NCA(t)) * pre tax nominal WACC / deflation factor(t)
Total holding loss	Calculated by multiplying the real price change by the total NRC minus the difference between total capex and total OCM depreciation. Real holding loss(t) = Total NRC(t-1)*ChP
Total capital and depreciation costs	Calculated by summing the return on capital plus the total OCM depreciation plus the total holding loss. Real total capital and dep cost(t) = Real Return on capital(t) + Depreciation(t) + Real holding loss (t)

Calculation of total operating costs

A6.22 The hypothetical ongoing network adjustment leads to operating cost being calculated as described in Table A6.6.

Table A6.6 Operating cost calculations

Calculation	Description
Productivity adjusted operating cost change	This is the operating expenditure price changes calculated as the combined effect of factor price changes and assumed efficiency gain, split by pay and non-pay categories. Prod Adj(t) = (1+ChP)*(1-eff)
Total operating costs (non-pay)	The base year data for 2007/08 is calculated as the volume and efficiency adjusted level from the previous NCC. The forecast is calculated by multiplying the previous year value by the productivity adjusted operating cost change, and the product of the component volume change with the CVE for the non-pay cost category. Non-pay(t) = Non-pay(t-1) * Prod Adj(t) * (1+ % Volume Change * CVE)
Total operating costs (pay)	The base year data for 2007/08 is calculated as the volume and efficiency adjusted level from the previous NCC. The forecast is calculated by multiplying the previous year value by the productivity adjusted operating cost change, and the product of the component volume change with the CVE for the pay cost category. Pay(t) = Pay(t-1) * Prod Adj(t) * (1+ % Volume Change * CVE)
Total operating expenditure	The sum of the total non-pay and pay operating costs.

Calculation of total unit costs by service type

A6.23 Using the total capital costs and operating costs the total costs are calculated as described in Table A6.7.

Table A6.7 Total costs

Calculation	Description
Real Total costs	Sum of the total capital costs (Table A6.5) and the total operating costs (Table A6.6) by component.
Real Total unit costs	The ratio of real total costs by component and network component volumes.
Real Unit costs by service type	Product of the real unit costs by component (on a per minute or per circuit basis) and the usage factors by component type for each service.

Starting price adjustments and calculation of X

A6.24 The key outputs of the model are the calculation of the value of X for the following services:

- Call termination;
- Call origination;

- Interconnect Specific Basket (ISB); and
- Product management, Policy and Planning (PPP).

A6.25 For each service, the value of X is determined so as to ensure zero supernormal profits by the end of the charge control period measured on a FAC bais. Supernormal profits are calculated as the difference between total revenues and total costs (including the return on capital employed) for each service. In the final year of the unit charge is equal to the unit cost on a modelled FAC basis.

Table A6.8 Calculation of the value of X

Calculation	Description
Unit charges	The Unit average charge for 2009/10 is provided by BT. The values of X for the new charge control period are calculated by the model so that there are no super-normal profits by 2013/14. Where two or more services fall within the same basket (such as Call Origination), the sum of their costs is equal to the sum of their revenues by the end of the charge control period.
Total revenues	The product of unit revenues and service volumes.
Unit costs	As explained in table A6.7
Total costs	The product of unit costs and service volumes
Supernormal profits	Calculated as the difference in total revenues and total costs on a FAC basis for each service. X is set so that supernormal profits for 2013/14 are equal to zero for each service or basket of services.

One-off Adjustments

A6.26 Under Approach A, if the starting charge is below the modelled DLRIC floor, a one-off P_1 adjustment is made to set the starting charge that allows recovery of DLRIC costs over the first year of the charge control and thereafter glides to FAC.

A6.27 In some scenarios we are proposing an initial one-off adjustment. This change in price occurs in P_1. The one-off change for Approach B seeks to allow recovery of modelled FAC for each service over the control period. The initial one-off adjustment is set to allow a post-adjustment glide path which will both set unit charges equal to FAC in the final year of the charge control and allows at least full recovery relative to FAC over the period. This may require an adjustment above FAC in P_1 if the path of unit costs is concave (i.e. it has a hump). The one-off adjustment replaces the X adjustment in the first year of the charge control.

A6.28 The calculation of X for each basket is summarised in TableA6.8. There are some differences introduced for some of the services which are outlined in the following paragraphs.

Call origination and call termination

A6.29 Call origination and call termination are subject to different values of X as calculated by the model. The two key reasons for this difference are: a) the different margins between charges and costs where call termination is lower than call origination and b) the extra costs of intermediate services such as emergency and operator assistance (OA) that need to be recovered via call origination (but not call termination).

ISB

A6.30 The ISB basket is modelled on a stand alone basis as the cost drivers (circuits rather than minutes) and individual cost components (circuits rather than PSTN network components) making up this basket are different to those of the core model. Due to a lack of available data from the previous NCC the ISB base costs have been calculated using a different methodology to the other services. The base year GRC is BT's reported GRC with 21CN costs removed. The NRC/GRC ratio is set equal to the starting ratio from the previous charge control. The asset lives are set as the average asset lives during the previous charge control. The approach taken to model the ISB basket can be summarised as follows:

- The basket consists of three key services: Customer Sited Interconnect (CSI), Intra Building Circuit (IBC), Interconnection Extension Circuit (IEC), Re-arrangements and ISI Transmission Link. These services consist of connection, fixed rentals and per km rental charge components.
- Base year revenues are determined from BT's financial statements;
- Unit forecast costs are calculated as total forecast costs divided by total volumes. As with other cost calculations these costs are functions of forecast values for exogenous variables such as AVE, CVE, efficiency gain, input price changes and volumes changes. Again volume changes for ISB components are taken from BT forecasts. Where BT was unable to provide forecasts the volumes are assumed to decline at the same rate as total call volumes.

PPP

A6.31 PPP is subject to controls that are separate from the other baskets. The cost drivers for the two services are different. PPP costs are largely salary related and are driven by the interconnecting activity of other operators. PPP is used in all the charge controlled services. PPP is charged on a per minute per call basis. The volume forecasts for PPP are based on the decline in total retail call volumes.

A6.32 The deregulation of single transit and LTC will also imply that the PPP costs associated with those services will now be recovered outside of the charge control. The costs of PPP associated with ST and LTC are removed from the pot of PPP costs to be recovered from the remaining NCC services. We also remove the revenue associated with PPP on ST and LTC. As PPP is charged on per call rather than per service basis, the only revenues that are removed are those on calls that use ST and LTC but not other standard service.

Model periods

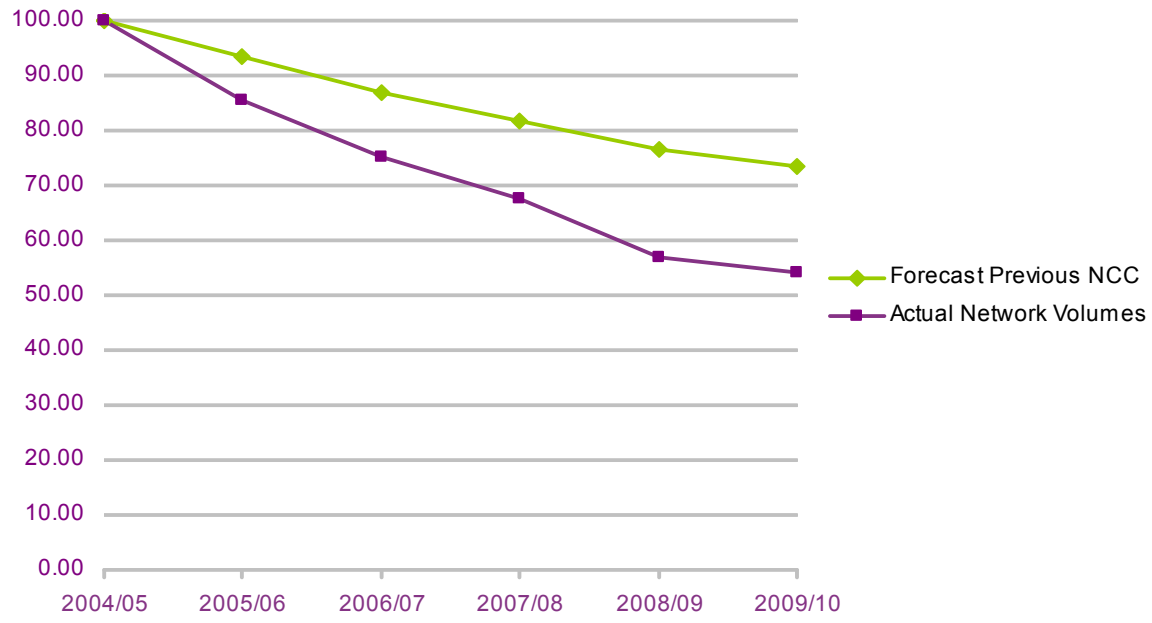
A6.33 The model uses the calculated base year data from the previous NCC model as explained in section A6.6. The model then forecasts cost values between 2008/09 and 2013/14. The next NCC period starts during October 2009 which is half way through financial year 2009/10.

Volumes

A6.34 Telecommunication networks are characterised by significant economies of scale and an increase in retail volumes, caused by market growth or increased share of traffic using BT's network, is likely to lead to a smaller proportionate increase in total costs than total revenues. Hence, BT's profitability is highly affected by total retail market growth rates and the share of traffic using BT's network. BT has provided forecasts for retail market volumes using its network over the control period. Ofcom has also prepared its own retail volume forecasts based on recent past trends of retail volumes using BT's network.

A6.35 Figure A6.2 shows the forecast and actual decline in volumes for the 2005 NCC period (the last two years of the actuals are the most recent forecasts). The overestimate of network volumes over the charge control period provides the key explanation for some standard service charges being below modelled costs on a FAC basis.

Figure A6.2 Indexed Volume Forecasts 2005 NCC (2004/05 = 100) and NCC indexed actual volumes



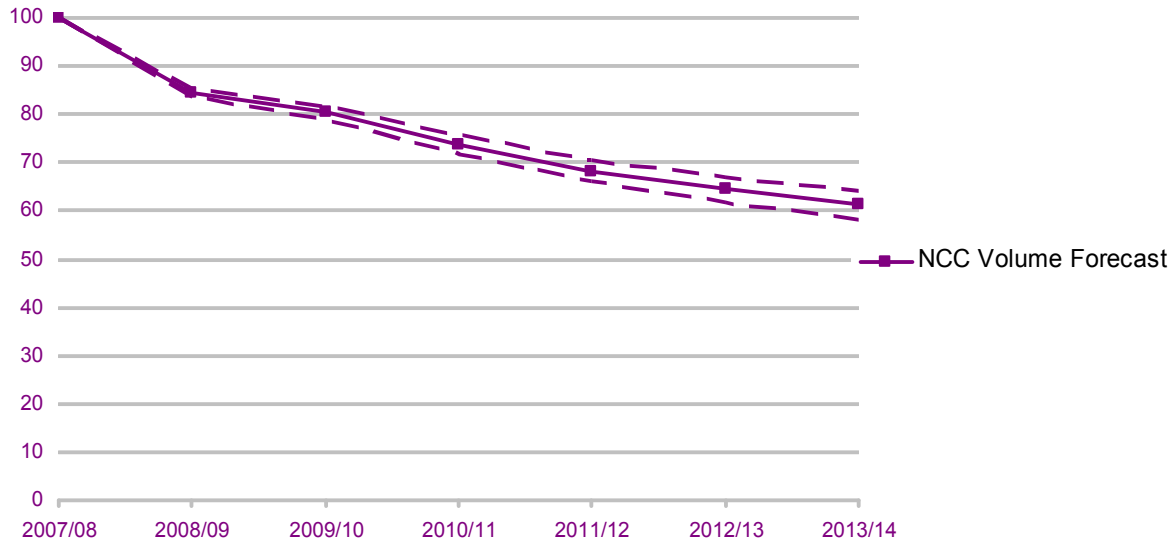
A6.36 Ofcom receives quarterly information from BT and other operators on line and retail traffic volumes as part of its ongoing market intelligence work. Ofcom has looked at recent trends in these data, together with additional information provided by BT in the context of this review, to produce forecasts of volumes over the next NCC period. Call volumes for any call type are calculated as the product of the moving average

number of calls per line and the average number of lines. The average number of lines is based on the forecasts used by Ofcom in the Openreach Financial Framework.

A6.37 Ofcom's retail volume forecasts produce similar levels of volume decline to the forecasts provided by BT. Ofcom feels that the forecasts provided by BT better reflect volume changes because they explicitly capture effects such as the switch from CPS to Wholesale call product. As such, our base case uses the volume forecasts produced by BT.

A6.38 Figure A6.3 shows the indexed forecast decline in volumes for the period of the next NCC. The dotted line shows a +5% to -5% range (by the end of the control period) around the forecast that is used in our sensitivities.

Figure A6.3 Indexed BT volume forecasts 2009 NCC (2007/08 = 100)



Efficiency

Ofcom's efficiency calculations

A6.39 The efficiency factor is an important parameter as it determines the rate by which real unit capital and operating expenditure are expected to decrease year on year before taking account of volume and input price changes. It should be noted that no adjustments are made to the efficiency factor to include the effect of anticipated saving from 21CN. See Section 4 for a discussion of efficiency savings associated with 21CN.

A6.40 Our approach to efficiency has been discussed in section 4.91. We have used a range of 1-3% yearly efficiency gain over the control period with a base assumption of 2% per year.

Other Inputs

Asset-volume elasticities (AVEs)

A6.41 An asset-volume elasticity is defined as the percentage increase in gross assets, valued at replacement cost, for a 1% increase in volume. Ofcom has assumed asset-volume elasticities of 0.38 for inland conveyance (network) costs. These are based on assumptions used in the last two NCC models, which were based on a top-down view of BT's costs.

A6.42 Ofcom has considered whether the AVEs used in the model for the next charge control period should be different to the ones used for the last charge control period due to the projected decline in PSTN volumes. Ofcom believes that the use of the same AVEs as the last charge control period is justified for three reasons;

- *Technology Neutrality* – Allowing a reduction in the AVEs to account for volumes switching from the PSTN to NGN would be inconsistent with hypothetical ongoing network costs,

- *Symmetry and consistency* – In past charge controls when volumes have been increasing Ofcom has not adjusted AVE upwards. We are rolling forward base period hypothetical network costs from the previous NCC model. To be consistent with the previous NCC model and to allow for a symmetrical treatment of volume changes we should also use the same AVEs for this hypothetical ongoing network as were used for the previous hypothetical ongoing network.

Cost-volume elasticities (CVEs)

A6.43 A cost-volume elasticity is defined as the percentage increase in costs for a 1% increase in volume. CVEs in telecommunications are typically significantly less than one, reflecting economies of scale. Ofcom has assumed a base case CVE of 0.25 for inland conveyance (network) costs. This is based on assumptions used in the last NCC model.

A6.44 Ofcom has considered whether the CVEs used should be different from those used in the last charge control because of the projected decline in PSTN volumes. Ofcom believes the CVEs should remain unchanged for the same reasons discussed above for the AVEs.

A6.45 It may be preferable to produce updated values for AVEs and CVEs based on recent data. However, given the problems with the data that have already been discussed, any new estimates for AVEs and CVEs are unlikely to be reliable. The asset and cost volume elasticities are taken from the 2005 Network Charge Control statement. These AVEs and CVEs are outlined below.

Table A6.9 AVEs and CVEs

Asset	Asset volume Elasticity (2005)
Cable	0.55
Duct	0.05
Local Exchange	0.55
Main Exchange	0.7
Transmission	0.2
Other Ntwk Eqpt	0.65

Operating costs	Cost volume Elasticity (2005)
Opex – pay	0.25
Opex – non pay	0.25

Motor Transport	0.4
Land & Bldgs	0.2
Computer & OM	0.65
Other	0.65

Cost of Capital

A6.46 The cost of capital is the minimum rate of return which investors require in order to continue investing. While actual returns in any year might differ from the cost of capital, one would not expect to see returns persistently above (or below) the cost of capital in a competitive market. Ofcom has used a range for the pre-tax nominal cost of capital between 10.25% and 11.75%. This value is based on the range determined in the Openreach Financial Framework Review second consultation.[31] This nominal cost of capital is adjusted for inflation to give the real cost of capital.

Change in asset and other input prices

A6.47 BT has provided data on changes in nominal asset prices. The inflation adjusted average of these values has been used as the basis for forecasts of future changes in real asset prices over the next control period. This implies a real asset price change of -2.36% overall. The breakdown of the nominal asset price changes is shown below.

Table A6.10 Asset price changes provided by BT

Asset	4 Year average nominal price change
Cable	3.64%
Duct	-0.29%
Local Exchange	-2.28%
Main Exchange	-2.51%
Transmission	-5.04%
Other Ntwk Eqpt	-2.84%
Motor Transport	-2.76%
Land and Bldgs	-1.43%
Computers & OM	-2.93%
Other	-2.08%

A6.48 BT has provided data on changes in nominal prices per unit of labour and other operating inputs. The average of these values has been used as the basis for forecasts of future changes in real input prices over the next NCC period. A real increase in labour costs (per unit of labour) of 0.93% per annum has been used in the base model.

A6.49 Given the situation of technological flux of BT's network it may not be appropriate to use the values provided by BT. There are no completely robust values for the assets that make-up BT's PSTN network. The base values for asset price changes are the values provided by BT. A range of asset price change ranging from 0 to -4% is used in the sensitivities.

[31] See http://www.ofcom.org.uk/consult/condocs/cost_capital2/statement/final.pdf

Negative Inflation

A6.50 As explained in Section 4 of the consultation document, Ofcom is using RPI as the inflation index in its NCC formulae. Our cost forecasts are based on a long term view of inflation. In the short term, it is possible that we will experience a period of deflation. This would be unprecedented in recent times and adds an additional level of complexity to cost projections. Specifically, for some categories of costs - such as pay costs, which are unlikely to fall in nominal terms, at least in the short term - the historically observed link between general inflation and cost movements may no longer provide the appropriate basis for forecasting costs. We will keep this under review.

Sensitivity Analysis

A6.51 Below we present the results of our sensitivity analysis on the values of X for a glide path with no adjustment. The final two rows present the combined changes in sensitivities that are used for our ranges of X. All values of X have been rounded to the nearest quarter of a percent.

Table 6.12 Result of sensitivity analysis

Parameter	Comment	Termination	Origination	PPP	ISB
Starting scenario is Ofcom Base Case		**6.75%**	**5.75%**	**3.25%**	**4.00%**
Volume sensitivities					
Volume forecasts +5%	Higher volumes with AVEs and CVEs less that 1 mean that unit costs fall. But since revenues increase in line with volumes, this means that the ratio between final costs and revenues is lower leading to a lower value of X.	**6.00%**	**5.00%**	**2.25%**	**3.75%**
Volume forecast -5%	Lower volumes lead to unit revenues falling faster than unit costs. This bring about higher values of X.	**7.25%**	**6.25%**	**4.00%**	**4.50%**
Efficiency sensitivities					
Efficiency assumption = 1%	Lower efficiency gain means costs do no decrease as quickly.	**7.50%**	**6.50%**	**4.50%**	**4.75%**
Efficiency assumption = 3%	High efficiency means lower costs over time.	**5.75%**	**4.75%**	**1.75%**	**3.25%**
WACC sensitivities					
WACC = 10.25%	A lower WACC means a lower return on capital and therefore lower costs.	**6.25%**	**5.25%**	**3.00%**	**3.75%**
WACC = 11.75%	A higher WACC will increase costs.	**7.00%**	**6.00%**	**3.25%**	**4.50%**

CVEs and AVEs					
AVEs and CVEs set low (see section A6.41)	Lower AVEs and CVEs cause costs to decrease more slowly when volumes decrease. This causes unit costs to be higher than otherwise and a higher X.	**7.50%**	**6.50%**	**4.00%**	**4.75%**
AVEs and CVES set high (see section A6.41)	Costs decrease more quickly than otherwise when volumes decline causing lower Xs.	**5.75%**	**4.75%**	**2.25%**	**3.50%**
Asset Price Change					
Real Asset price change = -4%	A larger decrease in asset prices will decrease costs over time as the mean capital employed decreases. However base costs may be higher as the holding loss will be greater.	**6.00%**	**5.00%**	**3.00%**	**4.00%** [32]
No real asset price change		**7.50%**	**6.50%**	**3.25%** [33]	**4.25%**
Combined Paranmeters					
Scenario 1	From Base Case Volume = +5% Efficiency = 3% WACC = 10.25% AVEs & CVEs = High Asset price Ch = -4%	**3.25%**	**2.50%**	**0.00%**	**1.50%**
Scenario 2	From Base Case Volume = -5% Efficiency = 1% WACC = 11.75% AVEs & CVEs = Low Asset price Ch = 0%	**10.50%**	**9.50%**	**6.75%**	**6.50%**

[32] This value is the same as the base case due to the ISB asset price changes being close to 4% and the rounding effect.
[33] This value is the same as the base case due to the rounding effect.

Annex 7

Impact Assessment

A7.1 The reasoning presented in this Annex alongside the discussion and analysis in Section 4 of this document represents an impact assessment, as defined in section 7 of the Communications Act 2003 (the Act).

A7.2 You should send any comments on this impact assessment to us by the closing date for this consultation. We will consider all comments before deciding whether to implement our proposals.

A7.3 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was chosen. They form part of best practice policy-making. This is reflected in section 7 of the Act, which means that generally we have to carry out impact assessments where our proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of our policy decisions. For further information about our approach to impact assessments, see the guidelines, 'Better policy-making: Ofcom's approach to impact assessment', which are on our website: http://www.ofcom.org.uk/consult/policy_making/guidelines.pdf.

A7.4 This impact assessment is to be used in conjunction with Annex 5 of the wholesale narrowband market review[34]. This annex of the wholesale narrowband market review is the impact assessment that measures the effect of imposing charge controls on the wholesale narrowband services where BT is found to have SMP. Consequently, the impact assessment of the NCC consultation needs to deal with how best to set charge controls. Section 4 of this consultation document covers this question in great detail. Here we repeat the main conclusions of this section and cross-reference the supporting analyses.

The citizen and/or consumer interest

A7.5 The network charge controls are designed to prevent BT from unfairly exerting its SMP in wholesale markets by setting excessive charges and thereby increasing its competitors' input costs. Without controls BT could increase its profitability without discriminating between its wholesale customers and its own retail business, but this may have negative consequences for competitors and consumers. BT's customers in this context are other competing networks that purchase interconnection and wholesale conveyance services from BT. But by affecting the input prices that these competitors face the final customers can also be harmed.

A7.6 The NCCs operate alongside other remedies which are designed to protect competitors and consumers from the negative consequences of market distortions which could result from unfair exploitation by BT of its SMP.

A7.7 Without the appropriate network charge controls BT might be able to raise its competitors' input prices unjustifiably. This would lead to BT unfairly increasing its market share in retail narrowband telecommunications markets. This, in turn, would adversely affect competitors' profitability. Moreover, final consumers are also worse

[34] Review of the fixed narrowband services wholesale markets, Ofcom, March 2009

off in a less competitive environment because less competition in the retail markets leads to higher retail prices. The NCCs together with other remedies identified in the wholesale narrowband market review ensure that markets are not distorted as a result of abuse of SMP.

Ofcom's policy objectives

A7.8 We need to impose network charge controls in markets that were identified in the wholesale narrowband market review. These markets are call origination and call termination. In addition, two technical areas were also identified for setting NCCs: interconnection circuits and product management, policy and planning.

A7.9 In order to set appropriate charge controls we have considered options regarding:

- the duration of the controls;
- the approach to model costs when BT is moving from one platform to another;
- the cost base;
- the appropriate charge control baskets for PTN services;
- the treatment of 21CN services;
- the appropriate form of the control (glide-path vs. one-off adjustments); and
- the efficiency improvements we expect BT to deliver over the next charge control period.

Analysis of different options

A7.10 Options for the duration of the controls were considered in paragraphs 4.22 – 4.42. These options were an 18 months control and a 4-year control. We want to select the option that balances well the trade-off between dynamic and allocative efficiency benefits. Also, we considered other factors that might influence the appropriate length of the charge controls such as synchronisation with the charge control on mobile termination rates and the compliance with the draft European Commission Regulation on call termination. Finally, we also wanted to set a long enough charge control that allow BT to develop its 21CN so that we will have robust information on 21CN services for the next NCC review.

A7.11 Options for the approach to modelling costs were discussed in paragraphs 4.43 – 4.74 The options considered were explicit modelling of BT's PSTN and 21CN and a technology neutral modelling approach. As discussed in th. is section, only one of these options was feasible with the information Ofcom has.

A7.12 Options for the cost base were considered in paragraphs 4.75 – 4.86. These were LRIC and CCA FAC cost modelling. The criteria we considered were reliability, consistency, continuity and to choose a costing methodology that promotes the right incentives to innovation and investment.

A7.13 Options for the appropriate charge control baskets for PSTN services were considered in paragraphs 4.87 – 4.95. The options considered were leaving the baskets as in the present NCC or making changes to the present structure such as imposing sub-caps in the ISB basket. We analysed whether there were any

apparent changes to competitive conditions that affect the services that were identified in the wholesale narrowband review as candidates for ongoing charge controls.

A7.14 Options for the treatment of 21CN services were discussed in paragraphs 4.108 – 4.113. The question was whether to impose network charge controls on these services or not. Again, as in the case of the approach to modelling, only one of these options was possible due to the lack of robust data on BT's 21CN services.

A7.15 The arguments regarding the appropriate form of the control were presented in paragraphs 4.153 – 4.173. We considered the options of imposing a glide paths from current charges or one-off adjustments to FACs.

A7.16 The discussion of the expected efficiency gains is in paragraphs 4.114 – 4.138. We have discussed several different sources of efficiency estimates provided by external studies and previous Ofcom work. We have assessed the relevance of these sources and how their results can be applied to the present situation in order to formulate our estimates.

The preferred option

A7.17 We carefully considered the above options. We analysed how each option would affect the consumers and Ofcom's stakeholders. Based on our analysis, we propose NCCs with the following features:

- a 4-year network charge control period;
- technology neutral cost modelling;
- CCA FAC cost base;
- charge control baskets covering call termination, call origination, interconnection circuits, and Project Management, Policy and Planning (PPP);
- not imposing NCCs on 21CN services until we have more information to make a decision on this issue;
- glide path to align NCC charges to forward looking modelled FAC at the end of the control period; and
- 1-3% annual expected efficiency gains over the next charge control period.

Annex 8

The legal Framework for NCCs

A8.1. The present regulatory framework for electronic communications networks and services entered into force on 25 July 2003. The framework is designed to create harmonised regulation across Europe and is aimed at reducing entry barriers and fostering prospects for effective competition to the benefit of consumers. The basis for the regulatory framework is five EU Communications Directives (together "the Directives"):

• Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services ("Framework Directive");

• Directive 2002/19/EC on access to, and interconnection of, electronic communications networks and associated facilities ("Access Directive");

• Directive 2002/20/EC on the authorisation of electronic communications networks and services ("Authorisation Directive");

• Directive 2002/22/EC on universal service and users' rights relating to electronic communications networks and services , ("Universal Service Directive"); and

• Directive 2002/58/EC concerning the processing of personal data and the protection of privacy in the electronic communications sector ("Privacy Directive").

This framework is currently being reviewed, but the Community legislation has yet to adopt legislative proposals.

The Communications Act 2003

A8.2 The Framework Directive, the Access Directive, the Authorisation Directive and the Universal Service Directive were implemented in the United Kingdom on 25 July 2003 via the Communications Act 2003 ("the Act"). The Privacy Directive was implemented by separate regulations which came into force on 11 December 2003.

A8.3 In particular part 2 of the Act sets out the majority of that Act's provisions that implement the Directives. Sections 32, 45-50 and 78-90 are of particular importance. Ofcom is required to act in accordance with its general and specific duties in sections 3 and 4 of the Act, respectively.

A8.4 Under section 3, Ofcom must, in carrying out its functions further the interests of citizens in relation to communications matters and the interests of consumers in relevant markets, where appropriate by promoting competition. As to the latter Ofcom must have regard, in particular, to the interests of those consumers in respect of choice, price, quality of service and value for money. This corresponds with the policy objective in Article 8(2) of the Framework Directive.

A8.5 Section 4 of the Act requires that Ofcom acts in accordance with the six Community requirements set out at sections 4(3) to 4(9). Where it appears to Ofcom that its general duties conflict with its section 4 duties, priority must be given to the latter.

A8.6 Ofcom has, however, a wide measure of discretion in balancing its statutory duties and objectives including where they conflict. In doing so, Ofcom will take all relevant considerations into account, including consultation responses. Sections 4 and 5 of this document consider the application of duties relevant to our proposals in more detail.

Market Reviews

A8.7 The Directives require National Regulatory Authorities ('NRA') to carry out reviews of competition in communications markets to ensure that regulation remains appropriate and proportionate in the light of changing market conditions.

A8.8 Each market review normally has three stages, namely:

- definition of the relevant markets;
- assessment of competition in each market, in particular whether any undertakings have SMP in a given market; and
- assessment of appropriate regulatory obligations where there has been a finding of SMP.

A8.9 Ofcom is currently undertaking market reviews for the Fixed Narrowband Retail Markets and Wholesale Narrowband Markets ('the wholesale review'). Consultation documents for these reviews were published on [date].

Relationship between this review and Narrowband Market Reviews

A8.10 Network Charge Controls are a specific remedy that Ofcom can impose upon a market once a finding of SMP has been made in that market.

A8.11 We do not propose to set out in further detail the legal framework for the market review process in this document, and will concentrate on the framework that allows the imposition of a Charge Control regime. A detailed discussion of the underlying legal framework for the market review process is set out in the wholesale review.

A8.12 The wholesale review has proposed the following markets as being markets in which a provider held SMP:

Fixed narrowband analogue exchange lines
Fixed narrowband ISDN 2 exchange lines
Fixed narrowband ISDN 30 exchange lines
Call Origination
Call Termination

A8.13 Each of those markets have been analysed and appropriate remedies to address the competitive concerns in each market have been proposed. Network Charge Controls have been proposed for the following markets in the geographic area of the UK excluding the Hull Area:

Call Origination;
Call Termination.

A8.14 In addition the wholesale review identified the need for a charge control remedy on PPP, as a component of services within SMP markets, and interconnection circuits as a 'technical area' where the absence of regulation would mean that the proposed remedies in the associated SMP market would be ineffective.

A8.15 Exchange line markets are not part of the markets within the Network Charge Control review, so this review is concerned only with the call origination and call termination markets, PPP and interconnection circuits.

A8.16 The scope of this review is required to consider in detail the proposed remedy of a charge control on Network markets and put forward proposals as to their implementation. It is therefore important to set out the framework within which consideration of a Charge Control will be considered as a specific SMP remedy.

SMP Remedies

Subject matter of the SMP remedies

A8.17 The third and final market review stage concerns remedies. Article 16 of the Framework Directive dictates the imposition or removal of SMP remedies depending upon whether or not a finding of SMP in an identified services market has been made. Where an SMP finding has been made, Ofcom will consider what appropriate SMP remedies are available. This process has been completed (to the point of consultation) in the wholesale review.

A8.18 Under section 45 of the Act, Ofcom is empowered generally to set SMP services conditions authorised or required by sections 87 to 92. The latter implement Articles 9 to 13 of the Access and Interconnection Directive and Articles 17 to 19 of the Universal Service Directive. In addition, Ofcom's power to set such conditions includes additional powers specified in section 45(10), such as powers to include provisions in SMP services conditions for Ofcom to make directions in respect of specified markets.

A8.19 Specifically, section 87(9)(a) empowers Ofcom to set :

"such price controls as Ofcom may direct in relation to matters connected with the provision of network access to the relevant network, or with the availability of the relevant facilities"

A8.20 This allows the imposition of a Charge Control regime.

A8.21 Section 46 of the Act provides that SMP services conditions set under section 45 may only be applied if the person to whom they are to apply is a communications provider (or a person who makes associated facilities available) and is a person whom Ofcom has determined to be a person having SMP in a services market. It is therefore important to consider the precise identity of the regulated entity on whom it is appropriate to impose obligations.

Regulated entity

A8.22 As noted above, section 46 provides that a person to whom an SMP services condition is applied must be a 'communications provider' or a 'person' who makes

associated facilities available and a 'person' who Ofcom has determined to have SMP in a specific market for electronic communications networks, electronic communications services or associated facilities (i.e. the 'services market').

A8.23 Article 16 of 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-5447), for example, where a company within that group is not independent in its decision making.

A8.24 Ofcom considers it appropriate to prevent a dominant provider to whom a SMP service condition is applied, which is part of a group of companies, 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. The only dominant provider on whom Ofcom propose to set charge controls for the purpose of this review is BT.

The legal tests

A8.25 However, before Ofcom can set or modify SMP services conditions on such a regulated entity, it must be satisfied that certain legal tests have been satisfied in imposing the SMP condition in question.

A8.26 In Section 4 of this document, Ofcom sets out its reasons explaining why those tests would be satisfied based on evidence presently before Ofcom. The wholesale review proposed appropriate remedies in accordance with the legal tests set out below, however it remains important to apply the tests to the specific mechanics of how we propose each remedy should be applied, to ensure that they remain consistent with the requirements of the Act.

A8.27 In addition to need of satisfying the general and specific duties, the appropriateness of the remedy and identifying the nature of the competition problem mentioned above, Ofcom must satisfy a number of additional tests.

A8.28 First, under section 47(2) of the Act, Ofcom must show for each and every SMP services condition that it is:

• *objectively justifiable* in relation to the networks, services, facilities, apparatus or directories to which it relates;

• *not such as to discriminate unduly* against particular persons or against a particular description of persons;

• *proportionate* to what the condition or modification is intended to achieve; and

• in relation to what it is intended to achieve, *transparent*.

A8.29 Secondly, each of the tests set out in section 87(4) of the Act which Ofcom considers relevant must be satisfied. That section requires that Ofcom:

> "…must take into account, in particular, the following factors—
> (a) the technical and economic viability, having regard to the state of market development, of installing and using facilities that would make the proposed network access unnecessary;
> (b) the feasibility of the provision of the proposed network access;
> (c) the investment made by the person initially providing or making available the network or other facility in respect of which an entitlement to network access is proposed;
> (d) the need to secure effective competition in the long term;
> (e) any rights to intellectual property that are relevant to the proposal; and
> (f) the desirability of securing that electronic communications services are provided that are available throughout the member States."

A8.30 It is to be emphasised that this list is not exhaustive and other reasons can therefore be added by Ofcom for imposing the access obligation(s) in question.

A8.31 Thirdly, in addition to the above-mentioned tests, Ofcom must also satisfy the tests set out in section 88 of the Act in relation to network access pricing etc. obligations, namely: price control; cost orientation and cost recovery rules; use of cost accounting system rules; obligations to adjust prices.

A8.32 Section 88 only allows Ofcom to impose such obligations where:

- it appears to Ofcom 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 (see below for the meaning of this term); and

- it also appears to Ofcom that the setting of the condition is appropriate for the purposes of promoting efficiency, promoting sustainable competition, and conferring the greatest possible benefits on the end-users of public electronic communications services. In considering these matters, Ofcom may have regard to the prices at which services are available in comparable competitive markets and may determine what they consider to represent efficiency by using such cost accounting methods as they think fit.

A8.33 There is a relevant risk of adverse affects arising from price distortion if the SMP designated undertaking might fix and maintain some or all of its prices at an excessively high level, or impose a price squeeze, so as to have adverse consequences for end-users of public electronic communications services.

A8.34 In addition, Ofcom must show that in setting the network access pricing obligation it has taken account of the extent of the SMP provider's investment in the matters to which the condition relates.

A8.35 It is to be noted that the term "price control" has not been defined in the EC Communications Directives. The 20th recital to the Access and Interconnection Directive suggests that it could cover a range of obligations concerning prices:

> "Price control may be necessary when market analysis in a particular market reveals inefficient competition. The regulatory intervention may be relatively light, such as an obligation that prices for carrier selection are reasonable as laid down in Directive 97/33/EC, or much heavier such as an obligation that prices are cost oriented to

provide full justification for those prices where competition is not sufficiently strong to prevent excessive pricing. In particular, operators with significant market power should avoid a price squeeze whereby the difference between their retail prices and the interconnection prices charged to competitors who provide similar retail services is not adequate to ensure sustainable competition. When a national regulatory authority calculates costs incurred in establishing a service mandated under this Directive, it is appropriate to allow a reasonable return on the capital employed including appropriate labour and building costs, with the value of capital adjusted where necessary to reflect the current valuation of assets and efficiency of operations. The method of cost recovery should be appropriate to the circumstances taking account of the need to promote efficiency and sustainable competition and maximise consumer benefits."

A8.36 Article 12 of that Directive, however, expressly empowers NRAs to impose obligations on operators to meet reasonable requests for access to, and use of, specific network elements and associated facilities, *inter alia* in situations where the NRA considers that denial of access or unreasonable *terms and conditions* having a similar effect would hinder the emergence of a sustainable competitive market at the retail level, or would not be in the end-user's interest, and that NRAs may attach to those obligations conditions covering fairness, reasonableness and timeliness.

A8.37 In the light of the potential interplay between these provisions, Ofcom has addressed the section 88 test also under the requirement to provide network access on fair and reasonable terms and conditions, including charges.

ERG Common Position on Remedies

A8.38 At a plenary meeting on 18/19 May 2006, the European Regulators Group ("ERG") adopted a revised version of its document entitled 'Revised ERG Common Position on the approach to Appropriate remedies in the new regulatory framework', ERG (06) 33, (the "Common Position on Remedies").

A8.39 That document sets out NRAs' views on imposing remedies in a manner that contributes to the development of the internal market and ensures a consistent application of the new regulatory framework under the EC Communications Directives.

A8.40 Ofcom has therefore taken into account those views in considering appropriate remedies.

Fixed Call Termination

A8.41 One of the markets where we are proposing a Charge Control is the call termination market.

A8.42 The Commission have published a draft recommendation on the regulatory treatment of fixed and mobile termination rates in the EU.

A8.43 This guidance seeks to harmonize the approach by NRAs to the setting of price controls in relation to the regulation of voice call termination rates.

A8.44 The Recommendation is currently in draft form and therefore has not been finalised, although the process is currently at a very advanced stage. We have, therefore, given the draft version of the guidance that is currently available detailed

consideration, and are mindful that, had the Recommendation been published in its final form we would be obliged to take utmost account of it.

Annex 9

List of services to be included in the proposed NCC

Call termination

Internal local exchange segment
External local exchange segment
Internal local exchange stick

Call origination

Internal local exchange segment PSTN + ISDN (excluding OA)
External local exchange segment PSTN + ISDN (excluding OA)
Local exchange stick
Local exchange stick (ISDN)
Internal local exchange segment (including OA)
External local exchange segment (including OA)
Internal local exchange segment ISDN (including OA)

Product Management, Policy and Planning (PPP)

Internal
External

Interconnection Services Basket

Customer-Sited Interconnect
- Line – connection
- Line – fixed rental
- Line – per km rental

Intra building circuits
- Connection
- Rental

In-span interconnection transmission link
Interconnection Extension Circuits
- Connection
- Rental – fixed
- Rental – per km

Re-arrangements

Annex 10

Glossary

This glossary contains definitions of terms used in this document. These definitions are for guidance only and have no legal standing.

Analogue: the direct representation of a waveform, as opposed to digital, which is a binary coded representation.

Barriers to entry: an additional cost which must be borne by entrants but not by firms already in the industry; or other factors, which enable an incumbent to maintain prices above the competitive level without inducing entry.

BT: British Telecommunications plc.

Communications provider (CP): a person who provides an Electronic Communications Network or provides an Electronic Communications Service.

Carrier pre-selection (CPS): A facility enabling customers to choose their carrier for certain defined classes of call, by selecting the operator of choice in advance (and having a contract with the customer), without having to dial a routing prefix or follow any other different procedure to invoke such routing.

Communications Act 2003 ('the Act'): The Act of Parliament that established Ofcom, set out its duties, and the powers which Ofcom has to discharge those duties.

Digital: the binary coded representation of a waveform, as opposed to analogue, which is the direct representation of a waveform.

DLE (Digital Local Exchange): the telephone exchange to which customers are directly connected, often via a remote concentrator unit.

DLRIC (Distributed Long Run Incremental Costs): is the Long-Run Incremental Cost of an individual service (see definition below) with a contribution of intra-core common costs.

Exchange line: the telephone line that connects the customers' network terminating point to the local exchange.

FAC (Fully Allocated Costs): an accounting method for attributing all the costs of the company to defined activities such as products and services. Typically this method would follow the principle of cost causality.

Hull Area: 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 Communications (Hull) plc also known as KCom.

Indirect Access: where a customer establishes a connection with a particular operator's network by dialling a short code to switch through the network on which his exchange line terminates. Such calls are usually billed by the Indirect Access operator.

Integrated Services Digital Network (ISDN): a network evolved from the digital PSTN which provides digital exchange lines to customers and 64kbps end to end digital connectivity between them. Two or more 64kbps connections can be combined to provide a higher speed connection, e.g. 128kbps.

Interconnection: the linking (whether directly or indirectly by physical or logical means, or by a combination of physical or logical means) of one Public Electronic Communications Network to another for the purpose of enabling the persons using one of them to be able:
(a) to communicate with users of the other one; or
(b) to make use of services provided by means of the other one (whether by the provider of that Network or by another person);

IP (internet Protocol): the packet data protocol used for routing and carriage of messages across the internet and similar networks.

IP network: a network that uses IP; for example the internet is a public IP network.

KCom: Kingston Communications (Hull) PLC – telephone company which operates in the Hull area.

Leased lines (also known as private circuits): a permanently connected communications link between two premises dedicated to the customers' exclusive use.

LRIC (Long Run Incremental Costs): The costs caused by the provision of a defined increment of output, taking a long run perspective, assuming that some output is already produced. The 'long run' means the time horizon over which all costs (including capital investment) are variable.

Narrowband: A service or connection allowing only a limited amount of information to be conveyed, such as for basic voice telephony. This compares with broadband which allows a considerable amount of information to be conveyed. See also bandwidth.

NGN: Next Generation Network, also referred to as 21CN (21st Century Network).

NRAs: the body or bodies, legally distinct and functionally independent of the telecommunications organisations, charged by a Member State with the elaboration of, and supervision of compliance with, telecoms authorisations.

PPP: Product Management, Policy and Planning.

PSTN: Public Switched Telephone Network.

Remote concentrator: the part of the local exchange on which customers' exchange lines terminate. It is sometimes colocated with the main local exchange and sometimes located remotely from it.

Return on Capital Employed (ROCE): the ratio of accounting profit to capital employed. The measure of capital employed can be either Historic Cost Accounting (HCA) or Current Cost Accounting (CCA).

RPI: Retail Price Index.

SMP: The Significant Market Power test is set out in European case law, the new EU Communications Directives and the Commission's SMP Guidelines. It is used by the national

regulatory authorities (NRA) such as Ofcom to identify those operators who must meet additional obligations under the Access Directive.

Standard service: an interconnection service which BT is required to provide.

Stand Alone Costs (SAC): an accounting method that allocates a portion of the common costs of the company to defined activities such as products and services.

Tandem exchange: A main exchange in BT's network which has the primary function of switching calls between other exchanges, rather than to and from customers' exchange lines.

Usage factors: expressions of network usage for the main conveyance components and show how often a component is used on average in the provision of services. The 24-hour charge is calculated by multiplying the usage factors by the amount applied to the relevant components. The time of day charges are then calculated by multiplying the network tariff gradient by the 24-hour charge.