Leased Lines Charge Control

A new charge control framework for wholesale traditional interface and alternative interface products and services

Consultation

Publication date: 8 December 2008

Closing Date for Responses: 2 February 2009

Contents

Section 1

Summary

Introduction

1.1 Leased lines, or private circuits as they are also known, provide dedicated transmission capacity between customer sites, which can be used to carry voice and data traffic. Retail sales of these services in the UK are estimated to be worth approximately £1bn a year and the value of the upstream wholesale markets is considerably higher, as wholesale products are also used to serve a number of other retail markets. Leased lines play an important role in business communications in the UK. They are a key building block in the communications networks on which UK businesses depend, and which are central to the effective functioning of the economy.

1.2 It is therefore of considerable importance that the markets for these services operate effectively, and deliver the services which businesses require in a timely, efficient and cost-effective manner, based where possible on active competition between service providers.

The BCMR Statement found BT to have SMP in a number of leased lines markets

1.3 This consultation document is being published alongside the Statement on the "Business Connectivity Market Review" (the "BCMR Statement")[1]. In the BCMR Statement we set out the findings of our market review of the retail and wholesale markets for leased lines in the UK. According to the BCMR Statement we found BT to have Significant Market Power ("SMP") in a number of wholesale leased lines services as follows:

- Low bandwidth Traditional Interface Symmetric Broadband Origination ("TISBO") services up to and including 8Mbit/s;
- High bandwidth Traditional Interface Symmetric Broadband Origination ("TISBO") services above 8Mbit/s up to and including 34/45 Mbit/s (outside the Central and East London Area, "CELA");
- Very high bandwidth Traditional Interface Symmetric Broadband Origination ("TISBO") services above 34/45Mbit/s up to and including 140/155 Mbit/s (outside the Central and East London Area, "CELA");
- Low bandwidth Alternative Interface Symmetric Broadband Origination ("AISBO") services up to and including 1 Gbit/s; and
- TI trunk segments at all bandwidths.

1.4 In the BCMR Statement we also indicated that, following consultation, we remain of the view that charge controls should be applied to the services in these markets. The purpose of this consultation document is to set out our charge control proposals.

[1] http://www.ofcom.org.uk/consult/condocs/bcmr08/

The charge controls are being set in a changing market

1.5 We note that the next charge controls are being set in a dynamic and evolving market environment:

- The UK communications market is seeing increased demand for bandwidth in the backhaul network, to support higher speed broadband services and the associated growth of internet traffic.

- The TISBO market is going through a period of steady decline. BT is not expecting any significant volumes to remain on the Digital Private Circuit Network ("DPCN") platform beyond 2012/13 and expects most customers to have migrated to other products such as Ethernet.

- Openreach is continuing to develop its Ethernet portfolio. It is currently undertaking a significant investment in a national backhaul network based on Wave Division Multiplexing ("WDM") technology, to support new products such as Ethernet Backhaul Direct ("EBD"), which are designed to meet the growing demand for backhaul capacity. The networked nature of this product will mean greater efficiency and lower costs in backhaul provision.

- BT has recently announced an ambitious Next Generation Access ("NGA") programme, which is likely to further boost demand for capacity to support high speed broadband services.

1.6 In this context, it will be important to ensure for example that our proposed price controls produce the correct investment incentives and allow for efficient migration from old to new products.

1.7 There are significant uncertainties surrounding the short term macro-economic outlook and capital markets continue to exhibit unusual levels of volatility. Setting a new set of charge controls in this context is challenging. In particular, we recognise the possibility that certain eventualities (such as general price deflation) may present unforeseen challenges that necessitate review of the controls that we set following the consultation. In light of this we will closely monitor the effectiveness of the proposed controls, and intervene if such circumstances require it.

The introduction of the proposed charge controls has been delayed

1.8 Ofcom imposed a charge control on low and high bandwidth TISBOs following the 2004 Leased Lines Market Review[2] (the "2004 Review"). That control expired at the end of September 2008. Our intention was to finalise our proposals for the new charge controls before the end of September, so that they could be implemented from 1 October 2008.

1.9 In June 2008 we were informed by BT of a number of amendments to its 2006/07 regulatory financial statements for leased line services, which were reflected in a restatement issued by BT in September 2008. These amendments had the effect of significantly reducing BT's revenues from TISBO services, while increasing the revenues attributed to AISBO services.

1.10 Given the materiality of the changes, and their implications for the charge control, we commissioned an independent review of the amendments. This was undertaken by

[2] http://www.ofcom.org.uk/consult/condocs/llmr/statement/

Analysys-Mason and completed at the end of September. The Analysys-Mason report is published alongside this consultation[3]. We have taken their findings into account when developing the proposals set out below.

1.11 We expect to publish a Final Statement on the charge controls in March 2009, such that they will formally come into effect from 1 April 2009. In view of the delay resulting from the restatement of BT's regulatory accounts, BT Wholesale ("BTW") has given a commitment that:

- For the period from 1 October 2008 and the introduction of the new control, the prices of TISBO and PPC trunk services will not be increased in nominal terms; and

- The implementation of the new charge control will be backdated to 1 October 2008.

1.12 Openreach has recently announced significant price reductions for some of its AISBO products. In developing our proposals we have assumed that these price reductions are implemented in full, before the new charge controls come into effect in April 2009.

Summary of our key proposals

We propose to introduce RPI-X charge controls

1.13 We propose to introduce RPI[4]-X charge controls for most of the services provided by BT in the wholesale markets in which it has been found to have SMP. This form of charge control has been widely used in the regulation of UK utilities, including those in the telecommunications sector. Controls of this kind are designed to allow the supplier to earn a reasonable return on its investment, while at the same providing incentives to improve efficiency.

1.14 In the absence of competitive pressures, BT would have limited incentives to seek to reduce its costs of providing wholesale leased lines services. The charge control is intended to promote efficiency in the costs of providing wholesale services by requiring BT not increase its charge by more than a fixed amount each year.

1.15 RPI-X charge controls also provide an incentive for BT to seek further efficiency savings by allowing it to keep any returns associated with efficiency gains over and above those forecast when the charge control is set. The benefits of lower costs can then be passed onto customers.

We propose six charge control baskets

1.16 When designing the appropriate charge control baskets we need to balance two potentially conflicting requirements: the requirement to give BT enough pricing flexibility to respond to changing market conditions and to manage migration from old to new services; and the need to ensure that this pricing freedom is not used in a way that might harm competition. We believe our proposed baskets strike an appropriate balance between these two objectives.

1.17 We propose six charge control baskets as summarised in Table 1.1.

[3] http://www.ofcom.org.uk/consult/condocs/llcc/analysysmason.pdf
[4] RPI=Retail Price Index

Table 1.1 Summary of our proposed charge control baskets

Basket	Services within scope	Range of X[5]	Value of sub-cap
TI	Wholesale low bandwidth TISBO (≤ 8 Mbit/s) – connection and rental; Wholesale high bandwidth TISBO (> 8 Mbit/s and ≤ 34/35Mbit/s)-outside CELA – connection and rental; Wholesale very high bandwidth TISBO (> 34/45 Mbit/s and ≤ 140/155Mbit/s)-outside CELA – connection and rental; and Trunk (all bandwidths) – rental	RPI – 0.00% to RPI – 7.00%[6]	RPI-0% (Sub-cap on sub-basket of TISBO terminating segments) RPI-0% (Sub-cap on connections) RPI-0% (Sub-cap on rentals)
Equipment and Infrastructure (TI)	All equipment and infrastructure charges	RPI-0%	No charge can increase more than 5% in nominal terms
Ancillary Services (TI)	All ancillary services used in the provision of TI services within scope of the TI basket	RPI-0%	None
AI	Wholesale low bandwidth AISBO (≤ 1 G bit/s) – connection and rental Including new services: Ethernet Backhaul Direct Bulk Transport Link Ethernet Access Direct	RPI - 3.25% to RPI – 11.50%	RPI-0% (Sub-cap on sub-basket of WES) RPI-0% (Sub-cap on sub-basket of BES) RPI-0% (Sub-cap on connections) RPI-0% (Sub-cap on rentals)
Accommodation (AI)	Access Locate Access Locate Plus	RPI-0%	
Ancillary Services (AI)	All ancillary services used in the provision of AI services within scope of the AI basket	RPI-0%	None

1.18 The proposed sub-caps would limit any potential increases in the sub-baskets of TISBO terminating segments, WES and BES services to RPI in each year of the control.

We propose to exclude some services from the charge controls

1.19 We are not proposing to include Radio Backhaul Station Services ("RBS"), Symmetric Digital Subscriber Lines ("SDSL") and BT Wholesale Accommodation services (e.g. BT Netlocate) within the scope of the charge controls.

[5] The ranges for the value of X are after the proposed adjustments to starting charges.
[6] It is proposed that these controls should apply for the 3 year period from 1 October 2009 to 30 September 2012.

- For RBS we propose to maintain the requirement on BT to price these services in a manner which is consistent with the pricing of TISBO and trunk services.

- For SDSL BT has given Ofcom a voluntary price commitment that it will not increase the price of these services faster than the rate of inflation (RPI-0%) for the two years following publication of the BCMR Statement.

- For BT Netlocate we propose to rely on BT's cost orientation and other *ex-ante* obligations, as well as its general obligation to comply with competition law.

BT proposes to amend the level of charges at the start of the control

1.20 The aim of the charge control is to bring BT's current charges in line with an efficient level of costs at the end of the control. In cases where prices at the start of the control are materially out of line with costs there may be an argument for making one off adjustments to these charges (to bring them more in line with the underlying costs of provision).

1.21 Following discussions with Ofcom, BTW has proposed a number of adjustments to the starting charges for TI terminating and trunk services. The overall effect of these adjustments is to decrease TI basket revenues by around 4%, and the proposals are revenue neutral for external sales. These proposed price adjustments are to take effect on 1 April 2009 at the onset of the proposed charge controls.

1.22 Our provisional view is that:

- Provided these rebalancing proposals are implemented, BT should not be required to make any further one-off changes when the price controls are introduced;

- Prices for terminating and trunk services within the TI basket should not then increase in nominal terms between the implementation of the control and 1 October 2009, following which the RPI-X formula should apply; and

- The prices of all the services in the TI basket should be brought within the DLRIC floors and DSAC ceilings within 12 months of the implementation of the charge control.

1.23 BTW also proposes to make one off adjustments to services in the Equipment and Infrastructure basket. The proposals are revenue neutral for internal and external customers. These proposed price adjustments are to take effect on 1st April 2009 at the onset of the propose charge controls.

1.24 Similarly, Openreach has recently announced substantial decreases to the connection and rental prices of a number of WES/WEES/BES services. The overall effect of the price changes is to decrease current AI basket revenues by around 30%. These proposed price adjustments are expected to be implemented fully before the charge control comes into effect and our proposals have been developed on that assumption.

1.25 Our provisional view is that:

- Given the scale of the proposed price reductions, Openreach should not be required to make any further one-off changes when the charge controls are introduced;

- Prices for services in the AI basket should not then increase in nominal terms between the implementation of the controls and 1 October 2009, following which the RPI-X formula should apply; and

- The prices of all the services in the AI basket should be brought within the DLRIC floors and DSAC ceilings within 12 months of the implementation of the charge control.

We propose that the controls should apply until 2012 with rules for the treatment of discounts

Four year control

1.26 We propose that the leased lines charge controls should apply for the period ending 30 September 2012 i.e. four years after the recent expiry of the PPC control. A four-year duration will provide stability in the market and maintain incentives on BT to achieve efficiency savings. This is in keeping with other charge controls that have been implemented in the telecommunications sector in the UK.

Structure of control

1.27 We have considered a number of issues in relation to the detailed structure of the control, including the following:

- *The weighting of the charge control baskets*: For TI services we propose using prior year revenue weights in order to check compliance with the charge control. For AI services we propose combining a control on the average revenue from circuits at each bandwidth with a prior year weighted price cap on the AI basket as a whole.

- *Geographic discounts*: We propose to allow BT to offer geographic discounts for charge controlled services at the wholesale level, but these will not contribute to BT meeting its charge control obligations;

- *Volume discounts*: We propose not to allow BT to offer volume discounts at the wholesale level; and

- *Term discounts*: We propose to allow BT to offer term discounts for charge controlled services at the wholesale level, but these will not contribute to BT meeting its charge control obligations.

We use a number of key assumptions to model the value of X for the main charge control baskets

1.28 We developed a cost forecasting model (the "LLCC model") to calculate the ranges of X for the TI and AI basket of services. This model is based on a number of assumptions. The most material ones include the volume forecasts for the services in scope, the underlying base year costs and assumptions around BT's future efficiency gains and cost of capital.

We propose to amend BT's base year costs

1.29 We undertook an analysis of BT's 2006/07 base year costs (as published in its Regulatory Financial Statements, "RFSs") in order to determine the level of costs which are relevant for charge control and forecasting purposes. Our proposal is to decrease the base costs for TI terminating and trunk services within scope of the TI basket by £263m and the base costs for AI services within the scope of the AI basket by £43m.

Efficiency

1.30 The objective of the charge controls is to bring BT's current charges in line with an efficient level of costs at the end of the control period. As part of this process it is important to understand the efficiency levels that BT can be expected to achieve during the charge control period.

1.31 Taking into consideration the work undertaken by various consultants and our internal work on efficiency, we propose BT's forward looking efficiency gains are in the region of 0% to 5% for the TI basket and 1.4% to 3.0% for the AI basket. The latter aligns with the proposals made in our consultation document entitled *A New Pricing Framework for Openreach*[7] (the "OFFR Second Consultation"), which looks at determining the appropriate regulatory pricing framework for Openreach.

Cost of Capital

1.32 In deriving the values of X, the aim of the financial modelling exercise is to estimate charging constraints such that, by the end of the charge control period, BT is forecast to earn a level of return on the basket of services that is equal to its weighted average cost of capital ("WACC").

1.33 In the OFFR Second Consultation we are proposing to amend Openreach's WACC to a value between 9.25%-10.75% (pre-tax nominal). As a result, their estimated range for the WACC for the rest of BT (including core) is 10.25%-11.75% (pre-tax nominal).

1.34 Ofcom is of the view that TI and AI services should not be classified within BT's access network for the purposes of an assessment of risk levels. We therefore propose applying the higher end of the ranges proposed by the OFFR Second Consultation for the rest of BT, i.e. 10.25% to 11.75%.

Next steps

1.35 The consultation period ends on 2 February 2009. Following receipt of the various stakeholder views and our analysis of these, we will form our final view on the issues raised in this consultation document. We expect to publish our Final Statement in March 2009, with the proposed charge controls coming into effect in April.

[7] http://www.ofcom.org.uk/consult/condocs/openreachframework/

Section 2

Introduction

Introduction

2.1 Alongside the publication of this consultation document, Ofcom has also published the Final Statement on the Business Connectivity Market Review (the "BCMR Statement") which set out the conclusions of our review of the retail and wholesale markets for leased lines in the UK. As stated in the BCMR Statement we found BT to have Significant Market Power ("SMP") in a number of wholesale leased lines markets.

2.2 Moreover, in the BCMR Statement we indicated that, following consultation, our view was that charge controls should be applied to the services supplied by BT in the markets in which it has SMP. In this consultation document we put forward our proposals for the scope and form of the charge controls.

2.3 The purpose of this section is to summarise:

- The key characteristics of leased lines which are reflected in BT's pricing structure;
- The regulatory framework in which the proposed price controls are set;
- The last charge control in place for leased lines;
- The findings of the market review as discussed in the BCMR Statement which we base our proposals for a charge control on; and
- The links between this charge control framework and other Ofcom projects.

Leased Lines have some key characteristics

2.4 Leased lines are fixed connections between two or more customer premises providing un-contended dedicated capacity between these sites. A leased line can be used for a variety of communications between customer's premises including voice, video and data communications.

2.5 There are three broad types of leased lines:

2.5.1 **Analogue Leased Lines**: These are commonly used for voice transmission e.g. sending racing commentary to bookmakers or taxi ordering lines. They can be made into low bandwidth digital leased lines with the addition of modems. They are mainly supplied at the retail level (i.e. there is no wholesale equivalent) and are steadily being displaced by digital services.

2.5.2 **Digital Leased Lines based on Plesiochronous Digital Hierarchy ("PDH") and Synchronous Digital Hierarchy ("SDH") technology**: PDH and SDH refer to transmission protocols in which the transmission of data is time division multiplexed. As a result, the transmission characteristics can be predicted with a very high degree of accuracy. This is a key characteristic for some user applications. PDH and SDH circuits are currently the most common type of leased line, and are used for a wide variety of purposes e.g. providing backbone transport for mobile networks and connecting remote offices to larger business sites. Bandwidths range from 64kbit/s up to 622Mbit/s, with the most popular variants being n x 64kbit/s and 2Mbit/s. Wholesale terminating segments of analogue, PDH and SDH circuits are referred to in the BCMR Statement as Traditional Interface Symmetric Broadband Origination (“TISBO”) circuits.

2.5.3 **Digital Leased Lines based on Ethernet technology**: Ethernet is the transmission technology of choice for 21st century networks (“21 CN”) and is gradually displacing PDH and SDH. Ethernet circuits are popular, for example, for providing access into Virtual Private Networks (“VPN”). However, as it is not a synchronous transmission protocol and cannot offer predictable transmission characteristics, Ethernet is not able to support some specialist applications, such as those used by some utilities. Bandwidths range from 10Mbit/s up to 10Gbit/s, with the most commonly used being 10Mbit/s. Ethernet circuits are referred to in the BCMR Statement as Alternative Interface Symmetric Broadband Origination (“AISBO”) circuits.

2.6 There are two broad types of wholesale leased lines services:

2.6.1 **Disaggregated services**: These link an end-user site to a Communication Provider’s (“CP”) Point of Connection (“POC”), enabling the CP to assemble an end-to-end service using a combination of wholesale inputs and its own network.

The PDH/SDH variants of these services are known as Partial Private Circuits (“PPCs”). When used by mobile operators for links to their radio base stations, they are known as Radio Base Station Backhaul Services (“RBS Backhaul”).

For Ethernet services, the equivalent of a PPC is a Wholesale Extension Service (“WES”). These are currently provided using point-to-point fibre and are only available over comparatively short distances (e.g. 25 km). BT also supplies access and backhaul components of WESs. WES Access Services (“WES A”) enable CPs with a presence in a BT Local Serving Exchange (“LSE”) to aggregate a number of circuits for more efficient backhaul transmission. WES Backhaul (“WES B”) services can be used to carry these aggregated circuits back up to a CP’s POC and are also used by Local Loop Unbundling (“LLU”) Operators to carry their broadband traffic back up to their own networks (LLU Backhaul). WES B services are also referred to as Backhaul Extension Services (“BES”).

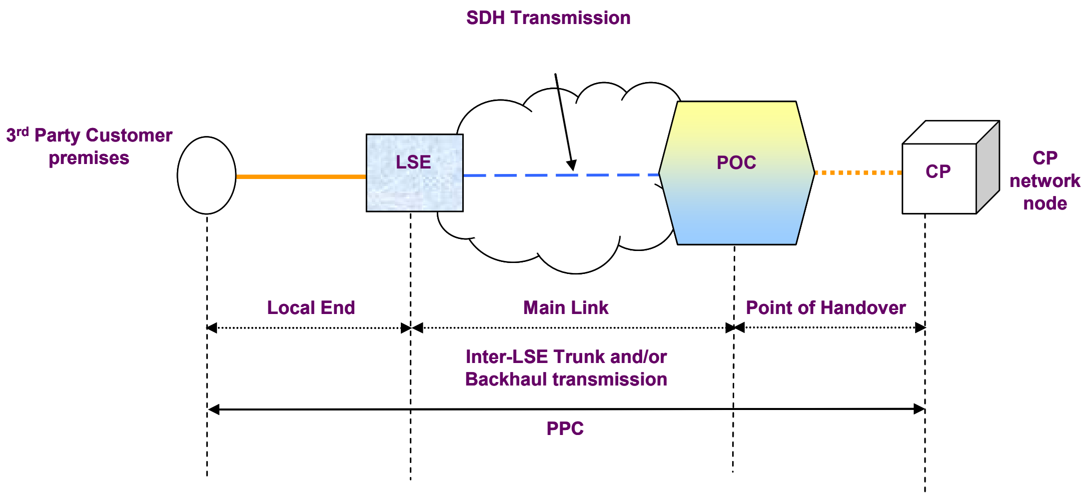
2.6.2 **End to end services**: These link two or more end-user sites and are simply a wholesale version of a retail service. The best example of this type is BT’s Wholesale End-to-end Extension Service (“WEES”), which is an Ethernet service provided over relatively short distances using point-to-point fibre. PDH/SDH wholesale variants are not available from BT.

2.7 There are three network elements to a PPC. The ‘Local End’ is the dedicated link between the third party customer premise and the LSE and is provided using copper or fibre pairs.

The ‘Main Link’ provides dedicated transmission capacity between the LSE and the CP’s POC with BT’s network. This Main Link can have a mixture of backhaul and trunk network transmission. The boundary between the backhaul and trunk element of a PPC is currently drawn at the Tier 1 nodes in BT's SDH network, of which there are 67 in the UK. In the BCMR Statement we proposed to define the boundary between the backhaul and trunk segments of a PPC at major points on the network where backhaul circuits are aggregated together – we identified 46 such aggregation nodes on BT's SDH network, which identify the break between trunk and terminating segments.

Finally the Point of Handover ("PoH") is a high capacity link which connects the CP's networks with BT's own network. The high-capacity PoH infrastructure is supplied as either: In-Span Handover ("ISH"), In-Span Handover Extension ("ISH Extn") or Customer Sited Handover ("CSH"). Multiple circuits can be handed over at a single PoH.

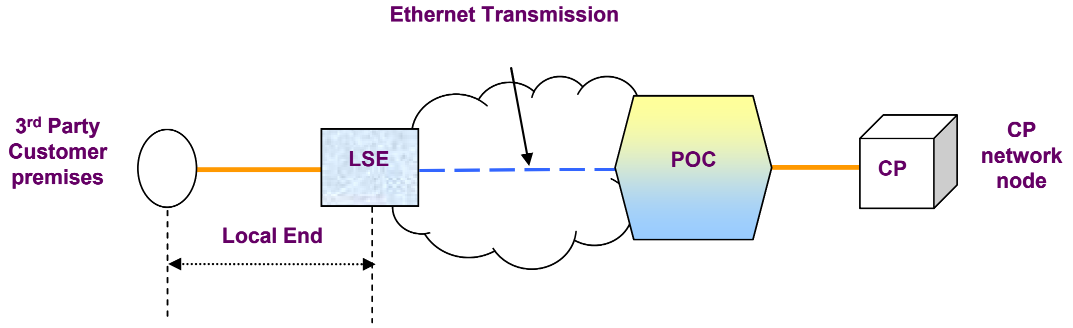
Figure 2.1 Partial Private Circuits



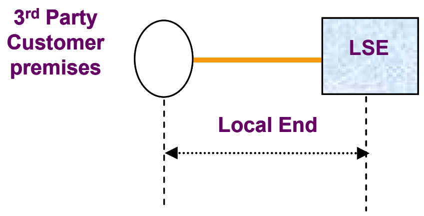
2.8 The component parts of a WES service are similar to PPCs in that the service is provided via a fibre-optic Local End using Ethernet transmission and often includes transmission between the LSE and the CP's POC provided using a dedicated fibre-optic pair.

Figure 2.2 Various types of Wholesale Extension Services (WES)

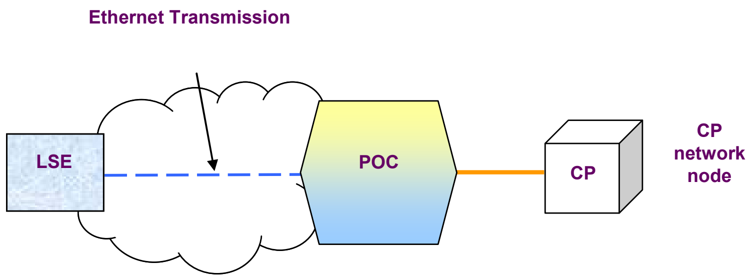
WES



WES A



WES B/ BES

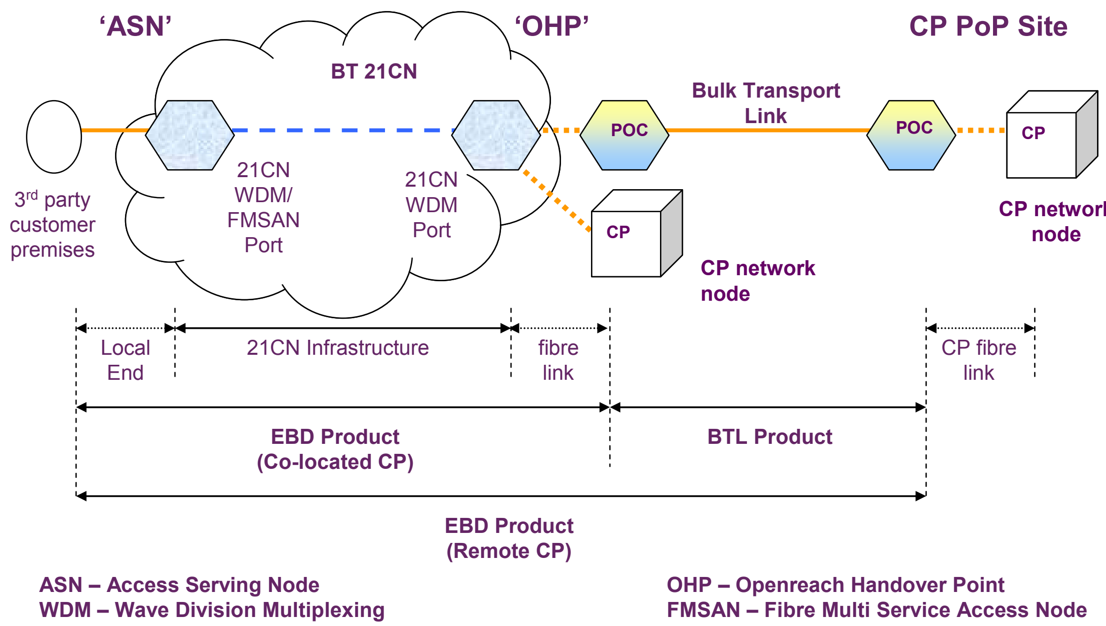


2.9 On 22nd May, Openreach launched the next generation backhaul products called Ethernet Backhaul Direct ("EBD") and Bulk Transport Link ("BTL"). Openreach is also planning to launch Ethernet Access Direct ("EAD").

2.10 The key characteristics of these new products are:

- Point-to-point un-contended Ethernet backhaul service utilising shared infrastructure network;
- Based on wave division multiplexing ("WDM") technology – to be rolled out to 1100 Tier one nodes; and
- Change to traditional pricing structure – price banding by geography e.g. urban, suburban and rural (within the 1100 exchanges 67% will be urban, 28% suburban and 5% rural).

Figure 2.3 Openreach EBD/BTL products



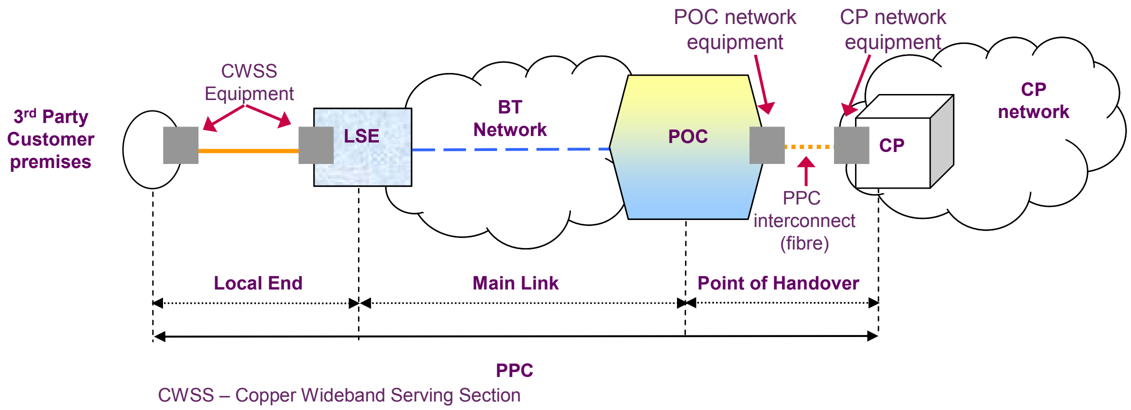
The physical characteristics of leased lines are reflected in BT's pricing structure

2.11 The above broad physical characteristics of leased lines are reflected in the pricing structure that BT follows for these products where prices are charged separately for:

Equipment and infrastructure: In the context of PPCs where customer specific equipment and infrastructure is provided by BT to CPs, the cost of the provision is recovered through up-front connection charges. This includes the third party local end infrastructure and POC equipment and infrastructure. In the context of PPC terminating segments, equipment and infrastructure include: equipment, copper and fibre.

Both of the 3rd party infrastructure and PoH connection charges intend to recover the capital costs of equipment and fibre.

Figure 2.4 PPC equipment location



Such equipment is also used for AISBO services but the charges are levied upfront in circuit connection charges.

2.11.2 **Circuit connection**: The circuit connection charge is intended to recover the costs incurred by BT in provisioning leased lines and varies by bandwidth. This charge applies to both TISBO and AISBO circuits. For AISBO services the charge also recovers the capital cost of the dedicated equipment at either end of the circuit, which for TISBO circuits is levied via the specific 3rd party equipment and infrastructure charges (as explained in paragraph 0 above).

2.11.3 **Circuit rental and maintenance**: The circuit rental and maintenance charge is levied by BT for the ongoing rental and maintenance of leased lines. The charge varies by bandwidth and is applied for both TISBO and AISBO circuits. The PPC terminating segments rental has three main elements; a Local End Fixed Charge, a Main Link Fixed Charge and a Main Link per kilometre Charge.

- *Local End Fixed Charge*: This is a flat rate charge which varies with the bandwidth of the local end but is independent of the particular infrastructure used to deploy it. For instance, a 2Mbit/s local end can be provided over copper or fibre but the local end fixed charge is the same for either type. This charge is intended to recover the capital cost of duct, maintenance costs of duct/fibre/equipment and other direct costs (such as accommodation and selling).

- The local end fixed charge is also levied in a similar manner for AISBO circuits.

- *Main Link Fixed Charge*: This is a flat rate charge for PPC terminating segments with a main link which varies by bandwidth but it is independent of the length of such segments. This charge is intended to recover the costs of equipment at either end of the link at the serving exchange.

- The main link fixed charge is not levied for AISBO circuits, as there is no equipment in between the ends of the circuit.

- *Main Link per metre Charge*: This is a charge per metre for the main link.

- This charge is also levied for AISBO circuits up to 25 km and is independent of bandwidth.

Table 2.1 Summary of BT current charging structure

Pricing element	TI	AI	Bandwidth related	Distance related
Circuit connection	✓	✓	✗	✗
Circuit Rental				
Local end fixed charge	✓	✓	✓	✗
Main link fixed charge	✓	✗	✓	✗
Main Link per km charge	✓	✓	✗	✓
Third party customer link infrastructure charges	✓	✗[8]	✗	✗
PoH charges				
Connection	✓	✗	✓	✗
Rental	✓	✗[6]	✓	✗

2.12 For a more detailed description of costs recovered via the different charges for TISBO and AISBO services see Annex 5.

The proposed price controls will be set in the context of the current regulatory framework

2.13 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 European Union 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").

2.14 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 Regulation which came into force on 11 December 2003.

[8] As explained in paragraph 2.11.2 third party equipment charges for AISBO services are levied upfront in the circuit connection charges.

2.15 Article 16 of the Framework Directive requires each national regulatory authority ("NRA") to carry out an analysis of the relevant markets as soon as possible after the adoption of the Recommendation on relevant product and service markets or any updating thereof.

2.16 The Commission adopted the first edition of the Recommendation on 11 February 2003[9]. Ofcom carried out a review of retail leased lines, symmetric broadband origination and wholesale trunk segments in 2003/04 and published its final statement on June 2004 ("the 2003/04 Review").

2.17 The Commission has recently adopted the second edition of the Recommendation[10], under which some markets concerned in this review are no longer on the list of recommended markets. In particular, the following two markets have now been removed:

- Retail market for low bandwidth leased lines; and
- Wholesale market for trunk segments of leased lines.

2.18 The removal of the markets from the list published by the Commission indicates that the Commission no longer presumes that, in principle, *ex-ante* regulation is warranted for these two markets. This does not mean, however, that NRAs are not in a position after an analysis of the relevant market and the finding of SMP to impose regulatory remedies in these markets, should the national circumstances justify such a step and whilst taking due account of the Commission's SMP Guidelines and Recommendation.

2.19 In the BCMR Statement we took into consideration the above regulatory framework when undertaking the market review to:

- Determine the relevant market or markets;
- Assess competition in each market, in particular whether any undertakings have SMP in a given market; and
- Assess the appropriate regulatory obligations which should be imposed where there has been a finding of SMP.

Moreover, the BCMR Statement proposed a number of remedies, such as a charge control. It is the purpose of this consultation document to consider whether a charge control is the appropriate remedy and in cases where this is affirmative to discuss the details of the proposed charge controls.

2.20 Following completion of a market review, and in cases where the incumbent is found to have SMP in an identified service market, Ofcom has a duty under the Act and the EC Framework for telecommunications regulation to set such SMP conditions as it considers appropriate and as are authorised under the Act. In assessing whether a

[9] Commission Recommendation 2003/311/EC of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services.

[10] Commission Recommendation on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communications networks and services (Second Edition) (C(2007)5406 rev1).

charge control would be an appropriate remedy and in assessing the appropriate level of that charge control we are taking into consideration, amongst others, the following:

- Section 3 of the Act, which sets out Ofcom's general duties;
- Section 4 of the Act, which requires Ofcom to act in accordance with the European Commission's requirements for regulation.
- The Act (Sections 87-92), in particular Section 87(9) which provides that subject to satisfying the 'tests' in section 88, Ofcom may impose a charge control as an SMP condition;
- The European Commission's ("ECs") SMP Guidelines[11], in particular paragraphs 21 and 114 which state that NRAs must impose one or more appropriate SMP services conditions (such as price controls) on a dominant provider, and that it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP;
- The Access Guidelines published by Oftel in September 2002[12];
- The revised European Regulators Group ("ERG")[13] common position on the approach to appropriate remedies in the regulatory framework for electronic communications networks and services; and
- The ERG's common position[14] on best practice in remedies imposed as a consequence of a position of SMP in the relevant wholesale leased lines markets.

Historically only TI terminating segments have been charge controlled

2.21 The 2003/04 Review[15] identified BT as having SMP in the following wholesale markets for leased lines in the UK (excluding the Hull area) where a charge control was imposed:

- Low bandwidth TISBO up to and including 8Mbit/s; and
- High bandwidth TISBO above 8Mbit/s up to and including 155 Mbit/s.

2.22 The same review identified BT as having SMP in the following wholesale markets in the UK (excluding the Hull area) where a charge control was not imposed:

- AISBO at all bandwidths; and
- TI Trunk segments at all bandwidths.

2.23 The latest PPC charge controls came into effect for the four years from 1 October 2004 to 30 September 2008[16]. The final values for X were set at the following levels:

---

[11] Commission guidelines on market analysis and the assessment of SMP under the Community regulatory framework for electronic communications networks and services (2002/C 165/03).
[12] http://www.ofcom.org.uk/static/archive/oftel/publications/ind_guidelines/acce0902.htm
[13] http://www.erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf
[14] http://www.erg.eu.int/doc/publications/erg_07_54_wll_cp_final_080331.pdf
[15] http://www.ofcom.org.uk/consult/condocs/llmr/statement/

Table 2.2 Last charge controls for TISBO terminating segments, which expired on 30 September 2008

Basket	Value of X
POC end and third party end equipment and infrastructure charges	RPI-8.9%
Low bandwidth connection and rental and maintenance charges	RPI-4.0%
High bandwidth connection and rental and maintenance charges	RPI-6.5%

2.24 These controls have now expired on 30 September 2008.

We now propose to introduce new charge controls to include TI trunk and Ethernet services

2.25 We now propose new charge controls for all leased lines services which fall into the following SMP markets:

- Low bandwidth TISBO services up to and including 8Mbit/s;
- High bandwidth TISBO services above 8Mbit/s up to and including 34/45 Mbit/s (outside the Central and East London, "CELA", area);
- Very high bandwidth TISBO services above 34/45Mbit/s up to and including 140/155 Mbit/s (outside the Central and East London, "CELA", area);
- Low bandwidth AISBO services up to and including 1 Gbit/s; and
- TISBO trunk segments at all bandwidths.

2.26 In addition we propose imposing a charge controls on all interconnection and accommodation services relating to BT's provision of services in the above mentioned list.

2.27 The aim of this consultation document is to summarise and invite comments on the form and key components of the new proposed charge controls.

When designing the proposed charge controls we also need to take into account other Ofcom projects

2.28 Ofcom's proposals on the structure and level of the new charge controls need to be consistent with other decisions Ofcom is taking or proposing. The main current regulatory decisions (taken and/or proposed by Ofcom), in addition to the BCMR, that are relevant are:

- **Replicability Review ("RR")**: During 2005/06, Ofcom considered whether BT's low bandwidth retail leased lines were technically and commercially replicable by competitors, given the availability of PPCs. In relation to leased lines, the RR

[16] http://www.ofcom.org.uk/consult/condocs/ppc_charge_control/statement/

concluded that BT's low bandwidth services were not yet replicable, primarily because PPCs are provided on a basis which in certain respects is not fully equivalent as between third party provision and BT's own downstream business. A statement was published in April 200617, setting out the issues BT would need to address before Ofcom would consider the services to be replicable. The issues identified fall into two broad categories which can be characterised as being process and pricing related. When determining the appropriate proposed charge controls we considered issues which fell in the latter category.

- **A New Pricing Framework for Openreach ("OFFR Second Consultation")**: The aim of this review is to develop an enduring and coherent regulatory regime for Openreach that meets wholesale customers' requirements for pricing, quality of service and innovation[18]. The focus of this review is to determine whether there is a need to change the existing level and structure of charges for the regulated wholesale access services. This review will consider all of Openreach's regulated access network prices other than the Ethernet services covered by in this consultation document.

- **PPC Disputes**: Ofcom is in the process of resolving disputes brought by a number of CPs in relation to BT's charges during the period of the last PPC charge control. The CPs allege that BT has overcharged them for PPCs on the basis that it has failed to comply with the cost orientation obligations that were imposed on it in the 2003/04 Review. The CPs have requested that Ofcom set cost oriented PPC charges that should have applied during the period of the last PPC charge control when resolving the disputes.

Structure of document

2.29 The aim of this Section was to give some background on leased lines, set the regulatory scene for the proposed charge controls and summarise the links to other Ofcom projects. The rest of this document is structured as follows:

- Section 3 summarises our approach in developing the appropriate charge control framework for leased lines;
- Section 4 discusses our proposed charge controls for TI terminating and trunk segments;
- Section 5 discusses our proposed charge controls for AI services;
- Section 6 discusses the implementation of the proposed charge controls; and
- Section 7 discusses the delay in the introduction of the proposed charge controls.

2.30 In addition there are a number of Annexes which support our main conclusions. In particular:

- Annexes 7, 8 and 9 contains our detailed calculations on which we base the proposed charge controls;
- Annex 10 includes our draft Notification under the 2003 Act; and
- Annex 11 includes our impact assessment.

[17] http://www.ofcom.org.uk/consult/condocs/busretail/statement/statement.pdf
[18] http://www.ofcom.org.uk/consult/condocs/openreachframework/

Section 3

Our approach to developing the appropriate charge control framework for leased lines

Introduction

3.1 In this section we explain our proposed approach to developing a charge control framework for leased lines services. More specifically:

- We first explain our regulatory objectives and why we propose to use an RPI - X control for a four year period;

- Given the duration of the charge control, we then discuss possible approaches to deal with forecast uncertainty, in particular the issues relating to the migration of leased lines services from legacy networks to BT's 21 Century Network ("21 CN");

- In light of our proposals in respect of new services, we assess how best to design the charge control to "credit" BT (in terms of the weight the charge control gives) for any price changes associated with moving to new services;

- We then explain the methodology we used to determine the charge control, split into five main stages:

  - Stage 1: We identified the appropriate charge control baskets;

  - Stage 2: We established base year costs;

  - Stage 3: We forecast costs from base year until 2012/13;

  - Stage 4: We considered any options for starting charge adjustments; and

  - Stage 5: We determined the proposed range for the values of X.

- We then set out our proposed approach to a range of issues that could impact on the leased lines charge control. The following key issues are also discussed:

  - How to treat the costs of services that are only being price regulated in some parts of the UK (i.e. excluding the Hull and CELA areas);

  - How BT should recover the costs of new services (such as its 21CN investments);

  - How to determine the weighted average cost of capital ("WACC") associated with BT's leased lines investments; and

  - How to treat various discounts offered by BT in assessing compliance with the proposed charge controls.

We need to balance a number of objectives

3.2 Our main objective when setting charge controls is to prevent BT setting excessive charges in wholesale markets where it has SMP, while providing incentives for BT to increase its efficiency. In particular, we want to ensure that prices are subject to appropriate controls whilst still encouraging BT to maintain service quality and innovation in leased lines services.

3.3 In seeking to prevent BT from setting excessive prices, it is important that we do not place too tight a restriction on BT's activities. We want to ensure that BT is still able to finance its activities and invest in its network. Furthermore, if we were to set charges below an efficient level, then this would potentially deter efficient investment by competing operators.

3.4 We therefore need to balance a number of objectives, including:

- Preventing excessive pricing;
- Providing incentives to enhance efficiency;
- Allowing BT to finance its activities; and
- Promoting efficient investment.

We propose to apply an RPI-X form of control for a four year period

The proposed controls are designed to bring prices into line with costs by the end of the control period

3.5 For the LLCC, as with other charge controls placed on BT's SMP services, we propose to apply an RPI-X form of control.

3.6 Ofcom proposes to set values of X so that the control on BT's charges (values of 'X') brings forecast revenues in line with forecast costs in the last year of the charge control period. This mimics the workings of a competitive market in which prices tend towards costs over time. It thus reflects both expected cost reductions and the elimination of any super-normal profits existing at the start of the charge control period. On the basis of this calculation, we propose to limit the amount by which BT can increase relevant charges to a maximum of RPI-X in any year.

There may be an argument for one-off adjustments to prices at the start of the control

3.7 We explained above that the value of X is based on bringing forecast revenues into line with costs in the last year of the control. But there is the option of making some of this required change via one-off adjustments to those prices. One off adjustments may be either upwards or downwards.

3.8 Any downward adjustment to starting charges would have the effect of reducing the required reduction needed to bring revenues into line with costs by the end of the control (i.e. there would be a lower absolute value of X). This is because the starting charge adjustments would bring prices closer to costs at the outset. We set out in paragraphs 3.117 to 3.137 below why, in the past, we have tended to prefer a glide path approach (due in particular to its better incentive properties) and, in the light of this general preference, some of the situations under which we might consider one-off reductions.

Relevant values of X and inflation determine the maximum allowable price changes

3.9 The controls can be set for individual leased lines services or we can apply the control across a 'basket' of services that are subject to similar competitive conditions. For the latter, this would mean that the "maximum increase" in the weighted average prices that BT can set across all services would have to be no more than RPI-X. For the services within the basket, BT would not necessarily have to reduce (or increase) the price of every service by exactly the same amount as the basket cap. Nevertheless, it would have to ensure that on average (across all services) it complies with the value of X.

3.10 As inflation is a factor outside of BT's control, the RPI part of the charge control allows BT to adjust prices for inflation, as measured by the retail price index ("RPI"). This, when added to the requirement on BT to change charges by X% per year, produces an obligation that limits BT's nominal price increases to a level of RPI-X%.

We propose to retain RPI as the relevant inflation index

3.11 We propose to retain RPI as the relevant inflation index. In past charge control reviews, we have considered alternatives to RPI because it includes items (e.g. mortgage interest rates and indirect taxes) which are not relevant to BT's costs. Alternatives to the RPI index, which exclude mortgage interest payments and/or indirect taxes, are available. There are also telecommunications specific price indices, which would more accurately track telecommunications related prices.

3.12 We have made the point in past charge control reviews that it is important that price caps have the effect of indexing price levels against a fixed measure, which is outside the control of the firm subject to the price cap. RPI and other variants of RPI (which exclude mortgage and indirect taxes) all have this characteristic. We could also account for forecast differences between different measures of inflation in the setting of the cap(s). Therefore, RPI or any of its variants would in principle be an effective index for control of BT's prices.

3.13 We consider that an advantage of RPI is its familiarity to stakeholders, which means that its use as a price control index enhances the transparency of the system. Adjustments for mortgage interest and/or indirect taxes would detract from this. Telecommunications specific indices have the disadvantage that BT's prices would be a major input to them and so there would be circularity in setting price controls for BT on this basis.

3.14 For the above reasons we believe that RPI continues to be the best index for price control in telecommunications.

Question 3.1 Do respondents agree that RPI is the best index for the charge control?

RPI-X best meets our regulatory objectives

3.15 The RPI-X form of control has a number of desirable properties that we think best meet the above regulatory objectives, as set out in paragraph 3.4 above. A particular feature of an RPI-X form of control is that it gives BT incentives to enhance its efficiency. The charge control entails forecasting expected efficiency gains over the duration of the control and determining the maximum permitted price change for particular group of leased lines services. In order to maintain its profitability on these services, BT has to make efficiency improvements to reduce its costs in line with the expected path set by the charge control.

3.16 In addition, the RPI-X control also provides BT with incentives to make additional efficiency gains over and above those forecast as part of the control. An RPI-X type control gives BT incentives to "outperform" the charge control. If it achieves efficiency gains over and above those forecast, BT would get to keep any profits resulting from these additional savings. Consumers benefit in the longer-term from this incentive mechanism, as these additional efficiency gains can be passed back in the form of lower prices.

3.17 The main alternative to RPI-X form of control is "cost-plus" regulation. Both RPI-X and cost-plus controls are set to allow BT to recover costs plus an appropriate market-up (at least on a forecast basis). But with cost-plus regulation, charges are set equal to actual costs including a regulated rate of return in each year of the control. The key concern with this type of charge cap is that it has poor incentive properties. BT would obtain a similar profit margin no matter what level of costs it incurred. In particular, BT would have limited incentive to keep its costs under control (or to outperform the control) as it can still pass on inefficient costs to customers. Cost-plus regulation would also potentially be intrusive as detailed ongoing regulatory scrutiny of costs would be need.

Question 3.2 Do respondents agree that an RPI-X control is the appropriate form of charge control for the regulation of TI terminating, trunk and Ethernet services?

We propose the appropriate charge control period is four years

3.18 We propose a four-year control, as our experience of setting charge controls previously (e.g. for PPCs and for the Network Charge Controls, "NCCs") suggests that this provides an appropriate balance between different objectives. On the one hand, we want to provide incentives for BT to reduce its costs via efficiency gains, which are greater the longer the duration of the control. But, on the other hand, we want to pass those gains to customers and encourage efficiency by bringing prices into line with costs.

3.19 In addition, the longer the duration of the control the greater the challenge of ensuring we obtain accurate volume and cost forecasts. The modelling of BT's future costs and revenues cannot be expected to be wholly accurate, as many changes in markets can affect the accuracy of the assumptions made at the time when the leased lines charge controls are set. However, by setting controls for a fixed period, the LLCC regime can provide a period of certainty on charges. This is beneficial to BT and also to other providers when deciding, for example: whether to use BT's regulated services; whether to contract with third parties; or whether to invest in their own infrastructure.

3.20 As stated above, an RPI-X control gives BT an incentive to increase its efficiency, by allowing it to keep any super-normal profits resulting from cost savings over and above those predicted when the control is set. In this context, longer duration controls may be preferable, as BT's ability to realise efficiency savings may entail initial capital expenditure, which may take a period of time to result in efficiency improvements. BT might view such investments as worthwhile only if it has the certainty that it can keep any associated cost savings (over and above those anticipated by the charge control) over a longer duration.

3.21 One concern with setting the control for too long is that the benefits of any cost savings would potentially accrue to the regulated company for a relatively long period. This could mean that prices become too far out of line with costs. However, this needs to be balanced against the benefit that would accrue to consumers in the longer run (such as via efficiency gains) from given the firm the incentive to make such gains.

3.22 Consumers can benefit from cost reductions made as a result of the enhanced incentives to improve efficiency under longer duration controls. In addition, in setting any subsequent charge control, the regulator can return the benefits of the regulation to consumer in the form of lower prices going forward. Therefore, over a longer period firms and consumers can share the gains of increased cost efficiencies.

3.23 Our experience of past charge controls suggests that a four-year period provides an appropriate balance. However, adopting a four-year duration control means that prices will depend on forecasts made now well into the future. If volume forecasts are wide of the mark then allowable charges might move too far out of line with costs by the end of the period.

3.24 We identify below the main sources of forecast uncertainty and what options we have available to handle this uncertainty within the context of a four-year control.

There are a number of forecasting issues under longer charge controls

3.25 The forecast of BT’s costs over the period of the control involves many detailed calculations and assumptions, which we describe further in Sections 4 and 5. Among the more important inputs to this calculation are the forecasts of the traffic using BT’s network(s). With some services having a degree of fixed cost, this means that increased (decreased) traffic will decrease (increase) BT’s average, or unit, cost of providing these services. This relationship between movements in costs resulting from volume changes is an important issue. Given that we will naturally face uncertainty over the way in which volumes change we may need to find ways to mitigate the risks that unanticipated volume changes may lead to over-large differences between prices and costs.

3.26 There appear to be two main sources of volume uncertainties. The first relates to how overall market demand is likely to evolve over the next four years. Second, and against the background of overall market growth, there is also uncertainty over the rate at which BT’s AI and TI customers migrate from existing services onto BT’s 21CN.

3.27 We think that volume uncertainty is a major factor in this control in particular because of uncertainty over migration to BT’s 21CN or other products. To address this forecast uncertainty, one solution would be to adopt a shorter charge control period, so limiting the degree to which charges could fall out of line with BT’s costs. However, a shorter-period control (e.g. two-years) would give less price certainty and could reduce the strength of the investment and efficiency incentives. A period of stability and certainty is particularly important at a time that BT is investing in a replacement network.

3.28 This leaves three broad options to tackle forecast volume uncertainties:

- **Mid-term reviews**: An interim review during the charge control period, with adjustments to the values of X if volume outturns were significantly different from our forecasts;

- **An error correction mechanism**: This would be similar in effect to the above but would automatically adjust for deviations in volumes from forecast levels;

- **A 'technology-neutral model**: This would be most relevant to scenarios where volume and cost uncertainties mainly arise from uncertainties over the technology used to deliver a particular service. A technology-neutral approach would overcome cost uncertainties by forecasting costs as if all volumes continued to be provided over a single hypothetical continuing network. Such technology-neutral approach would apply even if, in fact, the service migrated from an existing "legacy" platform to a newer network technology (e.g. a next generation network).

3.29 We discuss the relative merits of the above options in the following paragraphs.

We do not propose using mid-term reviews

3.30 One option might be to retain a longer duration control, but to conduct a mid-term review where volume outturns become significantly above or below the forecast volumes used to set the control. It appears that the main source of volume uncertainty is the potential migration from legacy to new services. In general, we do not consider that mid-term reviews are desirable due to their potential impact on BT's incentives and because, in this particular case, most of the volume uncertainty appears to be within BT's control to an extent.

3.31 Setting a charge control with the prospect of a mid-term review, would not provide BT with good incentives to increase volume of traffic on its network. Very large increases in volumes would tend to have the effect of reducing BT's unit costs (e.g. for services with fixed costs). Therefore, the prospect of a review might lead BT to believe that the regulator would intervene to set a tougher X as a result of very large growth of particular services (and corresponding reduction in unit costs). This would deter it from growing volumes and reducing costs in general and from encouraging services onto the new lower cost platform.

3.32 Similarly, if we were to review the value of X applying to particular wholesale legacy services at the mid-point of the charge control then this could reward BT twice for migrating traffic to the new network. BT would benefit both from a looser cap on the old network and from lower costs on the new network.

3.33 A mid-term review would also tend to shift any risks of forecast errors from operators onto consumers. This could be a concern if the latter group are less well placed to bear such risks. Indeed, if the main source of forecast risk relates to migration between particular services, it would be preferable, for this to be tackled at the operator level.

We do not propose introducing an error-correction mechanism

3.34 An alternative way to adjust for forecast uncertainty would be to apply an error correction mechanism ("ECM"). This would adjust the relevant charge caps automatically to account for significant changes in volume forecasts. However, we do not propose to include an ECM within our charge control, mainly because volumes are not entirely outside of the control of BT.

3.35 An ECM is generally more suited to situations where the path of cost movements over the duration of the charge control is subject to significant uncertainty, due to exogenous factors, at the time of setting the control. However, where an SMP provider has some influence over the volumes it sells, an ECM may create perverse incentives to discourage customer demand (for example by reducing quality) or to allow costs to rise (depending how the ECM is defined).

3.36 Moreover, an ECM may undermine one of the key features of a RPI-X form of charge control, i.e. that the control remains unaltered for the duration of the charge control. Fixing maximum charges for the duration of the control provides certainty in taking investment decisions for both the regulated company and other communications providers.

3.37 As with a mid-term review, an ECM would tend to shift the risks from operators onto consumers.

We propose using a technology neutral approach

3.38 One of the main sources of volume uncertainty is the scale and timing of migration of services from legacy networks to BT's 21 CN. Potentially, a significant proportion of this migration could occur during the next charge control period.

3.39 To cope with this potential source of uncertainty, for recent BT charge controls (e.g. in respect of the NCCs applied to fixed voice services), we have used a "technology neutral" approach to modelling. Under the technology neutral approach, the charge control would be applied to a particular service irrespective of which platform the service is carried over. Therefore, if BT migrated, for example, a circuit from its SDH platform to a service "emulated" over the IP network[19], the charge control caps applied to that service would not change. In setting the price cap for this service, we would base our cost forecasts on those of a "continuing hypothetical network" based on an appropriate view of BT's cost base.

3.40 Technology neutrality has desirable incentive properties:

- If the value of X covering both networks were fixed (i.e. the charge cap would be the same irrespective of whether BT delivers this with legacy or replacement services on another platform), then BT would migrate traffic onto another platform only if this were the cost-minimising solution.

- At the same time, the charge control would reward BT when it achieved cost savings (e.g. by migrating services to the NGN sooner) by allowing it to keep such savings until the end of the control period.

- The structure of the charges would also allow BT flexibility to offer lower prices on the NGN and for charges for services remaining on the legacy network to continue to reflect relatively higher SDH/PDH unit costs.

3.41 As well as having desirable incentive properties, a technology neutral approach helps overcome the main difficulties in forecasting the volumes of traffic delivered over particular platforms (e.g. leased lines traffic provided either over a legacy or 21CN networks). The uncertainty about future migration means that cost forecasts for

[19] An example of an emulated service would be one that replicates the required service characteristics and guaranteed levels of service typically associated with one network platform using another network technology. So for example, many retail customers require SDH/PDH services as they value the fact that these services provide reliable connections with high performance standards in terms of service characteristics such as latency and jitter. CP's reliant on BT's wholesale inputs would use a PPC, which currently employs BT's legacy SDH/PDH network. However, if BT were able to use its IP-based platform to deliver PPCs for example using traffic prioritisation or virtual circuits, at some time in future it could potentially emulate PPCs on its 21CN platform.

individual networks could be unreliable. The technology neutral approach also reduces the need to determine the costs of the new network. In particular, it overcomes the problem of having to estimate, as yet, not fully known costs of the provision of "replacement" or "emulated" services over alternative platforms.

3.42 For the technologically neutral approach, since the value of X would be set as if all traffic would continue to be carried over a continuing hypothetical network, there would be no need to forecast the rate of migration, and the modelling process would thus be simplified. This approach would also be 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.

Technology neutrality is particularly relevant to AISBO services

3.43 Openreach is continuing to develop its Ethernet portfolio. It is currently undertaking a significant investment in a national backhaul network based on WDM technology, to support new products such as Ethernet Backhaul Direct ("EBD"), which is designed to meet the increasing requirements for high bandwidth backhaul.

3.44 We re-iterate again that under our technologically neutral approach, the charge control will be applied to all AISBO services irrespective of the platform used to carry a particular service. That is because we are modelling the values of X for the AISBO services based on the costs of an ongoing hypothetical network.

Introduction of new services has potential implications for charge control design

3.45 The discussion above suggests that technology neutrality can help address uncertainty associated with volumes migrating from one technology to another. The introduction of new services does raise some wider issues over the design of the charge control formula. In particular, how do we ensure that the charge control appropriately "credits" any price reductions BT might offer for new services (for example to encourage migration). We discuss these issues of charge control design in the following paragraphs.

Question 3.3 Do respondents agree that a four year duration for the charge controls on TI terminating segments, trunk and Ethernet services is appropriate?

Question 3.4 Do respondents agree with our proposed technology neutral approach to modelling?

We propose to adopt within-year basket weights given significant projected migration of Ethernet services to a new network

<u>There are a number of options for basket weights</u>

3.46 The proposed controls on BT's wholesale TI and AI circuit charges will, in each case, limit the weighted average increase in BT's charges to a maximum of RPI-X. Under the basket approach, it is necessary to calculate the basket weights that are used in the calculation of the values of X and to assess BT's compliance with the controls. Regulators who have applied this form of control have generally used one of two main methods of calculating these weights – "prior year revenue weights" or "current year revenue weights".

3.47 In the 2004 PPC charge control consultation[20], we considered whether to use prior year or current year revenues or volumes to weight the charge control baskets. After considering the advantages and disadvantages of each approach, we decided to use prior year weights, as in other charge controls we have imposed on BT. We now have to decide whether to continue to use prior year weights for the next charge control or to use current year revenue weights, or to use a combination of the two.

3.48 Under the prior-year weighting approach, basket weights are set equal to the proportions of basket revenues accruing to the relevant services in the year prior to the one in which the price change occurs. Under the current year weighting approach, the weights are set equal to the proportion of current year basket revenues accounted for by each service as a proportion of total current year revenues. A current year weighted control is equivalent to a control on average revenue.

Comparison of prior and current year weights

3.49 Ofcom has generally preferred prior year weighting (as in the 2004 – 2008 PPC charge control) because current year weighted controls have two significant disadvantages. The first is that current year weights cannot be calculated with certainty until after the end of the price control year in which compliance is being assessed, because current year revenues will only be known with a significant time lag. This means that, to decide how far to reduce prices, the firm has to make forecasts of weights, with the consequent need for retrospective adjustment for forecast errors. Some energy network services in the UK are subject to average revenue controls, which incorporate such adjustment factors. For example, where actual revenues recovered in a particular formula year exceed allowable revenues (implied by the charge control), then the charge control includes a factor for any such over-recovery (or under-recovery).

3.50 The second potential disadvantage is that average revenue can be affected by product mix within the basket. For example, average revenue will fall if the quantity sold of a lower price product within the basket increases relative to the quantity sold of a higher priced product, even if the prices of both products are unchanged. This is sometimes referred to as the "apples and pears problem"[21]. In some markets (for example gas or electricity markets) in which average revenue controls have been used, output can be expressed in a convenient common unit, which avoids this problem, but this is much less likely to be true in telecoms markets.

3.51 By contrast, a prior year weighted control relies only on revenue information which is (or can be) already known when setting prices to comply with the control. In addition, it also has some theoretical advantages which mean that, under certain conditions, it can induce the regulated firm to set Ramsey prices, which are the most efficient way of recovering common costs. It should be noted however that these conditions are unlikely to hold in practice.

3.52 However, a feature of prior year weighting is that it does not allow for relative price or volume changes during the year in question (though these will of course be included in the weighting for the following year). This means that prior year revenue weights can have disadvantages when revenues from different products within a basket are

[20] http://www.ofcom.org.uk/consult/condocs/ppc_charge_control/

[21] So called because, if apple and pears are sold at different prices, compliance with a control on the average revenue from fruit will be affected by changes in the relative quantities of apples and pears sold.

expected to change markedly relative to each other over the period of the charge control.

We considered the use of current year revenue weights in the 2004 PPC charge control conditions

3.53 Ofcom considered whether to use current year weights for the PPC charge control set in 2004 because of concerns raised by some stakeholders about the application of prior year weighted controls to PPC markets.

3.54 In 2004, PPC terminating segments were a relatively new product. There was concern that this could mean that revenues or volumes would be erratic from year to year, and that as a result BT may have scope to “game” a prior year weighted control to its advantage. This is because under a prior year weighted control there is an incentive to match price increases to those products and services whose weight will be increasing. BT may, within its pricing decision, have scope to affect the weightings of the products and services within the basket in such a way as to make compliance with the cap less onerous. This was a concern raised by respondents to the 2004 PPC charge control consultation.

3.55 We considered these concerns and decided to use prior year weights for two reasons. First, it was felt that the alternative, the use of current year weights, and particularly the need for a forecasting mechanism, may also give BT an incentive to game the charge control mechanism. Second, it was felt that the use of sub-caps on PPC connection charges and rental and maintenance charges would sufficiently constrain BT’s ability to game the control even if prior year weights were used.

3.56 In addition, there were a number of practical considerations. Firstly, it was felt that problems experienced by Ofcom in validating historic volume and revenue data provided by BT for use in a prior year weighted control would be exacerbated by the use of current year weights. Additional problems identified included:

- The use of forecasts would give Ofcom no benchmark on which to compare or challenge the data from BT. With prior year weights there would be actual and prior year data that Ofcom can consider and question BT on;
- There would likely need to be a process designed to review independently BT’s actual data against the forecasts and an adjustment made in succeeding years. This could become complex and costly;
- There could be pressure for in-year adjustments. This is particularly so if actual data were significantly different from the forecasts. This pressure could come from within BT or from other CPs. This could increase the resources required to monitor compliance; and
- There would be a reduction in transparency. By their nature, forecasts are difficult to effectively review and are not necessarily prepared on a consistent basis over time.

We considered the case of using current revenue weights for AISBO services

3.57 We believe that, in general, the arguments for using a current year weighted control are now less strong than in 2004. PPCs, in particular, are no longer a new service. Concerns over fluctuations in demand do not seem to have been an issue in practice with the 2004 – 2008 control.

3.58 The arguments against use of current year weights are, however, still relevant. In particular:

- The use of current year weights would not necessarily improve the incentives on BT;
- The practical difficulties of using current year weights are significant; and
- If necessary, BT's ability to game the control could be constrained by the use of sub-caps.

3.59 We therefore believe that, in general, compliance with the proposed charge controls should be assessed using prior year weights.

3.60 However, we believe that there may be a better case for a current weighted control to be applied to the AISBO basket. Some of the circumstances which applied to PPCs in 2004, and which led Ofcom to consider the use of current weights, continue to be relevant to the AISBO basket. In particular, BT is proposing to introduce new services within the basket during the control period. There is expected to be large scale customer migration between the existing product portfolio and the new products. This means that there may be large movements in the revenue weights of the different services over time and, as noted above, this may give BT the opportunity to game the control.

Our proposal is to combine a control on the average revenue with prior year revenue weights for AISBO services

3.61 Within the timeframe of this review BT plans to roll-out a new Ethernet backhaul network. It is therefore likely that BT's provisioning of Ethernet services will move from dedicated point to point circuits (such as BES and WES) to network-based provisioning in a manner similar to that in which TI circuits are provisioned now. One of these new networked services is known as Ethernet Backhaul Direct ("EBD").

3.62 In addition, handover of AISBO circuits is currently provided via a 'local end' between the local serving exchange nearest to the communications provider's Point of Presence ("PoP") and the PoP. Each handover link is provided on a circuit by circuit basis, i.e. there is no aggregation as there is for TISBO products. This is also likely to change in future with AISBO services carried via a Bulk Transport Link ("BTL") in a manner similar to Customer Sited Handover ("CSH") for TISBO.

3.63 BT expects to make significant savings in costs from the new networked products as they enable the realisation of economies of scale and scope not possible with point to point circuits. It therefore expects that the prices of the new networked services will be significantly lower than those of the old point to point services which they will largely replace.

3.64 Under the technology-neutral approach to modelling which we are adopting for this price control, BT will not be required to price the new services below the old ones, subject to the compliance with the requirement that prices should be cost oriented. This is consistent with the aim of the technology neutral approach which is to give BT incentives to make efficient cost-reducing investments by allowing it to keep the benefit of cost savings (over and above those assumed in setting the control). However, BT is proposing to charge lower prices, in order to encourage users to migrate to the lower cost, more efficient products. We think that, in the circumstance, it is likely to be reasonable for BT to get credit towards meeting price control requirements from migration to cheaper services which has the effect of reducing the average price paid. Under a prior year weighted control, this will not happen fully since, as noted above, such a control does not reflect relative volume changes during the year in question.

3.65 This does not of course mean that there would be no practical difficulties with use of current year weights. The problems associated with forecasting revenues would remain, as would the difficulty of combining quantities of point to point and networked services in a single average revenue measure (referred to above as the "apples and pears" problem).

3.66 There are two aspects to the latter problem. Firstly, the current AISBO products (WES and BES) do not map onto the new networked products in an entirely straightforward way. For example, a BES might be replaced by an EBD circuit, plus a proportion of BTL, whilst a WES might be replaced by an EBD circuit plus a proportion of Ethernet Access Direct ("EAD") circuit plus a proportion of BTL.

3.67 Secondly, the proposed AIBSO basket contains a large number of products including BES and WES circuits at a number of different bandwidths. It is expected that there will be a general trend towards higher bandwidth circuits during the next charge control period and, other things being equal, this will tend to increase basket average revenue per circuit. This would distort an average revenue control, since compliance with the control could be affected by the movement of customers between different bandwidths (for example, increasing use of higher bandwidth circuits would tend to raise average revenue). One way of addressing this would be to apply separate average revenue controls to each bandwidth. This would, however, have the disadvantage of reducing the flexibility which BT would have to change relative prices of circuits at different bandwidths, which is a desirable feature of broad baskets.

3.68 We are not therefore attracted to the idea that the AISBO basket control should take the form of an average revenue control.

3.69 However, there may be merit in combining a control on the average revenue from circuits at each bandwidth with a prior year weighted price cap on the AISBO basket as a whole. This could be done by:

- First calculating the average revenue of point to point and networked AISBO circuits at each relevant bandwidth. This would of course require that a method of allowing for relevant differences between the types of circuits could be agreed and we would welcome comments on the feasibility of this.

- The average revenue so calculated could then be interpreted as the "price" of circuits at each bandwidth controlled by the prior year weighted control at the basket level, and could also be subject to average revenue subcaps if desired.

We propose using a correction factor to adjust for the fact that outturn demand in calculating the in year average revenue might be different from BT's forecasts

3.70 An implication of using average price changes is that, at the outset of each formula year, BT will need to set prices based on its expectation of likely demand and revenues across relevant services to achieve the required overall price changes. If outturn demand differs from BT's forecasts (for example migration to new services is slower than anticipated), then the average price paid by AISBO customers may be higher than required by the charge control. The charge control should in principle adjust for these shortfalls in the next year of the control to ensure BT does not benefit through higher overall revenues.

3.71 We would therefore need an adjustment term (which we refer to in our charge control conditions as the “*k*-factor”) so that BT makes up for this shortfall (or overrun) in the next year of the control. For example, if BT is required to change its prices by RPI-10% in each year of the control and it only managed a reduction of RPI-5%, there would be a shortfall of 5 percentage points. To make up for this shortfall, we would therefore have to apply a required reduction of around RPI-15% in the next year to ensure that BT is not better off in revenue terms.

3.72 One issue in adopting such an adjustment term is whether we should apply an additional uplift factor to give BT stronger incentives to meet its obligations in each year of the charge controls. A particular risk in using average prices is that outturn demand and revenues are within its control and this may present it with an opportunity to game the control. This could result, for example, in BT making price changes persistently below those required by the charge control. In these circumstances, we have the option of applying an uplift to the adjustment factor to provide stronger incentives on BT to meet the price changes required by the charge control in the relevant year of the charge control. If BT failed to meet any required change, it would have to make up for any shortfall in the required percentage change plus an additional required reduction in its prices reflecting the relevant rate of interest.

3.73 In the energy sector where controls of this kind have been used, an additional penalty rate may be added to the interest rate, to give the regulated firm a stronger incentive to forecast accurately, and to counteract any incentive to game the forecasting mechanism to its advantage. For example, in the National Grid charge control from 1 April 2007, if the firm's actual revenue exceeds the allowed revenue by more than 2.75%, the interest rate applied is increased by 4 percentage points[22]. We would welcome views on the usefulness of a similar mechanism for the charge control on AISBO services.

3.74 If we were to implement these proposals, we would need to determine the appropriate rate of interest and penalty to apply, if any. We are therefore inviting stakeholder comments on the appropriate rate of interest and penalty to use.

Summary of proposals

3.75 Based on the above discussions, we think that a four-year control provides the right balance between different regulatory objectives. A four-year control provides sufficient incentives to increase efficiency, and reduce costs and an appropriate period of price certainty. We are aware that a four-year control does not completely overcome issues of forecast uncertainty. But a major source of forecast uncertainty relates to the timing of the migration of BT’s current range of SMP leased line services based on legacy networks to equivalents provided on its 21 CN. We consider that we can mitigate much of this forecast uncertainty by adopting a technology neutral approach within our charge control. However, the introduction of new networked AISBO services may require us to accept different forms of the charge control formula for AISBO and TISBO services.

---

22 http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=19&refer=Networks/Trans/PriceControls/TPCR4/LegalNotices

Question 3.5 Do respondents agree with Ofcom's proposal to continue to use prior year weights to assess compliance with the proposed control on charges for TISBO and trunk services?

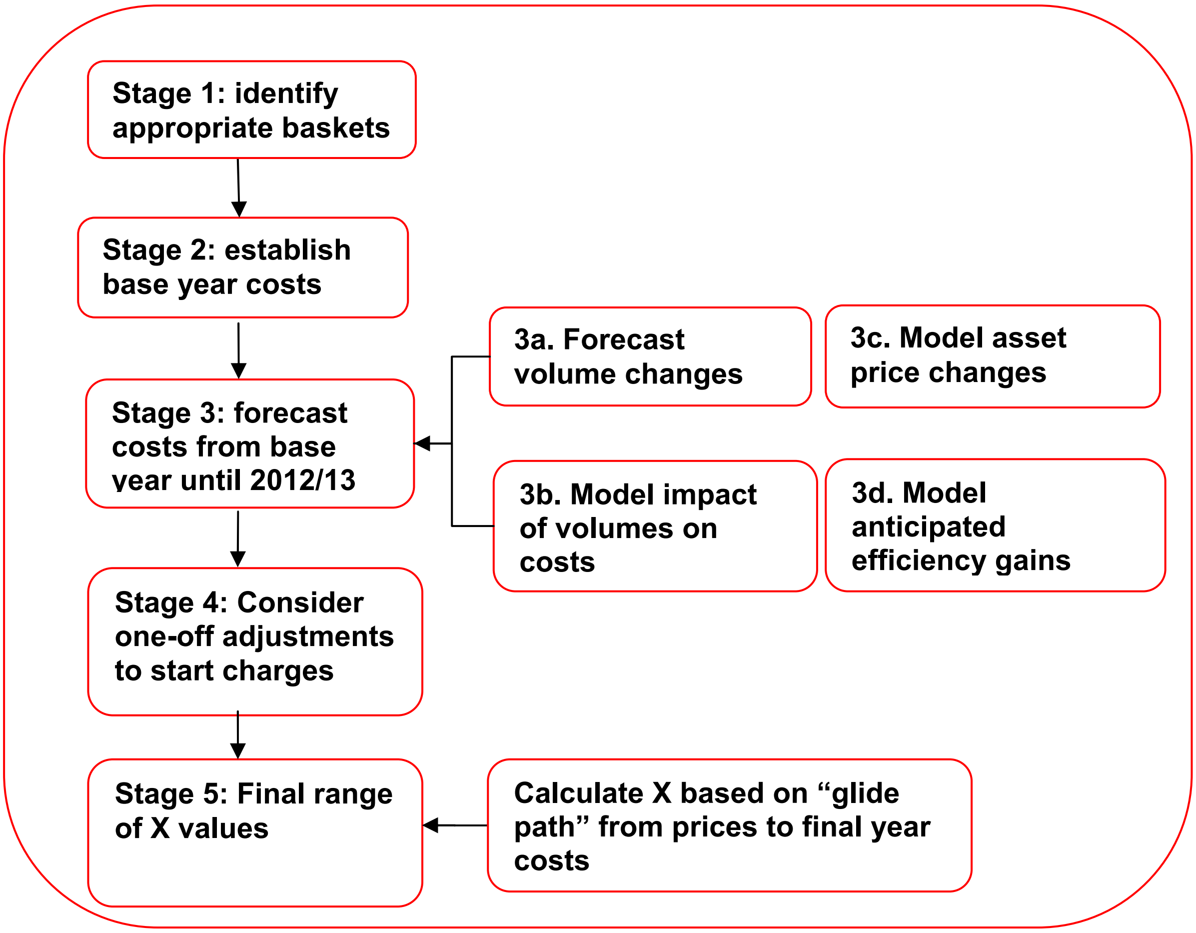
Question 3.6 We would welcome views on the merits of an average revenue control for AISBO services and on whether this could be combined with a prior year weighted price cap on the AISBO basket as a whole.

Question 3.7 Do respondents agree with the application of the "k factor"? We would also welcome stakeholder views on the appropriate level of the interest and penalty rates to be applied.

We applied a five stage approach when developing the appropriate charge control framework for leased lines

3.76 Having described the broad framework for the RPI-X control, we have set out in Figure 3.1 below the stages we have gone through to determine our proposals for the charge controls.

Figure 3.1 Key stages in our charge control proposals



3.77 Stages 1-3 reflect the key modelling stages. Stages 4 and 5 involve consideration of the rate at which prices should converge to costs (implied by our charge control modelling under Stages 1-3).

Stage 1: We identified the appropriate baskets

3.78 As part of this charge control, we propose to identify service baskets. A charge control basket is defined as the group of products and services, which are subject to the same charge control restrictions. This would mean for example that AISBO services such as WES and WEES could be subject to a single overall charge cap applied across both services if they are placed in the same basket. 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.

<u>We propose combining services into wider baskets</u>

3.79 It is important that we apply the charge control in the least interventionist way we can, consistent with achieving our regulatory objectives. Given that there are many types of leased lines services, applying a charge cap on individual services 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.

3.80 It is generally efficient to reflect differences in demand (especially 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, we would have to decide on the efficient allocation of common costs between these services. This would require 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.

3.81 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 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.

3.82 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 have sought not to constrain BT's pricing behaviour unduly by having baskets which are too narrowly defined.

Differences in competitive conditions might point to separately controlled services

3.83 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 markets, which might be viewed as "costless predation". This can be avoided by placing more competitive services in a separate basket to less competitive services.

3.84 In addition, if the regulatory regime means that BT makes use of different wholesale inputs to its competitors this might give it incentives to discriminate (for example only CPs use BT's BES services to backhaul broadband traffic). Again, if there were a number of services in the same basket, BT might have an incentive to concentrate price cuts on the services it uses more intensively at the expense of services it does not use.

Sub-caps might be an alternative option to multiple baskets

3.85 Applying very wide baskets where competitive conditions vary significantly could provide an SMP provider with scope to target significant price reductions to particular services. As a general rule, we would therefore propose to apply separate baskets for those services where there are likely to be significant variations in competitive conditions for that service relative to others.

3.86 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 incentive to make predatory cuts in more competitive markets is reduced.[23]

Stage 2: We defined the appropriate cost base at the start of the forecasting period using 2006/07 data

3.87 To set the charge control we need to be able to determine all costs relevant to providing charge-controlled services. The first step is to determine the relevant cost base from which we can establish base year unit costs. Once we have determined appropriate base year costs, we have a relevant reference point from which we can forecast BT's future costs (based on anticipated efficiency gains, volume changes and the estimated impact of volume changes on BT's costs).

3.88 The base year for the leased lines charge control model is 2006/07. Base year data are taken from BT's regulatory financial statement. We use BT's 2006/07 financial year data as it represents the most recent fully audited regulatory statements at the time we started our internal charge control modelling work.

- Where appropriate, we made adjustments to BT's base year data to ensure that the cost base only includes those costs appropriate for the leased line services in question; to enable us to forecasts costs on a forward-looking basis; and to reflect policy decisions related to specific categories of cost. The specific adjustments are discussed in more detail in Sections 4 and 5.

- We also took into account the effects of BT's re-statement of 2006/07 data. In addition we compared our modelled 2007/08 cost data to the 2007/08 RFSs to ensure that these were in line with actual results.

We use CCA FAC as our cost basis

3.89 Under BT's SMP conditions, the charges for its regulated services are required to be reasonably derived from the Long Run Incremental Costs ("LRIC") of providing that service allowing for an appropriate mark-up, including recovery of any common costs. In the context of determining the apportionment of common costs for this charge control, we considered the following main options:

- Current Cost Accounting with Fully Allocated Costs ("CCA FAC") and

- LRIC + Equi-Proportional Mark-Up ("EPMU").

3.90 While we think that neither of the above options is necessarily superior to the other, we set out below why we have selected CCA FAC.

[23] Suppose services were in the same basket and the basket required BT to reduce prices by RPI-10% each year. Without a cap, BT might decrease prices for the competitive service by 30% and increase prices for the uncompetitive service by 10% and still meet its charge control obligations (as the average reduction would be -10% assuming each price change was weighted equally). With an appropriate safe-guard cap on the less competitive service, BT would be unable to do this. It would still be able to respond to competition, for example by decreasing prices on the competitive service by 30% but it could not offset this with an increase in the price, in real terms, for the less competitive services, which would greatly reduce the incentive on it to make anti-competitive reductions in prices. These can be applied to individual service elements to avoid excessive rebalancing of charges. The appropriate value of the safeguard cap is likely to depend on the value of the basket X and the relative initial profitability of the difference services.

3.91 The LRIC+EPMU approach relies on BT's estimates of the LRIC of providing relevant services and then marks up these amounts to take account of BT's common costs. Using an EPMU rule, we can allocate any common costs across the different services in proportion to the LRICs of individual services.[24]

3.92 For the purposes of our cost basis used for the LLCC, we relied on CCA FAC consistent with BT's Regulatory Financial Statements (subject to relevant adjustments mentioned in paragraph 3.88 above).

- The use of CCA FAC is consistent with the approach we have adopted for other recent charge controls. We think that the LRIC + EPMU would involve a more time consuming operation where we would need to review BT's LRIC estimates for individual services and to ensure that they were an appropriate basis for attributing common costs.

- LRIC+EPMU and CCA+FAC have some similarities in that the definition of costs for both is still forward looking, unlike Historic Cost Accounting ("HCA") approaches. Charges based on forward-looking costs provide appropriate incentives for entry and investment. Both also include an allocation of fixed common costs to allow for full cost recovery.

- Monitoring BT's actual financial performance on a LRIC basis is not straightforward, as wholesale service profitability information is prepared more generally on a CCA FAC basis. CCA FAC uses data that can be reconciled to the regulatory financial statements, which are audited and are in the public domain. We also think that the CCA FAC and LRIC+EPMU should provide reasonably similar results, particularly at more aggregate levels, since the overall total of costs to be recovered is the same.

3.93 The possible downside of either option is that it does not necessarily result in the most efficient outcome.

- A Ramsey Pricing rule, which allocates common costs between services, by marking-up incremental costs of each service based on demand sensitivity (i.e. demand-elasticity) [25] could potentially result in higher welfare for consumers.26 However, for the regulator to determine these efficient prices with any degree of accuracy would require a detailed and robust demand modelling exercise. In practice, there would be very high information requirements associated with collecting data on the multitude of leased lines services.

- We have therefore rejected this as an option due to the high information and modelling requirements. In any case, we can achieve some of the efficiency objectives through our charge control design. In particular, the use of broadly defined charge control baskets would devolve decisions over efficient relative

---

[24] For example, if the LRIC of service X were £100 per unit and the LRIC of service £50, then (assuming the same volumes for each service) we would have a 2:1 ratio. If BT had common costs of £6m, an equi-proportional mark-up would allocate £4m to service X and £2m to service Y.

[25] In this way, a higher proportion of common costs would be allocated to less elastic services and less common costs would be recovered from services that are more elastic.

[26] Relative to spreading common cost recovery more evenly, this form of pricing rule can enhance consumer welfare as it can help increase demand from customers with a relatively lower willingness to pay. On the other hand, if charges were set so that common costs were recovered more evenly then these customers may be priced out of the market. Therefore, as the costs of providing services would more closely match customers willingness to pay, on allocative efficiency grounds, there are possible benefits to Ramsey pricing.

prices to BT, which might be in a better position to discover efficient common cost recovery profiles. Therefore, some of the benefits of Ramsey prices can still be achieved via the use of wider baskets.

3.94 In summary, we propose to use CCA FAC, given the additional resource costs and time associated with LRIC+EPMU modelling. CCA FAC has the benefit of greater transparency to enable us to map more easily BT's audited regulatory financial statements to relevant base year costs.

Question 3.8 Do respondents agree that CCA FAC is the appropriate cost basis for setting the proposed charge controls?

We propose to use national cost data

3.95 As stated in Section 4, we propose to charge control 34/45 Mbit/s and 140/155 Mbit/s TISBO services only in some parts of the UK (excluding the Central and East London Area ("CELA") and in the Hull area). However, as BT's cost information applies to the UK (excluding the Hull area), we need to identify an appropriate approach to setting our charge control for the relevant geographic area. We propose to use national cost and revenue data for all controlled services and our rationale for selecting this approach is discussed in more detail in paragraphs 3.143 to 3.155 below. This means that we would derive base year unit costs for 34/45 Mbit/s and 140/155 Mbit/s TISBO services (in the UK excluding the CELA and the Hull area) from BT's cost base relating to the provision of these services on average across all parts of the UK.

We propose an alternative treatment for 21CN costs

3.96 As stated above, we propose to apply a technology neutral approach in modelling costs. This would help overcome the difficulties associated with forecasting the pattern and speed of migration from legacy to replacement or emulated services and issues of modelling the costs of 21CN. This means that we need to model our base year costs as if all traffic is carried over a hypothetical continuing network.

3.97 As the technology neutral approach seeks only to model the hypothetical continuing network, it does not require information on the costs associated with 21CN. Indeed, we would propose explicitly to exclude any additional costs associated with investing in 21CN from our cost modelling. On the other hand, we add in to the model capital expenditure estimates based on the assumption that BT was continuing to invest in the legacy network.

3.98 This means that we would propose not to include any costs of capital or operating expenditure that we identify as incremental to 21CN (relative to the costs of the hypothetical continuing network). So for example, BT may currently be investing in new equipment which is specific to the 21CN platform. Such expenditure would not however have been incurred had the new platform not been introduced. Therefore, it would not be appropriate to include these costs in the base year.

3.99 On the other hand, BT would have still had to undertake capital expenditure to support relevant leased lines demand (even if the 21CN platform had not rolled-out). Therefore, we propose that our base year cost data will include any relevant capital and operational expenditure that would otherwise have been needed to support demand for leased lines in the base year of the charge control.

3.100 This might be seen most clearly for costs that are likely to be the same for the 21CN or a continuing hypothetical network. For instance, we might expect that the cost of providing a new fibre connection from an end-user to the local exchange would not vary whether this were used for 21CN or on the continuing hypothetical network[27]. Hence, only the costs truly incremental to 21CN would be excluded from our base year cost modelling. To put it another way, we would assume that BT continues to invest in 20CN equipment, *instead of* 21CN equipment.

3.101 One difficulty in determining the appropriate 21CN related costs that we should exclude from our base-year concerns the treatment of indirect costs. BT has allocated a share of its indirect costs, such as use of BT buildings, lighting etc, to 21CN. There is a question however had BT not proceeded with its 21CN, what the relevant share of indirect costs allocated to the continuing hypothetical network would have been. We have therefore had to assess what if any indirect costs allocated to 21CN we think it would have been appropriate for BT to recover (assuming continuing hypothetical network).

3.102 Further consideration is given to the treatment of BT's 21CN investment in paragraph 3.156 below.

Question 3.9 Do respondents agree with our proposal that, in principle, costs truly incremental to 21 CN should be excluded from our base year 2006/07?

Stage 3: We forecast base year costs to 2012/13

3.103 Having modelled the relevant base year costs under Stage 2, the next stage is to forecast (from this starting point) how costs are likely to change over the duration of the charge control.

3.104 The key determinants of cost movements in our model are:

- Volume changes (arising from overall market growth and BT's estimated share);
- The impact of those changes on capital and operating expenditure (so-called Asset Volume ("AVEs") and Cost Volume Elasticities("CVEs"));
- Asset and other price changes; and
- Anticipated improvements in BT's efficiency.

Volume changes

3.105 In order to understand how costs are likely to change over the charge control period, we need to forecast the volume of leased line services that BT is expected to supply. Changes in the volume of BT wholesale leased lines services will be affected by overall market growth as well as BT's expected share of the leased lines markets going forward. To assess this, we have reviewed BT's forecasts based on information provided from its wholesale divisions. This is discussed in greater detail in Sections 4 and 5.

3.106 It is important to note that the volumes we use to generate our forecasts are based on relevant demand from underlying markets rather than the technology used to provide services for that market. For example, BT could meet the demand for AISBO services in future using its legacy WES or BES products or via an equivalent

[27] Although, we would need to ensure that the access fibre would have been used solely for leased lines.

replacement product (e.g. Openreach proposes an "Ethernet Backhaul Direct" product to replace its BES service). Therefore, the volumes relevant to our forecasts for services in the AISBO basket include:

- Any continued (or new) demand for legacy AISBO products;
- Migration of those services to products using BT's "replacement" backhaul network (or its 21CN platform); and
- Any new demand going straight onto the 21CN platform (which could have otherwise been served on the legacy platforms).

3.107 These volumes would then be combined to provide an appropriate "technology neutral" volume forecast.

Relationship between costs and volumes

3.108 Given the above forecast volume changes, we then need to model how the cost of components that make up the respective leased line services and baskets will vary in response to changes in the volume of demand for particular services.

3.109 We used available[28] estimates of the cost-volume elasticities ("CVEs") and asset volumes elasticities ("AVEs") to forecasts BT's future costs. More specifically:

3.109.1 CVEs (defined as the percentage increase in operating costs for a 1% increase in volume) are used to determine the level of operating costs in response to changes in volume; and

3.109.2 AVEs (defined as the percentage increase in assets, valued at gross replacement costs for a 1% increase in volume) are used to determine the level of capital costs in response to changes in demand for leased lines services.

3.110 Note that under the technology neutral approach, we would base any predicted cost changes (in response to increasing or decreasing market demand) on the costs of providing those services over the hypothetical continuing network. As such, we would not seek to model any unit cost changes that could arise from demand migrating to a new platform (such as BT's 21CN).

3.111 However, under certain circumstances some services may share certain costs (e.g. capital costs such as duct or operating costs such as personnel) and therefore the migration from one service to another might leave the overall level of these costs unchanged. In these circumstances, it may be more appropriate to take into account how these shared costs change in proportion to the total volumes of these services[29].

3.112 As part of our modelling exercise, we have therefore considered the appropriate treatment of these shared costs. This is discussed in greater detail in Sections 4 and 5.

[28] The values of AVEs and CVEs we used in out LLCC model can be found in Annex 9.

[29] For example, if users move from service A and service B, but the duct used to provide service A could be re-used in providing service B, the net volume changes between services plus the relative usage made of duct by service A and B would drive any associated changes in costs. This would entail re-allocating duct costs to service B but total costs may not change.

Asset prices

3.113 The price that BT has to pay for new assets will clearly impact on its costs going forward. Changes in asset prices impact on BT's asset base valuation and give rise to holding gains and losses which are reflected in operating costs in the year in which they arise. In order to assess these costs, we forecast the likely changes in the price of assets over the duration of the charge control. Our proposed assumptions on asset price changes are discussed in greater detail in Annex 9.

Efficiency estimates

3.114 We forecast the expected efficiency improvements that BT might reasonably be expected to achieve over the duration of the charge control. These efficiency improvements relate to expected reductions in real unit costs, which do not depend on changes in the volumes but reflect the general improvements in efficiency, which all firms seek to make. In line with our technology neutral approach, this is based on the likely efficiency improvements of BT's continuing hypothetical network.

3.115 In estimating likely future efficiency improvements, we propose taking into account the trend of BT's past improvements in real unit costs and estimates of BT's current efficiency relative to appropriate benchmark companies. Alongside our internal analysis, we propose to take account of evidence from a range of external efficiency completed as part of the "A New Pricing Framework for Openreach" project. These are discussed in more detail in Sections 4 and 5 where we discuss our proposed charge controls for TI and AI services.

3.116 Based on the above studies, we have formed a preliminary view of BT's relative efficiency and the scope for future efficiency improvements. We present this as a range of likely reductions in real unit costs per annum. We then use this range of likely efficiency savings as an additional input into our forecast of costs for the charge controlled services for each year of the charge control. This gives us a view for each service of expected costs in the final year of the charge control.

Stage 4: We considered whether to make one off adjustments to prices

3.117 As part of our charge control assessment, we have considered whether to make any one off adjustments to prices. We explain below why our general preference is to adopt a "glide path" approach, whereby the charge control would bring about a gradual convergence of prices and unit costs over the period of the control. We explain that some adjustments could be justified at the start of the control to prices which are markedly out of line with cost. However, we note that, given the price changes BT intends to make prior to the introduction of this control, further one-off cuts of this kind may not be appropriate.

Our general preference is for glide-paths

3.118 One of the features of price cap regulation is that profits may diverge from the level expected at the time when the control was set. Any such divergence may be taken into account when X is reset in the next price control review. In principle, one way in which this could be done is by a one-off adjustment to prices, which would bring the firm's expected rate of return to an acceptable level in the first year of the new cap. The main alternative is a "glide path" approach, which would set the control so that the expected rate of return reaches an acceptable level by the end of the price control period.

3.119 The benefit of the glide path approach is that it approximates more closely than one-off reductions to the workings of a competitive market in which excess profits are gradually eroded as rivals improve their own efficiency. It also avoids discontinuities in prices over time and leads 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 is particularly important for telecoms as there are now many players besides BT.

3.120 This approach also has greater incentives for efficiency as it allows the firm to retain the benefits of cost reductions for longer. The key difference between price control and rate of return control, in terms of their incentive properties, arises from the longer regulatory lag in the former. This means that cost reductions feed into price reductions only after a period during which the firm receives the benefit of increased efficiency. One-off adjustments to prices would reduce the effective regulatory lag, and hence the incentives to reduce costs.

3.121 In addition, one-off adjustments would create a particular distortion to the incentives on the firm near the end of a price control period. If the gains from increased efficiency were always taken away in the first period of the new cap, there would be little incentive to improve efficiency towards the end of a control period.

3.122 Whilst the above discussions relate to one-off cuts to prices, one-off increases would similarly raise concerns about incentives for efficiency. Allowing a rapid rise in charges (i.e. via one-off price adjustments) would signal to BT that cost increases would quickly be followed by price rises. Therefore, if cost increases resulted in swift price increases this could reduce the incentive to control costs. Indeed, 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.

3.123 The above discussion suggests that it is not sufficient, for example, to apply one-off reductions simply because prices at the start of the control are out of line with costs. One-off reductions create distortions on investment incentives and efficiency improvements; impacts on regulatory certainty and stability; and would not necessarily best reflect outcomes likely in competitive markets (whereby surplus profits are gradually eroded). Therefore, if returns at the start of a control are initially high, eroding differences between prices and costs via a glide path approach may be preferable.

When might we consider one-off reductions?

3.124 While the above suggests a general preference for the “glide path” approach in the context of RPI-X controls, this does not mean we should rule out one-off reductions where there are good reasons to introduce them. In the context of the leased lines control, it is useful to understand the circumstances under which we might consider one-off reductions. This might include, for example, scenarios where:

- There are strong allocative efficiency arguments for bringing prices into line with cost sooner (such as where BT’s prices of particular services are out of line with cost-orientation requirements); and/or

- The previous charges were unregulated or not subject to charge control and where BT’s charges are relative to costs.

3.125 We discuss each of these issues in turn below. We would note, however, that while one or more of these conditions may exist, this would not necessarily be sufficient reason to justify one-off reductions. We also need to consider the materiality of the issue (particularly given the risk of damage to incentives associated with one-off adjustments). It may also be possible for BT to make acceptable voluntary adjustments in prices without us having to mandate this through detailed one-off reductions.

3.126 In addition, where BT has proposed to reduce some of these charges ahead of the current charge control we would also have to consider whether these would go towards address any concerns we have regarding cost-orientation.

We may need to consider cost-orientation arguments

3.127 To encourage efficiency in terms of prices being in line with costs, BT's SMP conditions require that each and every charge for its leased lines services is reasonably derived from the costs of provision. Therefore, while the charge control generally seeks to bring BT's prices in line with costs (including a reasonable rate of return) via a glide path, we want to ensure that BT continues to price individual services efficiently in line with its cost-orientation obligations.

3.128 In assessing cost orientation, we generally apply a first-order test which requires that the price of each item or service should be between the Long Run Incremental Cost ("LRIC") floor and Stand Alone Cost ("SAC") ceiling. The use of LRIC as a price floor is consistent with the competition law presumption that a price below average incremental cost charged by a dominant firm is anti-competitive. This is because, if price is less than the average incremental cost of a service, the firm would be better off by ceasing supply of that service entirely and therefore it is (generally) only rational if there is an anti-competitive motive. The presumption is however rebuttable.

3.129 Because of the existence of significant common costs between BT's activities, BT will only recover costs overall if at least some of its charges are above LRIC. However, there may be many different ways of attributing these common costs to different services, none of which may be uniquely correct or reasonable. However, the maximum proportion of these common costs which it is reasonable for BT to recover from any given service is generally given by SAC, which includes all (relevant) common costs.

3.130 The concept of SAC has its origins in the theory of contestable markets[30]. A contestable market is one in which the complete absence of barriers to entry means that incumbent firms, even monopolists, are constrained to price no higher than average costs by the threat of entry. The highest price that a multi-product firm could charge for any individual good or service in a contestable market is given by the efficient SAC of that good or service. This is because a price above this level would attract entry by a single product firm which would compete the price down to this level. Moreover, there is a particularly high risk that entry attracted by prices which are above SAC could be inefficient, that is, increase the total costs of providing the service.

3.131 Therefore, if prices of individual services are materially out of line with costs we may need to address this through one-off reductions. However, in assessing possible one-off reductions on cost-orientation grounds, we need to balance this against

[30] See Baumol, W., Panzar, J. and Willig, R. Contestable Markets and the Theory of Industry Structure, (1982), New York, Harcourt Brace Jovanovich).

alternative (and potentially more proportionate) regulatory approaches. For example, BT could achieve any price adjustments without us having to mandate this through detailed one-off reductions. This might be appropriate, for example, where BT's charges are only marginally out of line with the cost floors and ceilings implied by its cost orientation obligation.

Our approach may be different in cases where we propose charge controls on services not previously subject to price regulation

3.132 We highlighted above the poor incentive properties of seeking to pass-back efficiency savings arising from a previous charge control immediately to customers at the start of the next control. However, if BT's services have not been subject to charge control requirements previously (e.g. AISBO), then this might justify looking at the issue of incentives differently. This is because the incentives in a charge control and a non-charge control environment could be different.

3.133 In the case of BT services such as PPCs where it has, in the past, been subject to a charge control, returns in the final year of that charge control are reflective of the cost reductions it was able to achieve under that control. If returns are above the cost of capital this may indicate that BT has increased its efficiency by more than expected. It is important to give BT incentive to do this, which one-off adjustments to starting charges could remove. By contrast, where prices have not been charge controlled before and BT has SMP, this could mean that BT has enjoyed excessive and persistent returns for some time (and has had more limited incentives to keep its costs under control). However, care must be taken because high profits can result from innovation either in new products or cash saving new technologies, not only uncontrolled exploitation of SMP.

3.134 If a service is being subject to a charge control for the first time, and the returns on those services are materially out of line with costs, we may therefore want to consider some one-off reductions. We argued above, that even if there are potentially high returns, one benefit of the glide-path approach is that it often better reflects the outcomes likely in competitive markets (whereby surplus profits are gradually eroded). However, we would have to assess, if we were to adopt a glide-path (even with a very high required real price reduction each year) whether this would entail persistently high returns for the duration of the charge control. In these circumstances, for services controlled for the first time, we may prefer one-off reductions (or a combination of one-off reductions and a glide-path).

3.135 Longer term incentives may also be relevant when considering one-off reductions where a charge control is being introduced for the first time. This could be particularly important for AISBO services. In particular, BT is proposing significant 21CN investment during the proposed timeframe of this LLCC (i.e. this investment will occur in the most part between 2009 and 2013). The 21CN could yield potential cost savings beyond 2013, but this investment could be deterred unless BT is allowed to benefit from the resulting cost savings. We discuss the implications of BT's 21CN investment and our glide path approach in more detail later in this Section in paragraph 3.156.

3.136 As noted above, AISBO services have not in the past been subject to charge controls. If as a result, charges are significantly out of line with costs, there could be a case for adopting one-off adjustments for this control. But this is not the only consideration, as we need to judge the materiality of this issue (for example, whether there is a risk of distortion to competition) and we also need to be assess this against the impact on perceptions of regulatory stability and incentives.

We propose to take into account BT's latest price reductions

3.137 As stated above, it may be the case that in response to our concerns, for example, over the cost-orientation of particular services, BT could anticipate this by proposing price reductions. We are aware for example, that BT has announced price reductions on its AISBO services. If we were satisfied that such pricing proposals addressed our specific concerns and would have reasonably similar impact, we anticipate that we would not need to propose further one-off reductions.

Stage 5: We calculate the value of X for the basket of services

3.138 Having forecast costs for each basket we then model the value of 'X' required to bring BT's current prices at the start of the charge control in line with forecasts costs in the last year of the charge control period. This would provide us with an initial value of 'X' for each of the charge control baskets reflecting expected cost reductions and the elimination of any super-normal profits existing at the start of the charge control period.

3.139 If we apply adjustments to starting charges under Stage 4 this would mean that we would have to adjust the value of 'X'. For example, if we applied a one off downward adjustment to the starting price this would mean that the value of 'X' required to bring prices in line with forecasts costs in the last year of the charge control period would be smaller in absolute terms.

3.140 In setting the values of 'X' and any one off adjustments to prices, we need to consider a number of factors, including: the benefits of regulatory stability; the incentive properties of RPI-X regulation; the need to ensure that any forecast assumptions are reasonably derived from available data; and that our proposals best meet citizen and consumers' long-term interests. The value of 'X' for the relevant basket also needs to ensure that BT is required to make real efficiency gains (as would be expected of a relevant comparator company). We have considered all of these factors in putting forward our proposals for the values of X and initial starting charges.

Specific methodology issues

3.141 In the above discussion we highlighted the key stages used to arrive at the relevant values of X for each of the service baskets we propose as part of this charge control. There are however some more specific detailed methodological or policy issues:

- How we propose to model costs for services where the charge control applies only to parts of the UK (e.g. where we propose to de-regulate high bandwidth TISBO services in London);
- The relevant Weighted Average Cost of Capital that we apply to leased lines; and
- As the technology neutral approach would exclude certain costs of new services from our charge control modelling (e.g. certain 21CN-related costs), how to allow for the recovery of the costs of new services (where these offer greater long-term efficiency improvements).
- In light of the introduction of new services, the revenue weights we should use to calculate compliance with charge control baskets.

3.142 We explain our proposed conceptual approach to these issues below.

We propose to use national cost data

3.143 For 34/45 Mbit/s and 140/155 Mbit/s TISBO services, reflecting our finding of separate geographic markets and our SMP findings in the BCMR Statement[31], we only propose to charge control BT's services in the UK excluding the CELA and Hull area. We propose to deregulate BT's services in the CELA. This raises issues for our charge control as we need to model the costs in the charge controlled area. However, BT does not currently collect financial data on a geographically differentiated basis to allow us to model the specific costs of serving the regulated area. This means that we need to find an appropriate modelling approach to set a charge control for a part of the UK only. We propose to address this issue by using BT's national cost data to estimate the base year costs for all regulated services. Our rationale for selecting this approach is explained further below.

3.144 In assessing how best to account for geographic markets, we considered that it was important to ensure that the following conditions were met:

- The combination of charge control in non-competitive areas and lack of control in CELA needs to be consistent with cost recovery taking all areas together;
- It should be consistent with fair and efficient competition in the competitive area; and
- It should be consistent with the protection of consumers in the non-competitive areas.

3.145 We wanted to ensure that the overall requirement for cost recovery (as per the first bullet) could be combined as far as possible with providing the right incentives to ensure efficient recovery between CELA and non-CELA areas. A particular issue is how the costs that are common across the competitive CELA and non-competitive parts of the UK are modelled in the control. We need to ensure that common costs not recovered in the competitive area are allowed for in modelling the charge control for the non-competitive area. However, we also think that it is appropriate for charges in the competitive area to make a "reasonable" contribution to common cost recovery.

3.146 In principle, the preferred option would be to model BT's costs based on actual geographic data for those costs in the CELA and non-CELA areas. However, it is unlikely that we could establish robust geographic cost data applicable only to those areas in which the charge control would apply in the time available.

- Such an approach would create a high burden on BT's cost accounting.
- In particular, BT would need to identify for each cost component where local variations in unit costs were thought to be likely.
- We would also need to assess the relative efficiency of BT's costs by geography; and there would be a number of detailed issues regarding the assumptions used to forecast costs (e.g. cost volume elasticities).

3.147 Given this high information barrier, we also considered whether it might instead be appropriate to use national average cost data and seek to apply adjustments to those costs to reflect likely geographic differences in costs. Such adjustments could be

[31] http://www.ofcom.org.uk/consult/condocs/bcmr08/

based, for example, on an analysis of competitors' costs in the CELA and non-CELA area in order to provide a benchmark for the competitive prices. However, it was considered unlikely that we could collect sufficiently comparable data from a range of operators for the data to be sufficiently representative. In addition such an exercise would also place high information burden on relevant stakeholders.

3.148 Given these informational difficulties, we instead propose to use as our starting point national base year data consistent with BT's RFSs. While we note that this may not capture some geographic differences in costs, we think that it will be broadly consistent with the objectives set out in paragraph 3.144, as explained below.

<u>Consistent with cost recovery taking all areas together</u>

3.149 In the longer term, if competition intensifies significantly in London, BT might lose further market share but would not be able to fully pass-through any remaining common costs in the non-CELA area. There is a risk therefore that the use of national cost data to set charges for non-CELA services might become inconsistent with overall cost recovery. However, such a risk would only be likely to materialise if there was a significant further reduction in BT's market share within the CELA. Based on our discussions with stakeholders as part of the BCMR regarding their investment plans, we think there is a low risk that much deeper competition for SDH/PDH markets will materialise such that BT's market share will reduce significantly.

3.150 An additional reason why the risk of further significant market share loss may be low is that deregulation will give BT greater freedom to compete effectively. Greater pricing freedom should enable it to make greater revenues in the CELA than in the previous charge control period, when, despite facing increasing competition, it remained subject to charge control regulation. We therefore believe that there should not be a need to increase the revenues BT is allowed to earn in the non-CELA market in order to recover more common costs there, at least unless competition increases markedly and unexpectedly in intensity.

3.151 We therefore think that the use of national cost data for the purposes of modelling costs within non-CELA areas is consistent with cost recovery (taking all areas together).

<u>Fair and efficient competition in the competitive area</u>

3.152 The effect of de-regulating the CELA is that it provides BT with greater scope to respond to competitive pressures for example through bespoke pricing of wholesale services. Even if prices were to fall in the event of deregulation, this could still mean that BT's sales in the CELA would be making a greater contribution to overall cost recovery. For example, pricing freedom could allow it to increase its market share such that any price reductions in response to competition should be profitable.

3.153 The cap on charges for non-CELA services, will also ensure that BT cannot offset any price reductions in the competitive areas through higher charges for non-CELA services. This is an important point as competing operators with smaller geographic reach cannot recover common costs outside the competitive area in London. Deeming that BT should be able to recover a reasonable share of its common costs in London should therefore allow fair competition in this geographic market. Otherwise, BT could undermine competition in London and leverage its market power from the rest of the UK.

Protection of consumers in the non-competitive areas

3.154 One concern is that BT might seek to recover costs common to CELA and non-CELA areas within the non-CELA area only. The concern would be that BT might reduce CELA charges by loading its common costs into the non-CELA area. This concern can be addressed by setting a charge control on the basis of national average costs, including an average rate of common cost recovery. Customers in the non-CELA will be no worse off than under the current national control, as prices would not then be higher in this area simply as a result of differential rates of common cost recovery.

3.155 We therefore consider that using national cost data would provide a reasonable basis for modelling costs in the charge controlled non-competitive areas.

Question 3.10 Do respondents agree with the use of national costs to set the charge controls for the 34/45 Mbit/s and 140/155 Mbit/s services in the non-CELA region?

We considered how technology neutrality allows for cost recovery of new services

3.156 We explained above that we propose to adopt a technology neutral approach for this charge control. This will entail excluding certain costs, such as BT’s 21CN investments from our base year and unit cost forecasts. We explain below, conceptually, how the charge control mechanism would allow BT to earn a return on those investments from new services that might ultimately be used to serve leased lines customers.

3.157 BT is currently in the process of rolling out its 21CN project. This will entail high initial capital expenditure. The technology neutral model can appropriately incentivise BT to make such investments (where this results in a better long-term deal for end-users in the form of greater efficiency and lower long-term prices than the existing legacy networks).

Recovery of “un-allowed” costs would be via the efficiency gains of the new platform

3.158 The technology neutral approach means that we would allow BT to keep any efficiency gains made during the charge control period (relative to our forecast efficient gains). Hence, if the costs of serving customers on the 21CN platform are much lower than we have forecast (using the technology neutral model), BT will be able to retain any additional profits associated with those cost savings.

3.159 In particular, our forecast efficiency gains are based in part on the past trends for the legacy networks. BT is forecasting that it will be able to realise, in the long-term, much larger gains from its 21CN investment. Therefore, if BT is successful in rolling out its 21CN investment, it may well benefit from particularly high returns under the control. This gives BT the incentive to make this investment if it is expected to reduce costs later, as would occur in a competitive market.

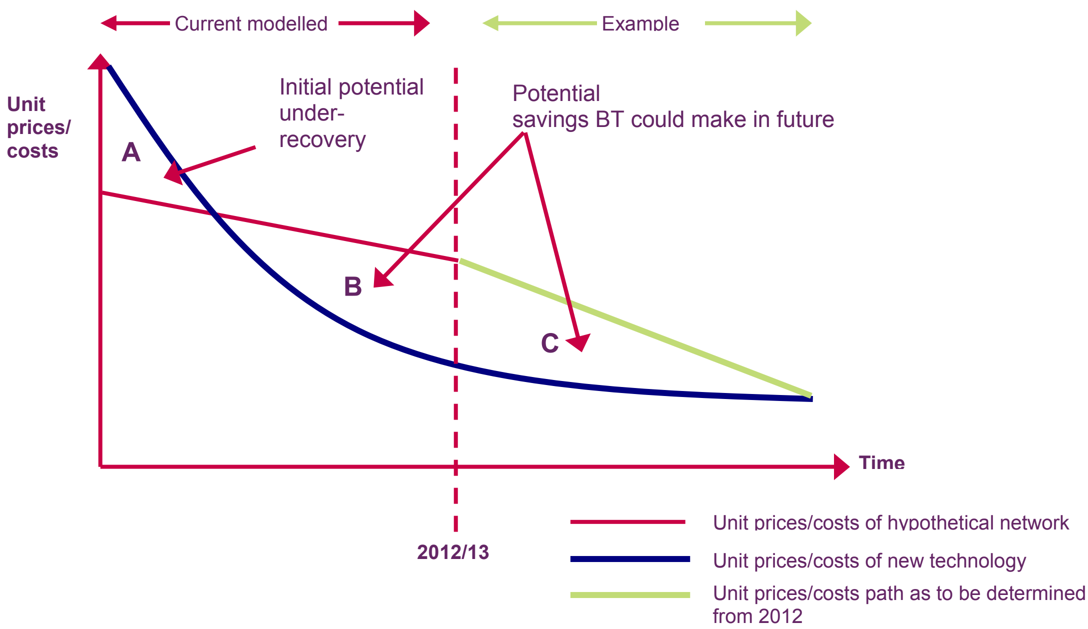
3.160 It would be via these additional profits that we would expect BT to recoup its investment. Indeed, in some cases there may be cost elements associated with the 21CN platform where it might be able to realise savings (for circuits supported on that platform) quite quickly (e.g. lower maintenance costs associated with enhanced resilience). Therefore, BT would be rewarded immediately for these efficiency improvements, as the charge control would continue to allow for costs of supporting those services as if they had remained on the hypothetical continuing network.

3.161 However, given the potentially high initial capital expenditure associated with this investment and general nature of the 21CN - which seeks to exploit economies of scale and scope to realise cost savings - a large part of the efficiency savings of the 21CN platform relies on sufficient customer migration from legacy products taking place.

3.162 If it takes some time for customers to migrate to 21CN, efficiency savings will initially be smaller relative to the hypothetical continuing network. Indeed, initially at least, (when measured on an accounting basis, with straight-line depreciation or similar) [32] the unit costs of 21CN may be higher than if BT provided these services on its legacy platforms. We illustrate these issues below by way of an example, before considering whether and how we can deal with these cost recovery issues in the context of our current charge control.

3.163 An illustrative cost profile for the legacy and 21CN platforms is set out in an example below.

Figure 3.2 Approach to cost recovery on new services



3.164 We first consider the time period up to 2012/13 (when the charge control would end) as shown in Figure 3.2. In this figure, the red line shows the path for prices implied by an RPI-X charge control based on costs of the hypothetical continuing network. The path implied by the red line is assumed to be consistent with bringing prices in line with forecast unit costs (of the hypothetical continuing network) by the end of the charge control period (e.g. in 2012/13).

3.165 The blue line shows a possible profile for 21CN related costs based on volumes gradually migrating to this new service platform over the four-year period. There is a decline in costs reflecting, for example, greater potential to exploit economies of

[32] The issue arises particular because of high initial capex costs associated with 21CN combined with accounting depreciation. Under approaches to accounting depreciation the cost of an asset is usually spread evenly over year of its life. If volumes are low in some years, unit costs will initially be high. Under economic depreciation approaches, the cost of the asset is spread according to the volume of output and unit cost do not vary with asset utilisation.

scale and scope and the potential efficiency benefits of the new network. Hence, for the 21CN, unit costs will decline as a greater number of circuits are supported on BT's 21CN products. Initially however with a lower volume of customers on the 21CN platform, unit costs may well be above those of its legacy products.

3.166 As shown in Figure 3.2, in the early part of the charge control period the blue line (21CN unit costs) would be above the red-line (the implied unit cost had all customers remained on the hypothetical continuing network). As BT would only be able to charge up to a maximum of the charge control (i.e. the red line), it would incur an initial accounting loss on any 21CN services.

3.167 However, once sufficient customers migrate to the 21CN platform, BT will be able to realise savings arising, for example, from economies of scope and scale on the 21CN platform. Hence, BT would be able to keep any additional profits associated with the savings arising from the more efficient network. These allowed retained profits are represented by Area B in Figure 3.2.

3.168 Indeed, the adoption of the 21CN platform could potentially result in benefits of migrating, for example, Ethernet customers currently on dedicated fibre onto a shared IP network architecture. If BT is able to migrate customers onto the 21CN quickly, the efficiency savings that could accrue to it over the charge control period could be significant. Therefore, there is some upside benefit if migration happens faster than shown in the above Figure. On the other hand, were migration to be slower, there is a risk that the efficiency benefits of 21CN (relative to the legacy networks) would take longer to be realised. We consider below the implications of a longer payback period for our charge control.

However there may be a potential for a longer pay back period

3.169 As stated above, for BT to recoup its investment by 2012/13, it would need to offset any initial under-recovery with sufficient subsequent returns (i.e. in Figure 3.2, Area B would need to exceed Area A in present value terms). However, as discussed above, it is possible that this payback period would potentially take longer than four years (particularly under slower migration scenarios). Therefore, for BT's investment to be viable it might require BT to continue to price above the accounting cost beyond the period of the initial charge control. In these circumstances, BT would require that the Areas B and C combined exceeded Area A.

3.170 If BT's payback period is over a longer timeframe than the four years of the initial charge control, this creates a degree of uncertainty, which might impact on BT's investment decision. In particular, in making its investments, BT does not know what regulation, if any, will be in place from 2012/13 onwards. If it thought that, at the start of a new charge control, Ofcom we would impose starting charge adjustments (for example that reduced 21CN prices to costs implied by the blue line), it would be concerned that it would not earn the return it needs (potentially represented by Areas B and at least some contribution from Area C).

3.171 On the other hand, if in Figure 3.2 we adopted a glide path approach (under the next charge control), such that prices were brought into line with costs by theend of the next control, this could be consistent with BT earning its required return on these investments. This is shown in Figure 3.2 above as the green line, which shows that prices would converge to costs by the end of the control. It would also mean that the full benefits of efficiency gains of new services (e.g. on 21CN platform) would be passed to consumers by the end of the next charge control period. It could also be consistent with BT earning a sufficient return on its 21CN investments (and potentially higher rates of return depending on the costs and prices in Figure 3.2).

Further commitments for future controls are not possible

3.172 As discussed above, uncertainty over future possible regulation might impact on whether BT proceeds with certain investments. We explain below that we cannot provide firm commitments for any prospective future charge control. However, we want our charge control to provide the right incentives for BT to make such investments, where this results in customers benefiting through efficiency savings (over a medium to long-term timeframe).

3.173 In the above example, we highlighted that BT's recovery of some of its 21CN investment might rely, in part, on long-term cost recovery. If BT was concerned that at the time of the next control we regulated prices down to the unit costs prevailing at the end of this charge control period this scenario might not be consistent with its required cost recovery profile.

3.174 One approach might be to offer some regulatory assurances to guarantee that we would not make any starting charge adjustments (in the context of a new charge control). 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[33]. Any decisions would have to be made, at the time, taking into account all relevant factors and in line with our relevant statutory duties, particularly in respect of the long-term interests of citizens and consumers.

3.175 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 paragraph 3.18, why we think a timeframe of four years provides the right balance between different objectives. On the one hand, we want to provide incentives for BT to reduce its costs via efficiency gains (productive efficiency). On the other hand, we want BT to pass on at least some those gains to customers and to encourage efficiency in terms of prices being in line with costs (allocative efficiency) over a reasonable timeframe (for example via a glide path at the time of the next control). In addition, the longer the duration of the control the greater the challenge of ensuring we obtain accurate volume and cost forecasts.

3.176 When setting new charge controls, Ofcom has, as a general rule, sought to bring prices down to cost over the duration of the charge control by means of a glide path. We have given high 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 in this review has been to focus any starting charge adjustments only where there are particular regulatory concerns that might outweigh the benefits of the glide path approach.

3.177 As stated above, we cannot provide commitments or fetter our discretion over the possible approach we might take under future possible charge controls. However, we discuss in more detail the circumstances in which starting charge adjustments might

[33] This also assumes that BT would be found to have SMP following a further Market Review of Business Connectivity markets and that we think that some form of charge control continues to be appropriate, which may not necessarily be the case.

be made in paragraphs 3.117 to 3.137. This may help provide further clarity on our thinking on this point.

We considered the relevant Weight Average Cost of Capital ("WACC") for leased lines services

3.178 Ofcom's practice is to set 'X' so that the value of BT's rate of return projected for the last year of the price control is equal to BT's weighted average cost of capital (WACC) given the forecasting assumptions made. This approximates to the workings of a competitive market in which excess profits are gradually eroded by competition.

3.179 We therefore need to decide on an appropriate value for the WACC to use in setting charge controls for the TI and AI services, which are the subject of this consultation.

We are considering the WACC in a number of other consultations

3.180 We apply a consistent approach to assessing the cost of capital for all BT's services for which we currently proposing to set a charge control or a new pricing framework. For example, in addition to this consultation covering wholesale leased line services, we are currently consulting on an appropriate pricing framework for certain Openreach services, including Wholesale Line Rental ("WLR") and Metallic Path Facilities ("MPF"). As part of this latter consultation applying to WLR and MPF, we are consulting on estimates of BT's WACC.

3.181 A detailed discussion of Ofcom's most recent estimates of the WACC for Openreach and the rest of BT was set out in the first consultation document *"A new pricing framework for Openreach"*, published in May 2008[34] (the "OFFR First Consultation"). A further discussion, reflecting responses to the first consultative document is included in the second follow-up consultation document, published in December 2008 (the "OFFR Second Consultation"). Because the details of our approach to estimating BT's WACC are set out there, we have not repeated them all here.

We estimated BT's WACC across different parts of its business

3.182 Our general approach to estimate the WACC uses the capital asset pricing model ("CAPM")[35]. As set out in the OFFR Second Consultation, the resulting range of estimates for Openreach's pre-tax nominal WACC applicable to its WLR and MPF services is 9.25 – 10.75%. The proposed range for the pre-tax nominal WACC for the rest of BT is higher, because these services are higher risk (reflected, in the CAPM framework used, in a higher beta value). The proposed range for the WACC for the rest of BT was 10.25 – 11.75%.

3.183 Our proposed updated ranges, and the range of estimates of underlying parameters from which they are derived, are summarised in the table below (taken from the OFFR Second Consultation).

34 http://www.ofcom.org.uk/consult/condocs/openreach/
35 http://www.ofcom.org.uk/consult/condocs/cost_capital2/statement/

Table 3.1 Proposed ranges for Weighted Average Cost of Capital for BT

	Openreach	*Rest of BT*
Equity Risk Premium	*4.5 – 5.0%*	*4.5 – 5.0%*
Equity Beta	*0.75 – 0.85*	*0.95 – 1.05*
Risk-free rate	*4.1 – 4.8%*	*4.1 – 4.8%*
Debt premium	*2 – 3%*	*2 – 3%*
***Pre-tax nominal WACC*[36]**	***9.25 – 10.75%***	***10.25 – 11.75%***

3.184 In proposing these ranges, we have, amongst other things, taken account of Section 3(4) (d) of the Communications Act 2003 which requires Ofcom to have regard to the desirability of encouraging investment and innovation in relevant markets when exercising our duties. Our duty to promote competition under Section 4 of The Act is also an important factor to consider. We would also note that competition at the retail level may provide a stimulus for innovation. The ranges proposed for the WACC are intended to allow a reasonable return on investment and to encourage future efficient investment, in line with Ofcom's duties.

Our proposed approach is to use BT's WACC for the LLLC

3.185 We explain below why we think that the cost of capital appropriate to BT's current portfolio of TI and AI services should be the "rest of BT" rate, that is, within the range of 10.25% to 11.75%.

3.186 We are of the view that neither the AI basket of services nor the TI basket of services should be regarded as similar to BT's access network for the purposes of an assessment of risk levels, even though AI services are provided by Openreach. Since the retail leased lines services from which the demand for these wholesale services is derived are mostly used by SME and corporate customers, future demand for these services, particularly in the case of the demand for new circuits, is likely to be more closely correlated with the economy-wide level of economic activity than other access services. This view is in line with our conclusion in "*Ofcom's approach to risk in the assessment of the cost of capital*" in 2005.

3.187 Following from the above, our view is that the cost of capital appropriate to BT's current portfolio of TI and AI services should be the "rest of BT" rate, that is, within the range of 10.25% to 11.75%.

We would require additional evidence to support a higher WACC

3.188 In the next charge control period, BT may invest in AI backhaul capacity specifically to support high speed broadband services. This investment may be subject to higher than normal risk because of uncertainty over future demand for these services. If this demand does not in fact emerge, the additional investment may be "stranded". We

[36] We consider it prudent to round our range estimates of the WACC to the nearest 0.5%.

have therefore considered whether we should allow a higher cost of capital for these investments.

3.189 Our view is that it may sometimes be appropriate to treat some large companies such as BT as being a group that consists of a number of firms, or projects, each with its own unique risk profile, that operate together under common ownership. It may therefore be appropriate to reflect project-specific variations in risk in the financial analysis we use to estimate BT's cost of capital.

3.190 We do however believe that the onus is on BT to justify use of a higher project-specific cost of capital on a case by case basis. Conditions under which we are more likely to be persuaded of the case for this were set out in the OFFR First Consultation.

3.191 Our view is that the case for assessing risk on a project-specific basis is likely to be stronger under the following circumstances:

- There are strong a priori reasons for thinking that the systematic risk faced by the project is significantly different from that faced by the overall company (e.g. different income elasticities of demand and/or stability of cash flows);

- There is evidence which can be used to assess those variations in risk e.g.:

  a) There are benchmark firms that are close to "pure play" comparators in terms of having similar risk characteristics to individual projects within the firm[37];

  b) Other quantitative analysis can be used to assess variations in risk;

  c) Data on the firm is supplied at a disaggregated level (accounting separation); and

  d) Correctly identifying variations in risk, and reflecting this in an adjusted rate of return, is likely to bring about significant gains for consumers.

Openreach's proposed alternative to our proposals

3.192 In its response to the OFFR First Consultation document, Openreach did not make the case for a higher cost of capital on a project-specific basis. Instead, it took issue with the project-specific approach favoured by Ofcom. BT stated:

> "BT has major difficulties with this approach and considers that...it would probably be unworkable in practice, unpredictable in its consequences, and...reduce investment incentives".

3.193 BT instead proposed an approach which, it stated, has been used by the CC/CAA to set charges for airport use. In summary, this approach would make explicit allowance for the potential asymmetry in welfare losses arising from disincentivising investment versus allowing some excess returns. Using this method, BT proposed a higher cost of capital than Ofcom to apply to Openreach and the rest of BT across the board, not just for higher risk projects.

[37] A pure-play comparator could refer to firms where the only line of business is the supply of the product in question, in this case high-speed broadband.

3.194 Our view is that the methodology proposed by BT is not comparable to ours. BT uses relatively very wide ranges for some of the inputs of the WACC, particularly the Equity Risk Premium ("ERP")[38], which is assumed by BT to lie between 3% and 7%, and the beta (the extent to which the risk faced by the relevant part of BT's business is correlated with the market risk), which is assumed to lie between 0 and 2. Our methodology, by contrast, is to determine relatively narrow plausible ranges for each of the inputs (see Table 3.1 above). This allows us to derive a reasonable range for the WACC without the need, for example, for complex statistical simulation with assumed probability distributions.

Our modelling of the WACC does takes into account possible asymmetry

3.195 In determining appropriate ranges for the WACC, it is however necessary to strike a balance between the risk that setting rewards too low could lead to discretionary investment being discouraged, and the risk that setting rewards too high could lead to consumers paying prices that are too high (or investments that are not fully justified by demand).

3.196 We agree that the downside of setting an ERP too low is worse (in terms of potential welfare impact of disincentivising investments) than the downside of setting the ERP too high. We therefore tend to favour setting the ERP towards the upper end of the 4 to 5% range. We have therefore allowed for the asymmetry described by BT by selecting values for parameters towards the top end of relevant ranges.

3.197 We do not accept BT's proposed methodology, either for setting the range for the WACC to apply in general, or as a justification for a higher cost of capital on a project-specific basis. However, we do not reject entirely the possibility that such a justification on a project-specific basis may be possible, along the lines set out above in paragraph 3.191.

3.198 As noted above, it may be that higher than normal risk is associated with the investment likely to be undertaken in EBD/BTL products (in the AISBO basket) over the next four years. In principle, this could justify a higher project-specific cost of capital for this investment. However, at present we remain to be convinced that this justifies a higher cost of capital for the AISBO basket in the next charge control period. Firstly, it is unclear that investments to support high speed services will be significant in this period, since NGA roll out will still be in its early stages.

3.199 Secondly, a higher cost of capital based on the above arguments would need to be accompanied by high volume growth assumptions, to reflect the growth of high-speed broadband services. We do not believe this is reflected in our base case volume forecasts.

3.200 In addition, to quantify any adjustment to the WACC, we would require an estimate of the share of the AISBO asset base which is related to high speed broadband, and the extent to which the risk associated with high speed broadband is higher than allowed for in the standard cost of capital (for the "rest of BT"). The latter seems particularly hard to estimate.

3.201 Lastly, backhaul capacity on an NGN can be expanded at relatively low marginal cost, which reduces the potential cost impact of forecasting errors.

[38] The equity risk premium ("ERP") is the expected (ex ante) or realized (ex post) difference between the return on the market portfolio and a riskless investment.

3.202 Therefore, on current information, we propose to apply a WACC in the range 10.25% to 11.75% to TI and AI services. However, we will consider in the light of any evidence provided in response to this consultation, whether to allow a higher WACC on AI services to reflect project-specific risk arising from uncertainty about demand for new high-speed broadband services.

Question 3.11 Do respondents agree with our proposed ranges for the WACC for TI and Ethernet services?

Certain discounts will not contribute towards BT meeting its charge control obligations

3.203 In this part, we discuss our proposed treatment of certain discounts namely: volume, geographic and term discounts. We concluded in the BCMR Statement that there would be a general presumption that volume discounts would breach BT's SMP conditions, so these are not considered in detail in the context of this charge control. In respect of geographic discounts, the charge control would allow BT to offer variations by location in the price of wholesale products but we propose that these discounts would not count towards meeting the price changes required by the charge control. As Openreach is considering offering term discounts (which offer price reductions where wholesale customers contract for a minimum term), we discuss below their possible treatment under this charge control.

Volume discounts

3.204 We concluded in the BCMR Statement that we would have a general presumption that volume discounts[39] are in breach of an SMP requirement not to discriminate unduly. If BT were to offer volume discounts for its wholesale products, the main beneficiary of those discounts would be downstream providers with the highest market shares. In many markets this is likely to be BT itself. Volume discounts could therefore be a cause for concern due to the potential for such discounts to favour the largest players downstream, in particular BT itself, which would have a detrimental effect on competition.

3.205 Given the conclusions in the BCMR statement, we have not further considered the treatment of volume discounts under the charge control.

Geographic discounts

3.206 In the BCMR Statement, we identified separate geographic markets for the Central and East London Area ("CELA") in respect of circuits above 8Mbit/s and up to and including 150Mbit/s, where we found BT not to have SMP and where no ex ante regulation was therefore applied. For the wholesale markets for TISBO and AISBO services outside the CELA region, we found BT to have SMP and, in this consultation document, we propose subjecting them to a charge control. We also found the AISBO and TISBO markets outside the CELA region to be national (excluding the Hull area).

3.207 For the geographic markets where we have found SMP, the underlying costs and competitive conditions will not be completely homogenous throughout the UK (even outside the CELA). In the last PPC charge control, we thought it was appropriate to give BT, within the context of that control, the ability to set differential charges

[39] Specifically, in the context of the BCMR statement we referred to concerns over "saw tooth" or "all-unit" volume discount schemes.

between different geographic areas. We propose the same approach for this leased lines charge control.

3.208 Within this charge control, we also propose an important safeguard to avoid BT having too much discretion over the way it can set charges in the geographic areas where it has been found to have SMP. In particular, BT could have an incentive to concentrate price reductions in more competitive areas and offset these reductions against smaller reductions (or increases) in less competitive areas. We need to ensure that BT is prevented from charging above the level required by the charge control in instances where competitive pressures are particularly weak. Over each relevant year of the control, we want to ensure BT is not be able to levy a charge above the charge control cap in a particular geography offset by lower prices in a more competitive area. For example, it would be undesirable for BT to raise prices for low-bandwidth services outside of the CELA and use this to “cross-subsidise” its low-bandwidth services in the CELA.

3.209 In order to prevent such behaviour, we propose that in setting geographically differentiated charges, any price reduction below that mandated by the proposed charge control in any particular area should not contribute towards BT’s charge control obligations. Therefore, in calculating compliance with the charge control, the revenues from, for example, low bandwidth services in London would be calculated at the undiscounted rate (i.e. the rate that applied to these services outside of the London area).

3.210 This would allow BT the freedom to charge in a way that it thinks more accurately reflects the costs incurred and to respond to the local characteristics of competition that exist in these markets. Moreover, given the level of cost differences that may exist and the extent of competition in some areas, BT’s ability to compete could be limited if it were required to maintain nationally uniform prices. Hence, geographically differentiated prices may reflect BT responding legitimately to cost differences in the face of competition.

3.211 In applying our “geographic revenue rule” this gives BT scope to respond to competition but not at the expense of those customers in less competitive areas. For any products or services that fall within the scope of the charge control and that are sold at a discount by BT on the basis of geographic location, BT would be required to use the undiscounted charges and report the revenues from such products and services on the basis that no discount was offered. This would apply both to the charges in the relevant charge control year for calculating the percentage change in charges, and for calculating the weights for each of the products and services in the basket, i.e. BT’s revenue for that product and service in the relevant prior financial year. The mechanisms by which the revenues for charge control purposes are calculated are set out in the proposed charge control Conditions G4, GG4, H4, HH4 and GH4.

3.212 We propose a similar approach for both our TI and AI baskets. It is important to note that in addition to this charge control safeguard, BT would still have a duty to ensure that it continues to comply with its other ex-ante obligations and its general obligation to comply with competition law.

3.213 For the avoidance of doubt, geographic markets where BT was found not to have SMP (e.g. high and very high bandwidth (155 Mbit/s) TISBO markets in the CELA) will not be subject to any charge control restrictions. Therefore, any price reductions which BT makes in the High and Very High Bandwidth CELA markets would not contribute in any way to its compliance with the charge control. BT will have to demonstrate its compliance with the charge control based on the prices it charges solely in SMP areas.

3.214 Therefore, only the geographic discounts that BT applies to services within SMP areas subject to charge control would be subject to the “geographic revenue rule” explained above.

Term discounts

3.215 Openreach is also considering introducing term discounts to some of its Ethernet services. We outline below our consideration of term discounts and why we think that they should not contribute to the charge control.

3.216 As part of our discussions with Openreach on its future pricing plans for AISBO services, it highlighted that, in response to demand from its wholesale customers, it was considering offering "term discounts". This would entail Openreach offering discounts where those customers sign up to longer-term rental agreements on some of its AISBO charges (principally its WES, BES and EBD services).[40] For example, relative to the rental charge for AISBO circuit with a minimum contract period of 1 year, it could offer a discount of up to ✂% in return for signing a 5 year contract and a discount of ✂% for a 3 year contract.

3.217 The proposal to offer term discounts raises two key issues in the context of this charge control and regulation of BT’s leased lines services. First, we need to consider whether there any potential competition or regulatory concerns regarding this form of discount (which would therefore potentially prevent BT offering such charges). Secondly, what account, if any, should we take of any price reductions associated with term discounts. In other words, would it be appropriate for term discounts to contribute towards compliance with the charge control.

We need to consider the competition concerns that term discounts could give rise to

3.218 In principle, this form of discount could raise competition concerns, for example:

- If BT’s downstream operations were at an advantage compared to downstream competitors. In principle, the largest beneficiary of term discounts could be BT’s downstream operations, as they may see no disadvantage in being contractually tied to Openreach for up to five years. If so, it could provide BT with the ability to undercut downstream competitors in ways that they could not match (where those competitors rely on wholesale services from Openreach, but do not wish to sign up to the discounts).

- Term discounts may increase the barriers to entry/growth for upstream competitors to Openreach, if purchasers of wholesale services are tied into longer term contracts (and so increasing the switching costs).

3.219 It is not necessarily the case, however, that we should automatically view all forms of term discount as harmful to consumers. To assess this further we have looked at guidance on competition law relevant to this issue. This wider information suggests that the relevance or importance of the term discount would depend on the precise details of the price scheme offered and the applicable market circumstances.

[40] Openreach would offer this discount on a per circuit basis, so an individual CP would not have to sign long-term contracts on all circuits purchased from Openreach to obtain this discount.

3.220 The OFT's guidelines on "Assessment of conduct" (under the Competition Act) highlight that discounts may be beneficial, for example because they reflect efficiency savings or are part of a fair competitive strategy. In this respect, the OFT guidelines note that "it is often important to consider whether the scheme is commercially rational only because it has the effect (or likely effect) of foreclosing all, or a substantial part, of the market that is open to competition".

3.221 In addition to the above guidelines we have also referred to other relevant papers related to this topic. For example, the paper by O'Donoghue and Padilla "*The law and Economics of article 82 EC*"[41] deals with loyalty discounts (specifically, volume ("all-unit") discounts that have a loyalty inducing effect). It highlights the importance of duration of those contracts when assessing possible harmful effects on competition. For example, they state (p.391) that "the reference period for which the all-unit discount applies can have an important bearing on the switching cost faced by rival firms. A longer reference period generally creates higher switching costs...case law has therefore mainly intervened in the case of relatively long duration reference periods - typically one year. This is because the switching costs faced by rivals are usually lower in the case of a short reference period and, as importantly, rivals have more frequent opportunities to re-bid."

3.222 This paper therefore suggests that the duration of contracts can be an important issue (when this has the effect of raising switching costs). The European Commission also completed a sector inquiry in 2007 into European electricity and gas markets, which is of relevance as it included an assessment of the effect of long-term contracts. Following on from this investigation, the European Commission sought further measures on the duration of contracts to remedy competition problems in electricity and gas markets. For example, it accepted the commitments made by Distrigas - the largest gas supplier and importer in the Belgian gas markets - in October 2007, which included limits on the maximum length of its gas supply contracts. The commitments set out that new contracts with gas "resellers" will not exceed two years (five years for industrial consumers and electricity generators).

3.223 Clearly, the above contract durations were determined in the context of the particular competition concerns in those markets. The Commission also highlighted that it would not necessarily consider all long-term contracts as illegal. The contract lengths agreed with Distrigas nevertheless provide useful benchmark for relevant "thresholds" applied in another regulated sector. The Commission also highlighted that in assessing the compatibility of long-term supply contracts with competition rules, it would consider the following:

- The market position of the supplier;
- The share of the customer's demand tied under the contract;
- The duration of the contracts;
- The overall share of the market covered by contracts containing such ties; and
- Efficiencies.

3.224 Therefore, we might be less concerned with term discounts where these are consistent with fair competitive strategy (as also suggested by the OFT guidelines) and that yield efficiency benefits. We have not (so far) received any compelling

[41] R O'Donogue and A J Padilla, *The Law and Economics of Article 82 EC*, 2006.

arguments from BT that explicitly identify the key efficiency benefits of “term discounts”. However, Openreach has argued that its wholesale customers have requested longer-term discounts, reflecting the pressure those wholesale providers face from their retail leased lines customers. The proposed term discount might therefore be a fair competitive strategy, and a deal that Openreach’s wholesale customer will demand of any supplier of AISBO services in this market. Therefore, from this perspective, term-discounts could reflect the “normal part of business” of competing in these markets.

3.225 However, the above references suggest that competitive impacts of term-discount would be of concern where they have the effect of foreclosing the market (or a significant part of the market) or raising barriers to switching (by tying customers). This latter issue may become more significant the longer the duration of the term discount. In the case of Openreach's proposal, although not including a volume element, Openrwach’s initial proposals suggest that it would require customers to sign three or five year contracts to benefit from the discount.

3.226 A three to five year duration is longer than some of the reference periods referred to above, for example, the O'Donoghue and Padilla case refers to a one year timeframe. Some differences may exist, however, between the specific case referred to in that paper (which referred to “all-unit” volume discounts) and term discounts. In the case of term discounts, we understand that Openreach’s proposals would be to offer this discount on a per circuit basis. So, even if it some contracts had the effect of tying-in customers by raising switching costs, it may be that, as each term discount is applied on an individual circuits basis this would not have the effect of tying a significant proportion of the wholesale customers.

3.227 On the other hand, it may be the case that for CPs to be able to continue to compete in retail markets they would have to ensure a sufficient proportion of circuits were on long-term deals. In addition, the main beneficiary of the discounts in this case may be BT's downstream operations, as the largest customer and one which would presumably see no disadvantage in being contractually tied to Openreach for five years. BT's downstream rivals could be faced with two choices both of which might impact on competition. One choice would be to sign up for a long-term wholesale contract, which could make it difficult for entrants at the wholesale level to get new customers. The other choice would be not to sign the contract and face a disadvantage when competing with BT in retail markets.

3.228 One factor mitigating against the above concern is that it is possible that rivals already in the upstream market (in which BT has SMP) could offer similar deals. However, increased switching costs may make future expansion or entry more difficult, tending to entrench SMP and "chill" the competition in low bandwidth AISBO markets.

3.229 The above discussion suggests some factors point towards possible competition concerns (but this issue is not clear cut). However, the demand for term discounts by a number of industry players might point to efficiency benefits (that can be passed onto end-users). In order to assess these issues, we have considered below the principles we have applied in other instances where BT Group has offered different types of discount (such as geographic or volume discounts).

Can we draw any parallels from our approach to geographic and volume discounts

3.230 Our current approach to geographic discounts and volume discounts relating to leased lines was originally considered in the 2004 PPC statement.[42] We have applied a similar approach to geographic and volume discounts in this document, see paragraphs 3.204 to 3.214.

3.231 Under the previous PPC charge control, BT offered geographic discounts for terminating circuits sold in the CLZ. BT's discounts in the CLZ were thought to reflect characteristics of the London area including:

- Shorter average circuit length;
- Shorter extra required dig per customer by BT;
- Different unit costs in the London area; and
- A differing level of competition being faced by BT in the London area.

3.232 A key part of the justification for allowing BT to offer geographic discounts was the view that costs were likely to differ between areas and that BT should be allowed to reflect these differences in prices. However, in order to avoid giving BT an incentive to lower prices in more competitive areas, offset by price rises elsewhere, geographic discounts were not permitted to count towards meeting the charge control. This suggests that the geographic discounts would be self-financing.

3.233 We have set out above that we would not allow volume discounts in leased lines markets, as BT's retail-arm would inevitably be the largest beneficiary of this type of discount.

3.234 Term discounts seem to lie somewhere between the above two cases. On the one hand, we have not seen evidence of the cost justification or efficiency savings associated with term discounts. So far, Openreach has only referred to pressure from some of its customers. However, some of BT's competitors might be disadvantaged in downstream markets. On the other hand, the potential for term discounts to be discriminatory is not as obvious as in the case of volume discounts.

We propose term discounts do not count towards BT meeting its charge control cap

3.235 We do not consider that term discounts (that attach conditions relating to contract duration) should count towards meeting the charge control requirements that limit the maximum price changes allowed. The charge control requires overall reductions in the price of BT's services and BT should not be able to provide these cuts only where long-term contracts are signed. We are concerned that Openreach might have an excessive incentive to offer these discounts if they count towards regulatory requirements.

3.236 If there are genuine efficiency benefits to term discounts, we anticipate that Openreach would still be able to make available optional long-term contracts with discounts, on top of required cuts. If the term discounts reflect cost savings (which seems to be unclear) or otherwise lead to efficiency gains for Openreach, then a reasonable starting point is that the discounts should be self-financing[43]. This is

[42] http://www.ofcom.org.uk/consult/condocs/ppc_charge_control/statement/
[43] We have in any case based our assessment of volume forecasts and charge control cost modelling on the assumption that no term discounts would apply. Therefore, even if we were to allow these term

entirely consistent with the approach adopted in BT's geographic discounts as discussed in paragraphs above.

Proposed approach to term discounts

3.237 We highlighted above some of the ways in which term discounts could affect competition. However, we also noted that a number of Openreach customers have asked for this form of discount, reflecting demand for such contracts from retail customers. Our initial view is that we would not necessarily object, at this stage, to the introduction of term discounts, if there were no (valid) objections from competitors (in response to this consultation, or as a complaint). We propose, however, that discounts (that attach conditions relating to contract duration) would not count towards meeting the regulatory requirements for price reductions. This is consistent with the approach we have adopted for geographic discounts.

Question 3.12 Do respondents agree with our proposed approach to discounts, in particular the proposed treatment of geographic and term discounts under the charge control?

Conclusions

3.238 We propose :

- RPI-X control for a four-year duration;
- Technology neutral approach for TISBO and AISBO services;
- The use of prior year revenues control for the TISBO charge control (as applied in the PPC control 2004-2008);
- Changes to the charge control formula for AISBO services (an average revenue control for individual AISBO services combined with a prior year weighted price cap across the overall AI basket);
- The use of BT 2006/07 regulatory accounts as the starting point for our cost base (subject to relevant adjustments proposed in Sections 4 and 5);
- The use of national data to model costs;
- Forecasts of costs based on BT relative and prospective efficiency; changes in volumes and the impact of this on its costs;
- Values of X based on final year costs and our view of starting charges (including any possible one-off adjustments);
- A WACC in the range 10.25% to 11.75% to TI and AI services; and
- BT can offer geographic and term discounts (but any price changes associated with those discounts would not count towards the charge control).

---

discounts to count towards our charge control, we would have to account for the impact on BT's volumes and costs.

Section 4

Proposed charge controls for TI terminating and trunk services

Introduction

4.1 This section considers the following key issues in developing the charge controls for TI terminating and trunk services:

- The appropriate design of charge control baskets;
- BT's recent restatement of volumes and revenues in the 2006/07 Regulatory Financial Statements ("RFSs") for some TI terminating and trunk services and the financial impact of this on the charge control;
- Our proposed cost adjustments to BT's 2006/07 base year data;
- The level of the starting charges of some TI terminating and trunk services; and
- Ranges for the value of X for the proposed baskets of services.

4.2 We note that although TI terminating and trunk services are discussed separately to AISBO services, our analytical approach and modelling methodology are applied consistently across the two service categories.

We propose a single basket including TI terminating and trunk services

We propose a single basket for TI terminating and trunk services

4.3 We propose a single basket (the "TI basket") which includes the following services:

- Wholesale low bandwidth TISBO (≤ 8 Mbit/s) – connection and rental;
- Wholesale high bandwidth TISBO (> 8 Mbit/s and ≤ 34/45 Mbit/s, outside CELA) – connection and rental;
- Wholesale very high bandwidth TISBO (> 34/45 8 Mbit/s and ≤ 140/155 Mbit/s, outside CELA) – connection and rental; and
- Trunk (all bandwidths) – rental.

4.4 In addition we propose imposing a sub-cap on TI terminating services, which requires BT to limit price increases on this sub-basket to RPI-0%.

There are a number of reasons why we propose a combined TISBO/trunk basket

4.5 As discussed in Section 3, paragraph 3.78, in determining the appropriate number of charge control baskets we need to balance two potentially opposing considerations:

- **Efficient pricing:** Creating more baskets than is appropriate to the competitive conditions in the markets being regulated would potentially reduce the scope for BT to set its prices for its products and services in an efficient manner; and

- **Competition:** Where the services being considered face different competitive conditions or BT does not use the same wholesale inputs as its rivals, BT may seek to set prices in a way that undermines competition.

4.6 If wholesale services within a basket have different competitive conditions and, in particular, where some of those services are not used by BT, then BT may have incentives to rebalance prices within a combined basket in a way that harms competition. However, as we highlighted in Section 3, we may be able to address these concerns through the use of sub-caps within the wider overall basket.

Competition concerns in TISBO and trunk markets may tend to point to separate baskets

4.7 A combined basket would be appropriate if CPs always purchased TI terminating and trunk services together and the competitive conditions were the same for both markets. These conditions do not hold and so the case is more finely balanced.

4.8 In the wholesale market definition in our BCMR Statement, we discussed the complementary nature of TI terminating and trunk segments and the greater potential for competition in respect of trunk markets.[44] As many CPs have their own core networks, it will not always be the case that a CP will need to purchase trunk when they require a TI terminating segment (as they may be able to self-supply trunk). On the other hand, a CP purchasing trunk from a third party will also need to purchase a TI terminating segment.

4.9 However, given that trunk markets are potentially more competitive than TI terminating segments, we might be concerned that a combined basket provides scope for BT to price anti-competitively (“costless predation”). Under this approach BT may use increases in TI terminating prices to “fund” decreases in trunk prices, which a wider combined basket would not prevent. Concerns over anti-competitive reductions in trunk prices may point towards separate baskets.

Efficient pricing and cost allocation issues tend to point to a combined basket

4.10 In the BCMR Statement, we re-defined the boundary between TI terminating and trunk segments. As a result we have had to reclassify some trunk segments as TI terminating segments instead. If trunk and TI terminating segments were in the same basket, this would simplify the charge control modelling, as there would not be a need to re-attribute costs between the two because of the changing boundaries.

4.11 Although our market definition captures where the key breaks exist between trunk and TI terminating segments, the break that we have identified may not map exactly onto the way BT has defined its existing network components for costing purposes. Although network cost components could be amended in the future to reflect the changing boundary between TI terminating segments and trunk, this would not be

[44] In the BCMR Statement, we explained that a CP requiring wholesale trunk segments will often purchase this with a TISBO segment. We also highlighted that trunk markets were prospectively more competitive than TISBO. In the case of the latter, access and backhaul elements are generally bottleneck services, whereas there is greater opportunity for CPs to realise economies of scale and scope in trunk markets and they are often able to self-supply trunk circuit segments.

achievable within the timelines of this consultation. Therefore, in the interim, we may need to make a judgement as to the amount of common costs that BT would need to recover from TI terminating segments and trunk services.

4.12 If we were able to take a firm view of the appropriate amount of common costs to be recovered from trunk, then this might point towards a separate basket. Ideally, we could determine an efficient allocation of common costs using Ramsey pricing (Section 3, paragraph 3.93). However, in practice, using Ramsey prices is complex due to the high information and modelling requirements. By using a combined TI terminating segments and trunk basket we capture some of these efficiency benefits, as a combined basket allows BT to choose its prices to better reflect demand elasticities and respond to demand changes.

4.13 Furthermore, given the magnitude of common costs, the potential gains from more efficient cost recovery within a single basket may be significant.

4.14 On balance, the cost allocation and market definition issues identified above tend to point towards a combined basket.

Wider market impacts also tend to point to a combined basket

4.15 We are proposing to apply charge controls at a time when both BT and other CPs are either investing or planning to invest in future replacement services (i.e. 21 CN and Ethernet trunk). Although these markets are still in development, and are not necessarily substitutes to TI markets yet, we need to think about how our choices over basket design could potentially impact on other markets.[45]

4.16 Against the background of these market developments, BT faces a range of incentives which may work in different directions. It would be hard to determine which one of these is likely to dominate any point in time.

4.17 Over time BT will want TI customers to migrate onto AI services to reduce costs. However there will be costs associated with this migration, which will tend to be higher as the pace of the migration quickens. On the other hand BT may also face competitive pressures from other CP's AI services, which will tend to increase the incentive on BT to accelerate migration. The rate at which customers migrate will depend in part on the relative prices of TI and AI services. Therefore BT will want to manage the migration process by adjusting the relative prices of TI and AI services and the increased flexibility offered by a single TI terminating segments/trunk basket may help BT to achieve this in an efficient manner.

4.18 There may also be an interaction with the structure of the charge control on AI services. We are proposing to introduce an RPI-X% type control on AI services, but not on Ethernet trunk (which does not yet exist). The incentive on BT to invest in Ethernet trunk may also be increased if BT is given the flexibility to vary the relative TI terminating segments/trunk prices in a single basket, particularly if switching depends on the relative price of trunk only. However we note that as BT currently sells trunk with TI terminating segments (and not on its own), any customer migrating from TI circuits to AI circuits is likely to focus on the overall price, reducing the potential for BT to benefit from higher TI trunk prices within the same basket.

[45] Although in the BCMR Statement we found that traditional interface services were in a separate market to alternative interface markets, this does not mean that the two markets will be entirely independent. Migration will be likely to be an option for some TI users over the next few years.

Question 4.1 Do respondents agree with Ofcom's proposal of a single TI basket including TI terminating segments and trunk services?

We propose imposing sub-caps

<u>We propose imposing a sub-cap on TI terminating segments</u>

4.19 In light of the above discussion, we propose a combined basket for TI terminating and trunk services. We think that a combined basket can help deliver a degree of flexibility in the face of a number of risks and uncertainties.

4.20 However, we also want to make sure that certain markets are protected within the combined basket. Hence, we propose a sub-cap on TI terminating segments, which requires BT to limit average price increases in this sub-basket to RPI-0% to address competition concerns.

Question 4.2 Do respondents agree with a sub-cap of RPI-0% on the sub-basket of TI terminating segments in the TI basket?

<u>We propose further sub-caps on connections and rentals</u>

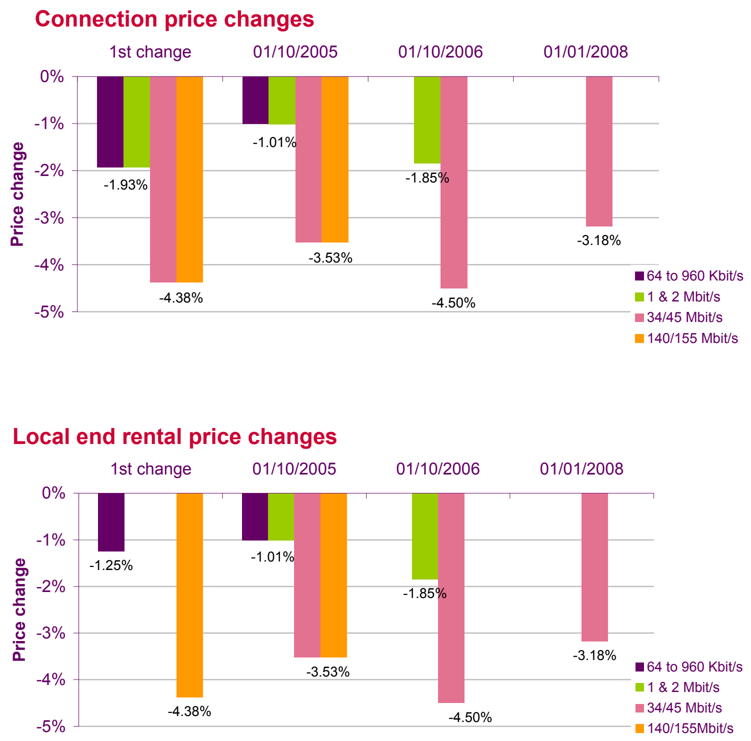
4.21 In the 2004 PPC charge control statement (the "2004 PPC Statement") Ofcom imposed different sub-caps[46]. These related to the connection and rental services and required BT to limit any increases in each sub-basket to RPI-0%. The main reason for introducing these sub-caps was to limit BT's flexibility to change the balance of cost recovery between connection charges and rental charges, as this could have a significant impact on CPs ability to compete effectively.

4.22 Our analysis (Figure 4.1) of price changes implemented by BT during the last PPC charge control showed that both connection and rental prices have, on average, decreased in nominal terms.

- The first price changes were implemented in two phases: on 1st April 2005 (for low bandwidth services) and 1st of October 2005 (for 34/45 Mbit/s and 140/155 Mbit/s).
- Prices for connections and rentals changed by the same percentage (and decreased in nominal terms) on the 1st October 2005. Similarly prices were either kept constant or decreased in nominal terms on 1st October 2006.
- There were further price decreases introduced to 34/45 Mbit/s rental and connection prices on 1st January 2008.
- The rental prices for main link and terminating segments showed a similar pattern to those of local ends during the price control (and therefore are not shown in Figure 4.1 below).

[46] http://www.ofcom.org.uk/consult/condocs/ppc_charge_control/statement/ppc_stmnt.pdf

Figure 4.1 Connection and rental price changes by bandwidth during current PPC charge control period



4.23 Although neither the connection charges nor the rental charges were increased during the last charge control (i.e. the individual sub-caps of RPI-0% on either the rental or connections sub-baskets did not bite), we still think it is appropriate to continue with the sub-caps of RPI-0% on the sub-basket of connection and the sub-basket of rental services. This is to ensure that any changes in the balance of costs recovered between connection and rental charges are capped and CPs continue to be protected against material increases in prices.

Question 4.3 Do respondents agree with Ofcom's proposal that sub-caps of RPI-0% are required for the sub-baskets of rental and connection charges?

We propose a separate basket for equipment and infrastructure charges

4.24 We have considered the following three options for the treatment of equipment and infrastructure charges within the leased lines charge control framework:

Option 1 - Cost-pass through mechanism

4.25 Under this approach BT would be guaranteed to recover all of its equipment and infrastructure costs and therefore will have a comparatively weak incentive to minimise its costs by negotiating a better contract with its suppliers.

4.26 Although BT may have some incentive to negotiate the best outcome for itself for the type of equipment that it buys, BT is unlikely to have the same mix of equipment as that of other CPs. Therefore on balance we do not believe a cost pass through mechanism would either create a sufficient incentive for BT to minimise its costs or give CPs enough protection against potentially discriminatory charging.

Option 2 - RPI-X charge cap (in TI basket)

4.27 An alternative option would be to include equipment and infrastructure charges in the TI basket. The incentive properties of this approach are improved because BT would generate additional profits if it were successful in negotiating lower equipment prices than those envisaged by Ofcom. Moreover, in the event that BT is unable to achieve this preferred outcome, BT's customers will continue to be protected from price increases by the RPI-X formula.

4.28 However we do not believe this option is appropriate for several reasons. Firstly, the equipment prices are likely to follow BT's newly negotiated purchasing contracts, rather then the overall TI basket X. Secondly, given the significance of the TI basket revenues this is unlikely to control equipment prices effectively. Thirdly, this approach would also be very complex to model due to the high number of individual equipment and infrastructure charges (where volume forecasts and cost elasticities would be required for each of them).

Option 3 – RPI-X charge cap (own basket)

4.29 Under this approach, which is a variation of Option 2, equipment and infrastructure charges would be in a basket of their own where the price of each equipment type is linked to an external index.

4.30 The indexation of charges could be achieved by using either: a) BT's negotiated purchasing contracts or b) an exogenous index. We do not think the former is appropriate as BT is currently negotiating its purchasing contracts. If the outcome of this negotiation was closely linked to the proposals in the charge control BT would not have the correct incentive to negotiate the best possible deal.

4.31 Given these considerations, we propose to include equipment and infrastructure charges in a basket of their own, subject to an overall cap of RPI-0%. We also propose that the price of each type of equipment should not be allowed to increase more than 5% in nominal terms in any given control year. We believe this is the appropriate approach as it will give BT enough flexibility to update prices to accommodate changing demand, whilst protecting CPs against major price hikes. For further discussion of this latter point see our summary of the Equipment and Infrastructure basket profitability discussed in paragraph 4.89.

Question 4.4 Do respondent agree with Ofcom's proposal to include equipment and infrastructure charges in a separate basket of their own (the "Equipment and Infrastructure basket") and subject to an overall cap of RPI-0%? Do respondents also agree that each charge in this basket should not be allowed to increase more than 5% in nominal terms in any control year?

We propose a separate basket for ancillary services

4.32 Ancillary services include other single payments that BT levies from CPs and its own downstream operations, such as Excess Construction Charges ("ECCs"). Ancillary services relate to the provision of services which fall in the scope of the TI basket. We note that ECCs are by far the largest component by value of ancillary services.

4.33 Our views on the issues of transparency, frequency and processes relating to the provision of ECCs are set out in detail in the BCMR Statement. We believe these will help address most of the issues raised by CPs and improve the understanding of the costs involved in providing ECCs.

4.34 Ancillary services are of low value (£14m in 2006/07). Given the significance of the TI basket revenues, inclusion of ancillary services in this basket is unlikely to control their prices effectively. We therefore propose these services are included in a basket of their own, where the aggregate level of charges is subject to RPI-0%.

Question 4.5 Do respondents agree that ancillary services are included in a basket of their own and subject to an overall basket cap of RPI - 0%?

We do not propose to subject RBS, SDSL and accommodation services to a charge control

4.35 We propose the following TI basket related products and services are not subject to our formal charge control:

Radio Base Station Backhaul Services ("RBS")

4.36 We do not propose to subject RBS to a charge control, given the requirement to supply these services on equivalent terms to PPC terminating segments (i.e. the price applied to each common component is the same for TI terminating segments and RBS). This will have largely the same end effect on the prices as that of subjecting these services to a formal charge control, as RBS services are made up using the same constituent TI terminating services (which are subject to a charge control). We note that inclusion of RBS in the TI basket, could affect the weights ascribed to the other services in the same basket. We believe the effect of this on the values of X calculated for the TI basket to be marginal.

4.37 We also note that BT remains subject to ex-ante obligations such as cost orientation, non-discrimination, meeting reasonable request for supply and its general obligation to comply with competition law as set out in the BCMR Statement.

Symmetric Digital Subscriber Line ("SDSL")

4.38 We believe it will be disproportionate to subject this service to a charge control. This is a legacy product which BT does not intend to support on its 21 Century Network ("21CN"). In addition BT has given us the following voluntary commitments:

- That it will continue to supply SDSL services to meet reasonable demand until 2010;
- That it will not increase its prices for SDSL services more quickly than the rate of inflation (RPI-0%) for a period of two years following the publication of the BCMR Statement i.e. from 2008 to 2010; and
- That it will commit to a further two-year cap, the level of which would be agreed with Ofcom prior to 2011 and subject to the continuing viability of the service and the need to fully recover costs.

Accommodation services

4.39 Accommodation services are provided by BT in relation to the provision of services which fall within the scope of the TI basket. The particular service in consideration is BT Wholesale's ("BTW") accommodation service e.g. BT Netlocate. This service enables CPs to site specific communications equipment in BT's exchanges. The product was designed by BT to meet its obligations under section 7.2 of the

Undertakings. The Undertakings also restricts the type of equipment that can be placed within BT exchanges[47].

4.40 In consultation with industry, BTW recently reduced the price of Netlocate services (new prices effective from 1st April 2008[48]) to bring them in line with the Local Loop Unbundling ("LLU") accommodation prices. In addition the new Ethernet accommodation products (Access Locate Plus) will supersede BT Netlocate and will also be subject to a price cap (see paragraph 5.8).

4.41 In light of the above developments we believe it would be disproportionate to subject this service to a charge control. We instead propose relying on BT's cost orientation and other *ex-ante* obligations and its general obligation to comply with competition law as set out in the BCMR Statement.

Question 4.6 Do respondents agree that RBS, SDSL and BT Netlocate should not be subject to our formal charge control?

BT re-stated the volumes and revenues of TI terminating and trunk segments in 2006/07

The overall effect of the re-statement is material

4.42 The effect of BT's restatement of TI terminating and trunk revenues in 2006/07 has the effect of reducing the revenues at the TI market level by £125m (Table 4.1). For a more detailed breakdown of the effect of this re-statement see Annex 6.

Table 4.1 Financial impact of BT's re-statement of 2006/07 TI market revenues

	External (£m)	Internal (£m)	Total (£m)
Net adjustment to circuit revenues	(90)	(179)	(269)
Total omitted revenues	85	59	144
Net re-statement	(5)	(120)	**(125)**

4.43 Due to the materiality of this re-statement we:

- *Commissioned Analysys-Mason to conduct an independent review of BT's calculations and supporting volume data*. As noted in our statement to BT's RFSs for 2007/08 we asked Analysys-Mason to test the accuracy of the new calculations, review and comment on the volume measures used, assess the capability of BT's systems and make recommendations (if necessary) for further improvements. The Terms of Reference ("ToR") for this review and the final report from Analysys-Mason summarising their key findin gs can be found on our

[47] http://www.ofcom.org.uk/telecoms/btundertakings/btundertakings.pdf
[48] http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/b3_53.rtf

website along with this consultation[49]. For a summary of the ToR and the key Analysys-Mason findings see Annex 6.

- *Asked BT to prepare a report which summarised the details around this re-statement*. As noted in our statement to BT's RFSs for 2007/08, we recognise that BT has deployed considerable resource in improving the methodology underpinning the revised revenue calculations. BT has also provided a report on this issue including an analysis of the restated 2006/07 data. This report has enabled us to better understand the changes made by BT and the rationale for the new basis of preparation of these revenue numbers. Analysys-Mason have also used BT's report as the starting point for their review.

4.44 Overall Analysys-Mason concluded that BT's re-statement of volumes and revenues for 2006/07 appears to be reasonable. They also suggested areas for further investigation that we are currently addressing.

The effect of the re-statement is even more material at the TI basket level

4.45 The impact of the re-statement is more material at the TI basket level. This is because the previously omitted revenues (see Table 4.1) are out of scope of the proposed charge control. Therefore the net revenue decrease at the TI basket level is £269m as shown in Table 4.1 above.

4.46 A list of the most significant amendments BT introduced and the effect of these amendments on the value of internal/external revenues at a market and basket level is further summarised below.

Table 4.2 Impact of BT's re-statement on the 2006/07 TI circuit revenues at the TI basket level

Amendment	External revenues	Internal revenues
Change to circuit volumes		
Revision of circuit length calculations	(12%)	(7%)
Removal of non revenue earning bearer circuits	(11%)	(4%)
Revision of local end counts	(6%)	(7%)
Price changes	(4%)	(1%)
Removal of non-current circuits	(1%)	(1%)
Unexplained volume changes	(2%)	(2%)
Changes to revenues		
Omitted revenues	N/A	N/A

( ) = % decrease in revenues as a result of each adjustment as compared to the starting revenues

[49] http://www.ofcom.org.uk/consult/condocs/llcc/analysysmason.pdf

4.47 The effect of the other adjustments identified by BT is minor and results in a less than 1% change on the internal and external revenues at a market and basket level.

4.48 We have used BT's restated revenue numbers when developing our charge control proposals, the material corrections being:

- *Revision of circuit length calculations*: BT is now using the location of the local serving exchanges ("LSE") rather then the estimated location of terminating ends (customer sites) to calculate circuit lengths. The latter methodology was used prior to 2004 when it was necessary to calculate the entire route length and the LSE information was not available (but is now). The prior methodology resulted in counter-intuitive results (e.g. when both local ends are connected to the same LSE, distribution and trunk lengths are non zero). Analysys- Mason are of the view that the changes implemented by BT are reasonable. We therefore propose to accept BT's revision of circuit length calculations going forward50. We note that this change in methodology has the biggest effect on the re-stated revenues.

- *Removal of non revenue earning bearer circuits*: An additional significant amendment is the exclusion of bearers which had been included in error in the chargeable circuit base. This amendment affects external revenues more then the internal transfer charges. Bearers are not chargeable, it is the circuits that they support and that are used internally or externally that generate revenues.

- *Revision of local end counts*: For 2006/07 BT chose to re-calculate the local end volumes based on volumes of circuits sourced from different internal systems to those used historically. The impact of this is to reduce the local end volumes51 and also bring the local end to link ratio to levels expected by BT52. In light of the more plausible local end to link ratios, we propose to accept BT's change in methodology.

- *Other amendments*: The most significant of the other amendments is the inclusion of the Central London Zone ("CLZ") discounts to the price of local ends[53.] We do not take this amendment into account. This is because we use undiscounted revenues to set the controls and we do not take geographic discounts into account when monitoring BT's compliance with the charge controls.

4.49 For a detailed discussion of BT's amendments and the impact of these on the revenues/volumes of external and internal sales see discussions in Analysys's report (Section 5).

We propose further adjustments to BT's base year costs in 2006/07

4.50 We use the total costs reported in BT's 2006/07 Additional Financial Statements ("AFSs") as the starting point for our financial analysis and charge control modelling. They are the latest fully audited set of regulatory accounts that we had at our disposal when we started the charge control modelling[54]. BT has explained that the re-statement does not have a material impact on the total costs reported in the RFSs

[50] Analysys-Mason report, Section 5.2.1.
[51] Analysys-Mason report, Section 5.2.4.
[52] Analysys-Mason report, Section 5.4.1.
[53] Analysys-Mason report, Section 5.2.6.
[54] BT published its latest Regulatory Financial Statements in September 2008.

across all markets and therefore no costs adjustments were identified as a result of the re-statement.

4.51 We propose adjusting the cost data to ensure that these are representative of the "relevant" level of costs for forward looking charge control purposes. We also consider whether to make one-off adjustments to starting charges, which requires reliable cost data matched to revenues.

4.52 Our proposed adjustments fall into four broad categories:

- *Type 1 – Exclusion of out of scope services*: We analyse the costs and revenues associated with services in scope of the TI basket. Therefore costs (and revenues) associated with Site Connect, resilient circuits and other ancillary charges are excluded from the cost base of services in scope of the TI basket.

- *Type 2- Amendments to the reported cost data*: We make further adjustments to the RFSs to make sure that the costs reported match the revenues.

- *Type 3 – Adjustments for forecast modelling*: These include adjustments which are required in order to modify RFS data to base year costs relevant for forecasting purposes (for example we exclude costs which are "one off" in nature). One example is the calculation of a smoothed holding gain/loss to include in the base year. Some of these adjustments also relate to the consistent application of prior Ofcom price modelling decisions (e.g. the regulatory asset value or RAV and the exclusion of 21 CN related costs).

- *Type 4 – Implementation of new LLCC pricing proposals*: These include new Ofcom policy proposals in relation to the recovery of certain costs e.g. payment terms.

4.53 Table 4.3 is a summary of our cost (and revenue) adjustments. For completeness we also show the effect of BT's restatement on the original 2006/07 RFS data. However as noted in paragraph 4.50, BT's re-statement of volumes in 2006/07 does not impact the total of costs in the same year.

4.54 The overall effect of our proposed adjustments is to increase the TI basket Return on Capital Employed ("ROCE") from its re-stated 2006/07 level of 8% to around 18%. For more details on the calculations of our proposed cost adjustments see Annex 8, Table A8.2.

Table 4.3 Proposed adjustments to BT's revenues and costs for services in TI basket (based on the 2006/07 AFS).

Description of cost adjustment	Type	Revenue adj. £m	Cost adj. £m	Rationale
Exclusion of out of scope services (paragraph 4.55)	1		77	These include Site Connect, resilient circuits and ancillary charges.
Exclusion of out of scope services			***77***	
Exclusion of 3rd party equipment and infrastructure costs (paragraph 4.57)	2		60	The costs/revenues of 3rd party and PoH equipment are in scope of the Equipment and Infrastructure basket. We exclude these costs/revenues from the TI basket to avoid double recovery.
Third party customer local end equipment selling costs (paragraph 4.59)	2		6	As equipment costs do not fall within the scope of the TI basket, we exclude an estimate of its selling costs from the TI basket.
Amendments to the RFSs			***66***	
Holding gains/losses (paragraph 4.60)	3		78	We recalculate CCA holding gains/losses using estimates of asset price changes during the control period.
Regulatory asset value (RAV) (paragraph 4.63)	3		9	We implement the Ofcom policy decision in 2005, where pre-97 access related cable and duct assets are to be valued at their closing Historic Cost Accounting (HCA) value in 2006/07 and indexed to RPI.
Exclusion of 21 CN direct costs (paragraph 4.69)	3		17	We propose not to factor in any increases in efficiency gains resulting from migration to 21CN. For consistency, we exclude the direct costs relating to 21 CN.
Payment terms (paragraph 4.72)	4		16	We modify debtors to reflect contractual payment terms.
Ofcom forecasting adjustments			***120***	
BT re-statement of revenues (paragraph 4.42)		269		
Total net adjustments		**269**	**263**	

We propose to exclude out of scope services

4.55 We exclude the costs associated with services outside the TI basket from our analysis of BT's base year costs for 2006/07. We therefore exclude the costs of Site Connect, resilient services and ancillary services from the cost base. We note that RBS and SDSL are also not included in our TI basket, but no adjustments are required to the base year costs as these services are recorded separately in the RFSs. See paragraph 4.35 for a discussion as to why these services are out of scope of the formal charge control.

4.56 Our model forecasts the total costs of components associated with the TI terminating and trunk services within the scope of the charge control. Some of these cost components are also in common with RBS and SDSL services. Therefore, although RBS and SDSL services are not included in the TI basket, volumes associated with these services are included in our model to ensure that we calculate the correct overall component volumes. This approach ensures that both total component costs and unit component costs are forecast appropriately.

We propose to exclude 3rd party and Point of Handover equipment and infrastructure costs from the TI basket

4.57 BT recovers the customer specific cost of equipment, fibre and copper used to provide a physical link between the LSE and the customer premises through a series of equipment & infrastructure connection charges. There are two issues relating to the way in which BT accounts for these costs and revenues in the 2006/07 RFS cost data:

- The costs and revenues associated with 3rd party equipment and infrastructure are reported within the services in the TI basket, even though for our purposes they should be accounted for separately in the Equipment and Infrastructure basket. Therefore we exclude the relevant costs and revenues from the TI basket to avoid double recovery.

- BT recovers the cost of 3rd party equipment and infrastructure upfront in connection charges whilst its accounting policy is to capitalise and depreciate these assets (over their useful economic life). This gives rise to a mismatch between the timing of the recognition of the revenues and costs in the financial statements. As part of our analysis of starting charges we adjust for this issue to make sure that costs and revenues are recognised on the same basis.

4.58 In light of the above our proposed treatment is to exclude these costs from the TI basket. The effect of this adjustment is to reduce reported costs in 2006/07 by £60m. Our detailed analysis of this adjustment is included in Annex 8.

4.59 BT incurs costs in selling third party customer LE equipment & infrastructure. As explained above these services do not fall within the TI basket. As BT does not account for these services separately from local end rentals we assume that these selling costs are also reflected in the local end rental cost base. We therefore eliminate an estimate of these costs (£6m) from the local end rental cost base in 2006/07. Our detailed analysis of this adjustment is included in Annex 8.

We propose to recalculate holding gains/losses

4.60 BT's 2006/07 RFSs include CCA holding losses of £694m. BT calculates holding gains/losses in relation to the:

- *Cost movements in the underlying assets experienced in the year ("cost" holding gain/loss).* A real holding gain (loss) is the additional value (loss) that accrues to the holder of an asset as a result of an increase (decrease) in its price relative to the prices of goods and services in the general economy. In 2006/07 BT RFSs include a nominal holding gain of around £22m.

- *Other holding gains/losses in the year ("other" holding gain/loss)*. This is by far the biggest category of costs and typically arises as a result of BT changing its valuation methodologies. In 2006/07 BT RFSs include a nominal holding loss of £716m, which is mainly due to BT reducing the estimated economic life of duct (from 60 to 40 years) and writing-off the net replacement cost of duct assets over 40 years old.

4.61 We propose two adjustments to the total holding gains/losses when including these in our analysis:

- *We only take into consideration the effect of cost inflation.* We propose to only take into account the cost element of the holding gains/losses.
  - o *We re-calculate the effect of cost inflation to be included in our model*. We further propose to re-calculate the cost element by using the historic five year average in the trend of real asset price changes as a proxy for future asset price changes.

- *We exclude other holding gains/losses*. This will ensure that our own asset valuation is consistent with the holding gains/losses we allow.

4.62 The net effect of our proposed adjustment (excluding BT's actual holding losses for 2006/07 and replacing these with our estimates based on the effect of cost inflation only) is to decrease base year costs in the TI basket by £78m[55]. Our detailed analysis of this adjustment is included in Annex 8.

Question 4.7 Do respondents agree that holding gains/losses should be recalculated for the TI basket of services by using the historic five year average in the trend of real asset price changes? Do respondents agree that no allowance should be made for "other" holding gains/losses in the TI basket of services?

We propose to take into account the Regulatory Asset Value (RAV) of pre-97 access copper and duct

4.63 Two prior Oftel/Ofcom policies gave rise to the RAV adjustment:

- *In 1997 Oftel changed the way BT accounted for its network assets in the RFSs*. Oftel required BT to value its network assets based on how much it would cost to replace them at today's prices (known as "current cost accounting" or "CCA") rather than how much BT spent on them when it bought them (known as "historical cost accounting" or "HCA")56. The purpose of this change was to allow regulated prices to be based on the economic cost of replacement assets.

[55] From a modelling perspective we estimate holding gains/losses in each year of the control based on the historic five year average in the trend of real asset prices and the net replacement cost of the same assets as forecast by the LLCC model. For more detailed explanation of our modelling approach see Annex 9.
[56] http://www.ofcom.org.uk/static/archive/oftel/publications/1995_98/pricing/pri1997b/chap6.htm

- *In 2005 Ofcom, as part of the cost of copper review, created the regulatory asset value ("RAV")*. As explained in the Statement on Valuing Copper Access57, the effect of the change in the method of asset valuation in 1997 was that BT would recover more costs than it actually incurred on its copper access network assets held prior to the accounting policy change. Specifically, BT would over-recover costs incurred on long life assets held prior to August 1997. No over/under recovery will occur on assets purchased since August 1997, as these have been consistently treated under CCA methodology. To prevent any under or over-recovery resulting from the change in the accounting treatment of the pre-97 copper access assets (duct and copper cable), Ofcom created the RAV which represents the remaining value (i.e. costs to be recovered) of these assets as of 1 August 1997.

  The RAV was used to set the price ceilings of WLR[58] and LLU[59] in 2006 and 2005 respectively. In the cost of copper review Ofcom further noted that:

  > "Some Partial Private Circuits (PPCs) also use metallic pairs in the final drop to the customer. Ofcom does not intend currently, however, to re-examine the existing PPC price controls as a result of this statement as to do so given that the price controls were imposed quite recently (in September 2004) would seem disproportionate. However, Ofcom will take account of this statement when the PPC price controls are next examined."

4.64 For any given asset, cost recovery, for any given asset will be equivalent, irrespective of whether an HCA or CCA methodology is applied, provided that the methodology is applied consistently throughout the asset's life and that such returns are discounted at the operator's cost of capital.

4.65 However, a change in methodology during the life of the asset could potentially give rise to over- or under-recovery of costs depending upon the future replacement cost and the point during the asset lifecycle at which the switch took place. This is because, while the extent of cost recovery is equivalent between the two approaches, the path of cost recovery is not. Therefore, for assets whose gross replacement costs ("GRC") increase over time, the switch from HCA to CCA over their life time would lead to an over-recovery of the costs incurred (and vice versa).

4.66 In our opinion applying the RAV adjustment to the TI basket of services is further justified because:

- Firstly, although BT was not required to offer (wholesale) PPCs until 2001, it is reasonable to assume that before 1997 the charges for leased lines services it did offer were recovering at least their HCA costs. This is because when price controls were introduced, the returns earned on PPCs were calculated to be in excess of the regulated cost of capital and if anything, the competitive conditions faced by BT before 1997 would have allowed for significantly greater pricing freedom. Assuming BT behaved rationally with its pricing decisions pre 1997, then we see no reason why its costs would not have been recovered.

- Secondly, and following from the above point, failing to account for the RAV adjustment in the value of pre-97 access duct and cable consumed by TI

[57] http://www.ofcom.org.uk/consult/condocs/copper/value2/statement/
[58] http://www.ofcom.org.uk/consult/condocs/wlrcharge/statement/statement.pdf
[59] http://www.ofcom.org.uk/consult/condocs/llu/statement/llu_statement.pdf

terminating segments, would lead to an over-recovery in the value of these assets.

- Thirdly, for consistent economic regulation assets should be valued on a similar basis for all the services that consume those assets. Using different valuation approaches would risk distorting relative prices and decisions based on those prices.

4.67 As explained above to prevent any under or over-recovery resulting from the change in the accounting treatment of the of the pre-97 copper access assets (duct and copper cable), we propose to apply the RAV adjustment to TI services within scope of the charge control. We use BT's RAV model as submitted to Ofcom in order to determine the value of the RAV adjustment which we then allocate to the relevant access copper cable and duct assets.

4.68 The effect of this adjustment is to reduce the total costs in 2006/07 of the TI basket by £9m. We also note that the RAV adjustment unwinds over time as pre-97 access copper cable and duct assets are replaced (the values of this adjustment in the last year of the control amounts to around £2m). Our detailed analysis of this adjustment is included in Annex 9.

Question 4.8 Do respondents agree that the RAV adjustment should be applied to the base year costs of the TI basket?

We propose to estimate costs on a technology neutral basis which requires us to exclude costs relating to 21 CN

4.69 21CN related capital and operating costs incurred by BT in 2006/07 are currently attributed to current services. For forecasting purposes we propose removing costs which are directly attributable to 21 CN from the 2006/07 base year costs. This is because:

- Under the technologically neutral approach to modelling, we forecast the costs of services irrespective of the underlying technology that is used to deliver them. Therefore we model the costs of a “hypothetical” ongoing network which, for simplicity, is based on the costs of the current network e.g. an ongoing PDH/SDH network.

- We are not including, within the model assumptions, the efficiency gains BT will derive from moving to 21 CN.

- Our model assumes an “ongoing” hypothetical network, where we build in an explicit allowance for future capital expenditure requirements.

4.70 We also note that:

- *Our modelling approach allows for continued capital investment*. As explained above, in our technologically neutral approach to modelling, we are assuming levels of capital expenditure sufficient to support an ongoing network.

- *We only propose to exclude costs which are directly attributable to 21 CN from our cost base*. BT provided detailed analysis of 21CN costs attributed to TI terminating and trunk segments. These can be categorised as “direct” costs such as employee salaries and “indirect” costs such as accommodation and transport costs. BT estimated the total 21 CN costs relating to the TI basket of services to be £39m of which only £17m are direct. In determining our cost adjustment we propose to only exclude costs which are directly attributable to 21CN, as BT would have incurred the indirect costs under any circumstances.

- *The excluded costs will be recovered in the future*. Our view is that the cost of the investment and any additional migration would be recovered when and to the extent BT realise future efficiency gains and from future users of the new network. For a more detailed discussion of our approach see Section 3 paragraph 3.158.

4.71 Following from the above, we propose to exclude 21 CN related direct costs. The effect of this adjustment is to decrease the 2006/07 TI basket costs by £17m. For details of our calculations see Annex 8.

Question 4.9 Do respondents agree that the direct costs relating to 21 CN should be excluded from the 2006/07 base year costs of the TI basket?

We propose to amend the value of notional debtors to reflect contractual payment terms

4.72 Notional debtors seek to reflect the cost to BT of the working capital required to finance the payment terms it offers. The TI terminating and trunk segment charges in the Carrier Price List ("CPL") were initially determined by Oftel where notional debtors reflected the assumption that customers would be billed monthly in arrears with thirty days to pay.

4.73 In practice, customers were billed three months in advance (with thirty days to pay) for the majority of services. The effect of this in 2006/07 was to overstate the value of notional debtors and hence BT's working capital requirements.

4.74 We therefore propose to amend debtors to reflect contractual payment terms. The effect of this adjustment is to decrease the 2006/07 costs in the TI basket by £16m. Our detailed analysis of this adjustment is included in Annex 8.

Question 4.10 Do respondents agree that the debtors in the TI basket should be amended to reflect contractual payment terms?

We propose to replace the local end adjustment factor with separate PoH charges

4.75 BT currently recovers certain PoH costs through an adjustment to the price of 3rd party local end rental charges charged to CPs (the "local end adjustment").

4.76 The local end adjustment dates back to Oftel's PPC Phase II Determination in December 2002[60] and was designed to recover some costs related to the PoH for external PPCs. More specifically Oftel excluded "network overhead"[61] costs from the 3rd party PoH circuit connection charges and instead directed BT to recover these costs via the local end rental charges to reflect the fact that overheads are incurred on an ongoing basis. To achieve this, local end rental charges were increased by

[60] http://www.ofcom.org.uk/static/archive/oftel/publications/broadband/leased_lines/ppc1202/ch3.htm
[61] BT's definition of network overheads consist of but are not necessarily limited to, costs associated with the running, housing and security costs of physical infrastructure and equipment and all related network planning, network management, provisioning, testing, and fault management.

32% and 30% for under 1 Mbit/s and over 1 Mbit/s TISBO services respectively. The uplift was based on a methodology suggested by BT, which compared the costs of equipment (per circuit) at the PoH with the cost of equipment (per circuit) at the 3rd party local end.

4.77 As the local end adjustment was set six years ago, during which time neither the methodology nor the underlying costs were updated, we think now is an appropriate time to reconsider our approach. To that effect:

- Firstly, we ascertain what costs a PoH link comprises of and how BT currently recovers these. This is discussed in detail in Annex 7.
- Secondly, we discuss various options around the future recovery of these costs.
- Thirdly, we determine the quantum of the costs to be recovered.

How should PoH costs be recovered in the future?

4.78 There are two ways in which BT can deliver a PPC to a CP over its networks: it can do this by either providing a wholesale PPC PoH link ("aggregated PoH") or by re-classifying an existing circuit purchased on retail terms as a wholesale PPC ("migrated PoH"). There are two differences between these two types of PoH:

- Whilst high bandwidth wholesale PoH links are dedicated, migrated PPCs are delivered over pre-existing local end infrastructure which could carry other services then PPCs.
- BT offers aggregated PPC PoH links at a minimum bandwidth of 155 Mbit/s, whilst for migrated PPCs the bandwidth of the infrastructure ranges from 2 Mbit/s copper link to 2.5 Gbit/s fibre link.

4.79 For more details on the above see Annex 7. Below we briefly discuss the two options we considered for the future recovery of these costs.

Table 4.4 Options for recovering PoH link costs

Option	Advantages	Disadvantages
Option 1 Keep the "status quo" of applying an uplift to the external local end price (but update the uplift factor)	No change to current process Charges based on usage of 3rd party ends	Ofcom unable to monitor total cost recovery effectively
Option 2 A separate charge averaged across BWs calculated on the same basis as the uplift factor	We will be able to monitor cost recovery for PoH and 3rd party local ends Easy to implement	BT needs to create separate PoH circuit charges

4.80 On balance we propose Option 2 from Table 4.4. This is because this option would increasing transparency by separately identifying the revenues and costs associated with PoH links, without being unduly disruptive. It would also ensure that the local end rental charge is the same for external and internal customers.

What is the quantum of the costs to be recovered?

4.81 BT estimated the PoH costs to be recovered to have been £11m in 2006/07. BT estimated this sum using an approach similar to that it has used for equipment basket connection charges where it followed a bottom up approach. A brief description of this method and our high level calculations are summarised in Annex 7.

4.82 Our proposed PoH rental charges are summarised in the table below (details included in Annex 7):

- We have calculated BT's estimate of POH rental costs to be 21% of third party local end rental costs.
- We have arrived at our individual proposed charges by multiplying the unit costs for third party local ends by 21%. This approach retains the bandwidth gradient present in the current regime.

Table 4.5 Ofcom proposals for separate PoH rental charges

	Proposed price per external circuit, per annum (£)
64 Kbit/s	**110**
2 Mbit/s	**180**
34/45 Mbit/s	**930**
140/155 Mbit/s	**1,800**

4.83 We also propose the new PoH rental charges are included in the TI basket as the costs are very similar to local end rental costs.

Question 4.11 Do respondents agree that 3rd party PoH costs should be recovered via separate per circuit PoH charges included in the TI basket?

We considered whether the levels of charges at the start of the proposed control are appropriate

BT proposes changes to the starting charges of some TI terminating and trunk services

4.84 BT has suggested amending a number of prices at the start of the next charge control as shown in Table 4.6 below. BT's aim is to:

- Bring individual 08/09 prices more in line with the Distributed Stand Alone Costs ("DSAC") and Distributed Long Run Incremental Costs ("DLRIC"); and

- Propose the minimum number of price changes to minimise disruption.

Table 4.6 New BT price proposals

Services	Current Price (£)[62]	Proposed Price (£)
64 kbit/s link[63]	62.81	125.62
64 kbit/s local end (external)	289.67	579.34
64 kbit/s enhanced maintenance	40.31	80.62
2 Mbit/s local end (external)	691.92	833.76
2 Mbit/s trunk	102.24	46.83

4.85 BT's proposals reduce the TI basket revenues by around £28m (using 2008/09 BT volume forecasts). This is accompanied by around £55m re-balancing from trunk to terminating segments. We also note that the proposals are revenue neutral to external customers, whilst more advantageous to BT's downstream operations. This is because BT is by far the biggest user of 2 Mbit/s trunk (around 78% of total 2008/09 forecast volumes).

Table 4.7 Impact of BT's new pricing proposals on external and internal revenues (calculated using 2008/09 volume forecasts)

	Impact on external revenues (£m)	Impact on internal revenues (£m)
64 Kbit/s link	6	10
64 kbit/s local end	6	13
2 Mbit/s local end	7	14
2 Mbit/s trunk	(19)	(65)
Overall impact	**(0)**	**(28)**

BT's pricing proposals are broadly in line with our analysis

4.86 As described in Section 3, we have generally preferred RPI-X regulation using "glide paths", under which charges are brought into line with costs over a number of years, to one-off adjustments to starting charges. This is because the use of glide paths leads to greater stability and predictability (by avoiding sudden changes to charges), and also because they improve cost reduction incentives by allowing BT to keep unanticipated efficiency gains for a longer period. However we also recognise that in

[62] Current price for local ends is external price only.
[63] Higher bandwidth main link prices are expected to increase pro-rata (a full list of proposed prices is included in Annex D to the proposed conditions G4, GG4, GH4 and H4). For purposes of the analysis presented in this section savings are calculated by multiplying 64 kbit/s equivalent circuit volumes by the price differential being proposed.

some cases one-off adjustments to starting charges may be required, if, for example, these charges are materially out of line with the underlying costs of provision.

4.87 BT's proposed prices go some way to addressing the key issues identified by us, by bringing prices within the DLRIC/DSAC floors and ceilings. However there are also some differences between our analysis and BT's.

- Firstly, when making their pricing proposals, BT compared current prices for services (as identified in Table 4.6) to the (unadjusted) DLRIC/DSAC values for these services as reported in 2007/08 RFSs. Our analysis is based on our estimate of the adjusted 2006/07 DLRIC/DSAC values. We estimate the adjusted floors and ceilings relative to our adjusted unit FAC costs (by assuming the same ratios between unit FAC costs and ceilings/floors reported in the 2006/07 RFSs).

- Based on its analysis using the unadjusted 2007/08 data BTW proposes to adjust the prices of a more limited set of services (all of which are for 2 Mbit/s or below as set out in Table 4.6). Bringing the average prices (for the services as identified in Table 4.6) within our recalculated floors/ceilings decreases the TI basket revenues by around £50m using 2008/09 volume forecasts (or £30m using adjusted 2006/07 values). The key difference here is that our analysis does not require local end prices to be increased. BT based its increase on its analysis which indicated that the average 2 Mbit/s local end price is below the floor in 2007/08.

- Secondly, we identified further services whose prices are outside our re-calculated floors/ceiling. These include link and local end rental charges for 34/45 Mbit/s and 140/155 Mbit/s services. Bringing these prices to the re-calculated floors/ceilings will further decrease the TI basket revenues by an additional amount (£24m using adjusted 2006/07 values). The majority of this change in revenue (around 90%) is a transfer to BT's downstream operations.

4.88 Taking all of the above discussions our proposal is for BT to implement its suggested one-off adjustments to the prices of some TI terminating and trunk services at the start of the propose control (as presented in Table 4.6). In addition we propose that:

- Provided the price rebalancing proposed by BTW is introduced, we're minded not to require any further one-off changes when the proposed controls are introduced.

- Prices for TI terminating and trunk services within the scope of the proposed charge control should not increase in nominal terms between the implementation of the charge control and 1 October 2009; and

- The prices of all the services in the TI basket are brought within the appropriately measured DLRIC floors and DSAC ceilings, within 12 months of the implementation of the charge control. BTW should review its charges during 2009/10 in the light of the latest available DSAC/DLRIC information, and rebalance prices where required to bring them within the appropriately measured floors and ceilings. In this context we would note that the onus is on BTW to comply with its regulatory obligations and we cannot fetter our discretion about any future adjustments which this may necessitate. BT has undertaken to keep TI prices constant in nominal terms until 1st April 2009 and we have developed our proposals on the basis of this assumption.

Question 4.12 Do respondents agree with the proposed approach towards prices for the TI basket of services during the period to 30 September 2009?

We considered whether the level of charges for equipment and infrastructure at the start of the proposed control are appropriate

The current profitability of the Equipment and Infrastructure basket is low

4.89 We also estimated BT's profitability associated with the Equipment and Infrastructure basket as a whole and for individual items of equipment.

4.90 Our analysis is based on bottom up costs for each type of equipment prepared by BT for 2006/7, using 2009/10 prices, with some assumptions made on internal volumes. Whilst we were able to calculate the profitability associated with external sales of equipment with a degree of certainty, this was not the case for internal sales. This was because BT did not record the volumes of equipment deployed (by type of equipment) to its downstream operations. BT did however record aggregate volumes of equipment within the key bandwidth categories (e.g. 64 kbit/s, 2 Mbit/s, 34/45 Mbit/s, 140/155 Mbit/s and PoH equipment). Therefore:

- By assuming that the product distribution of internal equipment within each bandwidth was the same as that for external, BT provided estimates on internal equipment volumes and was therefore able provide overall returns.
- The same issue did not arise with PoHs, as these are only sold externally.

4.91 Our analysis indicated that overall the 3rd party Equipment and Infrastructure basket yielded an estimated profit of around £0.1m for 2006/07. 2 Mbit/s Equipment and Infrastructure charges account for around 65% of the total basket, with the majority being sold externally. This drives the overall 0% return on sales (Table 4.8). For details of our calculations see Annex 8.

Table 4.8 Return by bandwidth of the equipment and infrastructure basket with 2008 prices

	64 kbit/s		**2 Mbit/s**		**34/45 Mbit/s**		**140/155 Mbit/s**		**PoH**	**Total**
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Ext	
Revenue (£m)	3.2	1.9	13.3	21.8	4.2	2.6	1.8	0.9	1.9	51.6
Profit (£m)	(1.5)	(0.9)	(0.4)	(0.5)	2.3	1.4	0.0	0.1	(0.4)	0.1
RoS (%)	(49%)		2%		55%		1%	8%	(19%)	0%

RoS = Return on Sales

BT is proposing one-off adjustments to the starting charges of some equipment

4.92 BT are proposing one of adjustments to the prices of equipment at the start of the control as follows (Table 4.9):

- Increase the price of 64 kbit/s Network Terminating Units ("NTUs");

- Increase the price of products requiring new blown fibre;
- Decrease the price of products with high returns to offset the price increases. For example such products include 2 Mbit/s Access on HDSL on existing copper; and
- Increase the price of some In Span Handover ("ISH") high bandwidth ADMs.

Table 4.9 Proposed BT price re-balancing to come into effect on first day of the proposed charge control

Bandwidth	Product Description	Current Price (£)	Proposed Price (£)
64 Kbit/s	NTU 64K-256K on existing copper	437.35	604.67
64 Kbit/s	NTU 128K-640K on 2M Infrastructure	776.53	950.24
64 Kbit/s	NTU 320K-640K on existing copper	541.13	622.94
2 Mbit/s	2M Access HDSL on existing copper	1,221.24	1,133.54
2 Mbit/s	4x2 Access at existing site	3,873.19	4,258.11
2 Mbit/s	34/45M ASDH NTE Existing Site*	12,682.57	7,048.78
2 Mbit/s	34/45M ASDH NTE Expansion Unit*	8,339.07	2,901.16
2 Mbit/s	Additional Charge to provide new fibre infrastructure	1,817.47	2,191.94
140/155 Mbit/s	SMA-16 no trib, dual fibre 1550nm, existing site*	120,995.53	71,301.01
PoH equipment			
ISH PoH	SMA-16 ADM single STM-16 handover (1300nm)	54,521.59	57,423.43
ISH PoH	SMA-4 ADM with single STM-4 handover (1300nm)	21,664.78	26,088.86

* not included in the last charge control

4.93 The effect of the proposed re-balancing is to reduce the variability of margins as shown in the Table below. The effect is also revenue neutral for both internal and external customers.

Table 4.10 Return by bandwidth of the equipment and infrastructure basket for after proposed BT price re-balancing (using 2006/07 equipment volumes)

	64 kbit/s		2 Mbit/s		34/45 Mbit/s		140/155 Mbit/s		PoH	Total
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Ext	
Revenue (£m)	4.1	2.4	13.6	22.3	2.3	1.5	1.8	0.8	2.1	50.9

Profit (£m)	(0.6)	(0.4)	(0.1)	(0.1)	0.7	0.5	0.0	0.0	(0.2)	(0.2)
RoS (%)	(17%)		0%		29%	36%	0%		(10%)	0%

RoS = Return on Sales

<u>Further price re-balancing is required once BT's negotiations with their suppliers are completed</u>

4.94 BT informed us that, as they have yet to conclude their negotiations with their suppliers of equipment, they are not able to re-balance the prices of equipment totally at the start of the charge control and would like to retain the flexibility to do so during the charge control. However, BT also do not expect prices to change materially as a result of the negotiations.

4.95 As BT are not able to "fully" re-balance the price of equipment by the start of the new control we propose the following:

- BT to re-balance prices of equipment and infrastructure at the start of the control (as proposed by BT in Table 4.9);
- BT to continue the rebalancing of such prices in a i) revenue neutral way and ii) without undue discrimination to any of the relevant users of equipment.

4.96 Following from the above we believe it is reasonable to subject the Equipment and Infrastructure basket to an overall cap of RPI-0%, where the price of any equipment cannot increase by more then 5% in nominal terms in any given year of the proposed charge control.

Question 4.13 Do respondents agree with the proposed one-off adjustments to the starting charges of equipment prices as proposed by BT?

We forecast base year costs to the end of the control

4.97 Once we determined the relevant cost base for charge control purposes, the next stage is to determine the total costs that BT will need to recover by the end of the next charge control period (e.g. by end of September 2012). In order to do this we developed a cost forecasting model ("the LLCC model") which is based on a methodology consistent with that used by Ofcom in developing its proposals for the current PPC charge controls. Full details of this model can be found in Annex 9.

4.98 The inputs into the model consist of:

- The 2006/07 base year costs and revenues from BT's AFSs adjusted as explained in Table 4.3 above; and
- A number of key assumptions, which when alternative values are used, result in different values of X.

4.99 The key input parameters of the model which affect the value of X are summarised in the Table 4.11 below.

Table 4.11 Key input parameters used in the LLCC model

Parameter	Description	Range of assumption
Service volume forecasts (paragraph 4.101)	Forecasts for the individual TISBO terminating and trunk services in scope of the TI basket	Ofcom forecasts ±10%
Future efficiency gains (paragraph 4.110)	BT efficiency savings in every year of the next control period	0% to 5% per annum
Weighted average cost of capital ("WACC") (paragraph 4.114)	BT's WACC used to calculate the return on capital employed (ROCE) which is added into the cost stack of individual services	10.25% and 11.75%
Asset volume elasticities ("AVEs") (paragraph 4.118)	% change in the gross replacement costs of assets for a 1% change in volume	Varies by asset category
Cost volume elasticities (CVEs) (paragraph 4.118)	% change in operating costs for a 1% change in volumes	Varies by operating cost type
Asset price changes (paragraph 4.121)	% change in asset prices	Varies by asset category

4.100 BT provided Ofcom with its view of each of the model parameters. In forming our view on the appropriate input values, we used the data submitted by BT as well as information available to us from work carried out on other charge controls, work related to the BCMR and work carried out on our behalf by external consultants. Our views on each of the input parameters are summarised in the paragraphs below.

The volume forecasts predict sharp decreases in the volumes of TI terminating and trunk segments

<u>We propose to use BT's growth forecasts</u>

4.101 The volume forecasts for the services in the TI basket are used to derive the total capital and operating costs that BT will need to recover by the end of the proposed charge control period. The values of X are sensitive to these forecasts due to the interaction between volumes and the asset volume elasticities / cost volume elasticities, which reflect economies of scale (and are described in more detail in the below paragraphs).

4.102 The generic approach to forecasting demand for services at the wholesale level is to derive these from the underlying volume forecasts at the retail level. This is because wholesale demand is "derived" from demand for products and services at the retail level. We were unable to find independent third party forecasts for leased lines services either at the retail or wholesale level.

4.103 We instead relied on BTW's volume growth forecasts for wholesale TI terminating and trunk services which we have applied to 2007/08 actual volumes from the RFSs. BT adopted the following methodology when forecasting future volumes for these services:

- External forecasts take as a start point Advanced Order capacity submissions. These are then adjusted for the percentage of orders that historically do not materialise. The resulting short term forecast is then trended forwards. Account is taken of both the migration from PPCs to Ethernet and the migration from Retail Private Circuits to PPCs.

- Internal volume forecasts have been derived from the Retail and Global Services forecast of Retail Private Circuits. The internal PPC volumes are derived to be consistent with this forecast, taking the underlying components making up the Retail Private Circuits.

4.104 We also tested the sensitivity of our model outputs to ±10% changes in the absolute level of volumes.

BT predicts an overall decrease in the demand for TI terminating segments and trunk

4.105 In BTW's view the following underline the general trend in the volume forecasts for TI terminating and trunk segments:

- The decline of Time Division Multiplexing ("TDM") technology and its replacement by Ethernet is now beginning to slowly materialise.

- The large installed base of legacy TDM services means that migration will be a gradual process and the limitations of Ethernet technology mean that it is likely a residual TDM base of some size will remain. The timing of the decline in demand for TDM services is difficult to predict as is the rate of growth for Ethernet services. The market is likely to be guided by the speed at which end-users churn equipment and the pricing and commercial signals given by market players.

- BTW is planning to offer some new TDM products on its NGN, but it has no plans to duplicate its entire current product portfolio. At some point it is expected that equipment vendors will withdraw technical support for legacy TDM network equipment.

- In the future, mobile operators are expected to demand more backhaul bandwidth to support mobile broadband applications. Current TDM base stations supporting an average of 2-4Mbts are expected to require a substantial increase in capacity to support High Speed Downlink Packet Access ("HSDPA") in 2009 and beyond. Ethernet base stations are expected to become available in similar timeframes providing a more cost effective mechanism for supporting additional bandwidth. Some operators are experimenting with xDSL backhaul to support mobile broadband for non-real time applications. New technologies such as WIMAX and HSDPA may also provide additional options for supporting mobile broadband and also substituting for fixed backhaul infrastructure.

- The improvements in performance of copper access networks that has been brought about by widespread deployment of xDSL has seen <2Mbit/s and 2Mbit/s dedicated services being substituted by broadband. 3G data cards are being deployed as a substitute for low bandwidth leased lines for non-critical telemetry applications.

<u>BT's volume forecasts reflect the general market trends discussed above</u>

4.106 BTW has provided volume forecasts for TI terminating segments and trunk up to 2011/12. These volumes are broken down into circuits provided internally to BT, circuits sold to CPs and circuits sold to mobile operators (and include forecasts for emulated services over 21 CN). For the purposes of this consultation we used BT's unadjusted volume forecasts, which we discuss below.

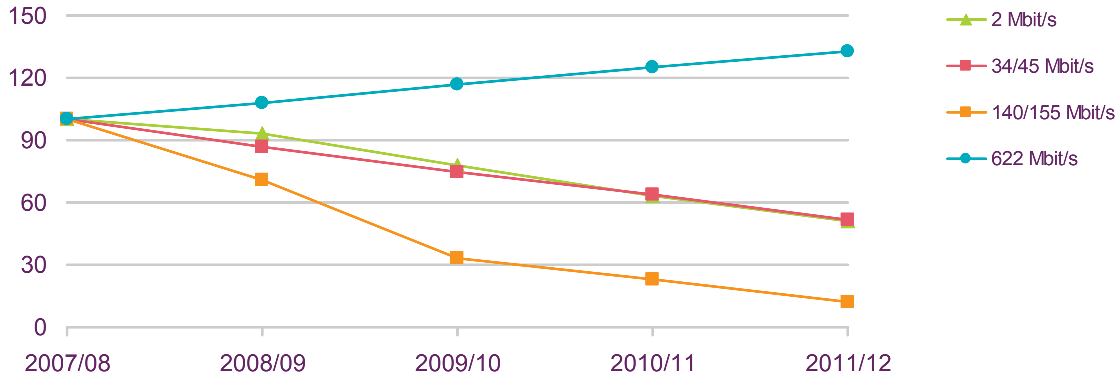
- For ease of presentation (and reasons of confidentiality) we have analysed total volume forecasts (e.g. the sum of internal and external volume forecasts).
- We have plotted forecast volume indices for the various services, where volumes are set to 100 in the first year. This is to show how the trend in the volume forecasts of particular services is predicted to change over the control period.
- For comparison we also note the Compound Annual Growth Rate ("CAGR") implicit in the volume forecasts. We note that a CAGR calculation takes into account the volumes at the end and start of a particular time period (as discussed below) and therefore ignores the year to year trends shown in the figures below.

4.107 Figures 4.2 and 4.3 below show the trend in the forecasts for total volumes (internal and external) of TI terminating local ends and trunk volumes. Main link and transmission volumes show similar trends to the local end volumes by bandwidth shown in the below figure.

Figure 4.2 BT's forecasts for total volumes of local ends (2007/08=100)

Figure 4.3 BT's forecasts for total volumes of trunk

2007/08=100



4.108 At a high level BT are forecasting total (internal and external) TI terminating segments to fall at a rate of 15%-40% per annum (CAGR[64]) during the control period (Figure 4.2 and 4.3). Key trends are:

- The biggest fall is expected in the sub-2 Mbit/s circuit numbers (45% year on year decrease between 2007/08 and 2011/12). BTW is not expecting any significant volumes to remain on the Digital Private Circuit Network ("DPCN") platform beyond 2012/13 and expects most customers to have migrated to other products such as Ethernet.

- 2 Mbit/s and 34/45 Mbit/s circuits are also expected to decrease (15% year on year decrease between 2007/08 and 2011/12). This is despite the inclusion of emulated services over 21 CN. BT expects that as demand for bandwidth increases customers will be switching to the higher bandwidth Ethernet products. This is also supported by the expected high decline in 140/155 Mbit/s circuits (41% year on year decrease between 2007/08 and 2011/12).

- Trunk volumes are also expected to decrease. The rate of decrease is the same as that observed for the local ends discussed above. The exception to this is 622 Mbit/s trunk which is only used internally by BT and is forecast to increase at a rate of 7% per annum.

4.109 We have attempted to cross-check BTW's forecasts against a reasonable view of future trends in the demand for TI and AI leased line services. It has however proved difficult to obtain an independent view of such trends. Our modelling so far has therefore been based on BTW's external and internal volume forecasts. However we are keen to receive stakeholders' views on appropriate volume assumptions.

Question 4.14 Do respondents agree with the volume forecasts used in the LLCC model for the TI basket of services? If not, please provide your views on the future volume forecasts of services within scope of the charge control.

We expect BT to realise efficiency gains of between 0% and 5% per annum

4.110 One of the main benefits of the RPI-X form of charge control is that it creates incentives on the charge controlled firm to increase its efficiency, by allowing it to keep any super-normal profits that it earns by realising greater efficiency savings

[64] CAGR=Compound Annual Growth Rate

then those assumed in the cost forecasting model (see paragraph 3.114 in Section 3).

4.111 The future efficiency gains we assume in the LLCC model measure the amount by which BT's operating costs are expected to fall annually within the control period. These efficiency gains have two components: the "catch-up factor" and the "frontier shift":

- *The catch-up factor measures BT's efficiency relative to other comparator companies*. 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)[65]. NERA's conclusion is that BT's efficiency is roughly "on the decile", that is, BT is just in the top 10% of companies ranked by efficiency. As in previous studies of this kind, the top decile is taken to be an appropriate benchmark for efficiency. A similar study conducted by Deloitte's on behalf of BT resulted in a similar conclusion.

- *The frontier shift calculates BT's underlying productivity gains*. This is the amount by which an efficient comparator company will expect to reduce real unit costs over time. We calculate BT's productivity gains achieved in the period from 2003/04 to 2006/07 after having adjusted for the effect of volumes, inflation, input price changes, BT's historic and expected future efficiency catch-up. This resulting number is used to derive the efficient level of operating costs at the end of the charge control period. Our analysis indicated that in real terms BT's annual efficiency improvements were between 0% and 5%. Further explanation of this calculation is included in Annex 9.

NERA's stochastic frontier model also suggests that the efficient level of unit costs was falling by around 2.5% to 3.0% annually in real terms between 1999 and 2006[66].

4.112 In deriving our assumptions for the future efficiency gains:

- We based our analysis on the costs of BT's whole network (including core). We did not attempt to split our analysis of efficiency between BT's access and core networks. This is because, as summarised in the OFFR First Consultation[67], the LECs provide a good comparable benchmark to BT as a whole. However this benchmarking exercise does not work when we undertake the same analysis with parts of BT. In addition, TI terminating segments and trunk also use BT's core network and therefore an efficiency gain based on analysing the costs of BT's whole network is more appropriate.

- We did not make any adjustments for potential efficiency gains derived from lower capital and operating costs that BT is expected to benefit from moving to its 21CN platform (as explained in Section 3).

[65] A copy of the full report is available on Ofcom's website http://www.ofcom.org.uk/consult/condocs/llcc/efficiency.pdf
[66] A somewhat different methodology is employed in "A new pricing framework for Openreach". Partly because standard benchmarking techniques do not work well for an access-only business like Openreach, it was concluded that it was necessary to use alternative efficiency measures which encompass both frontier shift and catch-up.
[67] http://www.ofcom.org.uk/consult/condocs/openreach/

4.113 Our analysis indicates that BT's forward looking efficiency gains are in the range of 0% and 5%.

Question 4.15 Do respondents agree with Ofcom's proposed efficiency assumption range of 0% to 5% when forecasting BT's future costs in the TI basket?

We assume the same WACC for all TI services

4.114 As discussed in section 3, Ofcom's practice is to set 'X' so that the value of BT's rate of return projected by the LLCC model for the last year of the price control is equal to the cost of capital. This approximates to the workings of a competitive market in which excess profits are gradually eroded by competition.

4.115 The OFFR Second Consultation is proposing to amend Openreach's WACC to a value between 9.25%-10.75% (pre-tax nominal). As a result, their estimated range for the WACC for the rest of BT (including core) is 10.25%-11.75% (pre-tax nominal).

4.116 We are of the view that TI baskets of services should be classified within BT's core network for the purposes of an assessment of risk levels. Since these services are mostly bought by SME and corporate customers of BT, future demand for these services, particularly in the case of the demand for new circuits, is likely to be more closely correlated with the economy-wide level of economic activity than other access services. This view is in line with our policy decision as outlined in the cost of capital statement published in 2005[68].

4.117 For the reasons outlined above, our view is that an appropriate value for BT's cost of capital for TI terminating and trunk services should be the higher range of WACC as proposed by the OFFR Second Consultation i.e. 10.25% to 11.75%.

Question 4.16 Do respondents agree with the range of WACC proposed for services in scope of the TI basket?

We propose to use AVE/CVE assumptions from the 2004 PPC charge control

4.118 AVEs and CVEs measure the percentage change in capital and operating costs for a 1% change in volumes. BT submitted revised estimates for its AVEs and CVEs by using the cost volume relationships for the relevant classes of assets as per its LRIC model (see Annex 9 on modelling). Therefore in setting the proposed charge controls we considered the options of using:

- *The AVE/CVE values used in the 2004 PPC Statement*. These result in a weighted average (across all cost components) AVE of 0.39 and CVE of 0.24.
- *The AVE and CVE values re-calculated by BT for the proposed charge control.* These result in a weighted average (across all cost components) AVE of 0.59 and CVE of around 0.5.

4.119 We have not agreed in the past with BT's approach to calculating AVEs and CVEs based on its LRIC model, because the LRIC of a product or service may include any fixed costs incurred in its provision, while the AVEs and CVEs relates to costs changes arising from changes in volumes (between non-zero output levels) rather than the decision to provide the service or not.

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

4.120 Ofcom's proposal is to use AVEs and CVEs used in the 2004 PPC Statement for similar asset types and keep these values constant over the period of the control. For a comparison of the AVEs/CVEs used in the LLCC model and submitted by BT see Annex 9.

Question 4.17 Do respondents agree with Ofcom's assumptions on AVEs and CVEs when forecasting the costs of the TI basket?

We use the average historic five year trend in real asset price changes

4.121 There are ten asset categories relevant to the provision of TI terminating and trunk segments[69] as reflected in BT's RFSs. The asset price change assumption is the amount by which each of the asset types changes in price during the control period.

4.122 We propose to use the average of BT's historic five year trend in real asset prices changes (e.g. between 2002/03 and 2006/07) and hold these constant over the period of the control. For a discussion of our proposed asset price changes see Annex 9.

Question 4.18 Do respondents agree with Ofcom's proposal to use the average historic five year trend in asset price changes as proxy to future prices when forecasting costs of the TI basket?

We propose alternatives to dealing with BT's narrow definition of cost components

4.123 In forecasting the future costs of the services in the TI (and AI) baskets we need to take into account likely customer migration between TI and AI services. BT's narrow definition of costs components, in which most components are defined in a technology-specific way, tends to understate the potential for assets to be re-used as migration occurs.

4.124 At its core the LLCC model forecasts the costs of components which make up the TI (and AI) basket of services. The cost of a particular service is then determined in proportion to the components it uses. As currently constructed the cost components defined by BT are in the majority of cases service specific[70]. Therefore, as service volumes decline so will the volumes of components associated with these services which in turn will result in material increases in the unit costs of these components.

4.125 As part of the independent review conducted on our model, Analysys-Mason suggested an approach to circumvent the issue discussed above. Their approach is based on an analysis of the marginal costs of components and the attribution of non-marginal costs in proportion to these. This results in a greater proportion of non-marginal costs being recovered from AI services as the volume of these grows and

[69] These are: cable, duct, local exchange, main exchange, transmission, other network equipment, motor transport, land & buildings, computers & OM and other.

[70] For example a 34/45 Mbit/s local end service uses one 34/45 Mbit/s local end component. This component is not used by any other service. The costs of this component include around 34% fibre, 20% duct and the remainder made up of various other assets (the percentages are based on the proportion of the gross replacement costs of the assets apportioned to this component) and operating costs. In the event of service volumes declining, so will the associated volume of this component resulting in a material increase in the unit cost. However the fibre and duct can be utilised to provide other services and therefore these costs can be recovered elsewhere.

avoids the rapid increases in TI unit costs which would result from a constant amount of fixed costs being recovered from an ever-smaller volume of TI services.

4.126 In practice, in order to implement the Analysys proposal, we had to develop a method of re-allocating non-marginal costs at the aggregate TI and AI basket level. This approach is consistent with the spirit of the Analysys method and is reasonable given that we are calculating the value of X based on the total basket level costs, rather than at an individual service level. This approach resulted in 75% of the fixed costs being re-allocated from the TI basket into the AI basket.

4.127 For further discussion of our methodology see Annex 9.

Question 4.19 Do respondents agree with Ofcom's approach of re-allocating fixed costs from the TI services to the AI services?

We bring prices in line with costs at the end of the control to determine the initial value of X

4.128 Having determined the potential adjustments to BT's 2006/07 base year costs, starting charges and likely ranges for the key input parameters Ofcom's proposals (and ranges where appropriate) for the values of X for each of the proposed charge control baskets are set out in the Table below.

4.129 Our proposed range is based on the sensitivity analysis we conducted on the key modelling parameters and is discussed in Annex 9. We note that the ranges for the values of X are calculated after allowing for one off adjustments to the starting charges.

Table 4.12 Proposed ranges for the value of X for the TI basket

Basket	Range of X (after proposed starting charges adjustments)	Sub-cap
TI	RPI – 0.00% to RPI – 7.00%	RPI-0% (sub-cap on TI terminating) RPI-0% (sub-cap on connections) RPI-0% (sub-cap on rentals)
Equipment and infrastructure (TI)	RPI-0%	No one charge allowed to increase more then 5% in nominal terms
Ancillary Services (TI)	RPI-0%	None

Conclusions

4.130 Our key proposals for the TISBO terminating and trunk segments are summarised below.

Table 4.13 Our proposals on the TISBO and trunk services

Basket	Description	Range of X (after proposed starting charges adjustments)
TI	Wholesale low bandwidth TISBO (≤ 8 Mbit/s) – connection and rental; Wholesale high bandwidth TISBO (> 8 Mbit/s and ≤ 34/45Mbit/s) – outside CELA – connection and rental; Wholesale very high bandwidth TISBO (> 34/45 Mbit/s and ≤ 140/155 Mbit/s) – outside CELA – connection and rental; and Wholesale TISBO trunk (all bandwidths) – rental.	RPI – 0.00% to RPI – 7.00% RPI-0% (sub-cap on TI terminating) RPI-0% (sub-cap on connections) RPI-0% (sub-cap on rentals)
Equipment and Infrastructure	All equipment and infrastructure charges	RPI-0% (no individual charge allowed to increase more then 5% in nominal terms)
Ancillary Services (TI)		RPI-0%
RBS		Not to be charge controlled BT to price in an equivalent manner to TI terminating segment prices
SDSL		Not to be charge controlled BT has given voluntary price commitments
Accommodation services (BT Netlocate)		Not to be charge controlled Rely on cost orientation

4.131 BTW also propose the following adjustments to start charges:

Table 4.14 Proposed new start charges

Services	Current Price (£)[71]	Proposed Price (£)
64 kbit/s link	62.81	125.62
64 kbit/s local end (external)	289.67	579.34
64 kbit/s enhanced maintenance	40.31	80.62
2 Mbit/s local end (external)	691.92	833.76
2 Mbit/s trunk	102.24	46.83

4.132 BTW are also proposing substantial changes to the prices of services within the Equipment and Infrastructure charges. The effect of these proposed changes is slightly revenue neutral for both internal and external sales.

4.133 In addition we propose that:

- Provided the price rebalancing proposed by BTW is implemented, we're minded not to require any further one-off changes when the proposed controls are introduced.
- Prices for TI terminating and trunk services within the scope of the proposed charge control should not increase in nominal terms between the implementation of the charge control and 1 October 2009; and
- The prices of all the services in the TI basket are brought within the DLRIC floors and DSAC ceilings, within 12 months of the implementation of the charge control. BTW should review its charges during 2009/10 in the light of the latest available DSAC/DLRIC, and rebalance prices where required to bring them within the floors and ceilings, appropriately measured. In this context we would note that the onus is on BTW to comply with its regulatory obligations and we cannot fetter our discretion about any future adjustments which this may necessitate BT has undertaken to keep TI prices constant in nominal terms until 1st April 2009 and we have developed our proposals on the basis of this assumption.

[71] Current price is external sales only.

Section 5

Proposed charge controls for AISBO services

Introduction

5.1 We considered the following issues when developing the proposed charge controls for AISBO services:

- The appropriate number and scope of charge control baskets;
- BT's recent restatement of revenues in the 2006/07 Regulatory Financial Statements ("RFSs") and its financial impact on the charge control;
- Our proposed cost adjustments to Openreach's 2006/07 base year costs in order to determine the relevant cost basis for forecasting purposes;
- One-off adjustments to the starting charges of AISBO services; and
- Range for the values of X for the proposed baskets of services.

5.2 As noted in the previous Section, our analytical approach and modelling methodology is applied consistently across TI and AI services. We refer to the relevant part of Section 4 rather then repeating these explanations again in this Section.

We propose two charge control baskets for AI services

We propose a single basket for the principal AISBO services

5.3 We propose a single charge control basket (the "AI basket") for the principal AISBO services provided by BT in the low bandwidth AISBO market. This basket is to include:

- Low bandwidth AISBO (≤1 Gbit/s) – connection and rental services.

5.4 We also propose this basket to include the new Ethernet connectivity services, namely Ethernet Backhaul Direct ("EBD)" and Bulk Transport Link ("BTL"), which Openreach launched on 20 May 2008. New AI products, such as Ethernet Access Direct ("EAD") will also fall within the scope of the AI basket.

<u>We propose using sub-caps in the main AI basket</u>

5.5 We propose to apply a number of sub-caps as follows:

5.5.1 A sub-cap on each of the WES and BES services separately, which requires BT to limit price increases in each of the WES and BES sub-baskets to RPI-0%.

5.5.2 Sub-caps of RPI-0% on separate sub-baskets for connection and rental services, applicable across all the services in the basket. This is to ensure that any changes in the balance of costs recovered between connection and rental charges are capped and CPs are protected against sharp price increases for particular services.

<u>There are a number of advantages associated with our basket design</u>

5.6 The main advantages associated with having a single AI basket are that:

- *It allows for uncertainty over the deployment of the next generation Ethernet backhaul products*. On 20 May 2008 Openreach launched the first of its next generation backhaul products namely EBD and BTL. The migration path from legacy WES and BES products to these newer products is still uncertain, as are the associated costs of provision. The inclusion of these "new" and "old" products in the same basket is consistent with our technology neutral approach to cost modelling, and avoids the need for us to rely on cost forecasts for the new services, or to make assumptions about the speed of migration from the old to the new.

- *It provides Openreach with pricing flexibility to manage the process of migration to 21CN products and more generally to respond to changing market conditions*. The definition of broadly defined baskets will enable Openreach some freedom to determine the pricing differentials between 20CN and 21CN products, which will affect the speed of migration between them. This will be important if the migration process is to be managed efficiently.

5.7 The proposed sub-caps would also help to ensure that Openreach does not use its pricing freedom in a discriminatory manner, by setting comparatively higher charges for services used more heavily by external customers.

Question 5.1 Do respondents agree with Ofcom's proposal of a single AI basket with separate sub-caps of RPI-0% on each of the sub-baskets of WES and BES services? Do respondents also agree with the proposed sub-caps of RPI-0% on the sub-baskets of connections and rental services?

We propose to create a separate basket for Ethernet accommodation services

<u>Openreach launched the new Ethernet accommodation products in July 2008</u>

5.8 BT launched the new Ethernet accommodation products (Access Locate and Access Locate Plus) on 4 July 2008.

5.9 Access Locate is a product BT developed following the Undertakings Review in December 2007[72]. This will enable CPs to leverage their existing Local Loop Unbundling ("LLU") space for the termination and aggregation of current and any future Ethernet products. This means that:

- All LLU operators will have the choice to upgrade to this new product, whilst the existing LLU accommodation product will continue to exist.

- This product will also be available to all third party backhaul and other Ethernet service providers.

5.10 Access Locate Plus will allow CPs to locate equipment listed under Annex 4[70] of the Undertakings namely broadband servers, video servers, PPCs and Multi Service

[72] http://www.ofcom.org.uk/telecoms/btundertakings/tsr_statement/tsr_statement.pdf

Interconnect Links ("MSILs"). Access Locate Plus will supersede the current BT Netlocate product used by CPs and offered by BT Wholesale. For CPs to buy this product they will first need to buy Access Locate.

Openreach set the prices of the new Ethernet accommodation products to be the same as the current LLU accommodation products

5.11 Both Access Locate and Access Locate Plus charges will be the same as the LLU accommodation charges. The only differences is that for:

- *Access Locate*: An administration charge of £220 (per exchange site) will be payable for conversion from LLU accommodation to Access Locate Terms and Conditions. This charge will cover the costs of administration such as receipt of order, notifying the CP that the transfer is actioned, updating the billing and reporting systems. This charge will not be payable by non-LLU Ethernet service providers.

5.12 The other difference between the various accommodation products is that communication providers will be limited regarding the type of equipment they can house under LLU, Access Locate or Access Locate Plus accommodation terms. So these products cannot be viewed as direct substitutes.

We propose Openreach to link the prices of Ethernet accommodation services to those of LLU accommodation services

5.13 We considered four different options for the treatment of the new Ethernet accommodation services:

- *Option 1 – Not to subject Ethernet accommodation services to a charge control*. Instead we would require BT to comply with its cost orientation and other ex-ante obligations and general competition law requirements as set out in the BCMR Statement. We do not think this is appropriate as Ethernet Accommodation services will be an important component of competition developing in the overall Ethernet market and CPs will require certainty over the future prices of these products.

- *Option 2 – Include Ethernet accommodation services in the overall AI basket*. As accommodation is an important technical area for the provision of Ethernet services, one possibility would be to include these services in the overall AI basket. However this would not be the most appropriate approach due to the low value associated with these services compared to the overall AI basket revenues (which means, if included, the control will not be as effective on controlling the price of accommodation services).

- In addition the underlying costs of accommodation services are unlikely to follow the same trend as the principal Ethernet services (for example the cost of power is likely to follow the trend in the electricity prices, rather then the underlying change in the cost of network plant and equipment).

- *Option 3 – Include Ethernet accommodation services in a basket of their own*. The main advantage of this approach would be that the resulting control will be more effective on the price of these services. The proposed cap could either be a) calculated by taking into account the total demand for these underlying services or b) linked an exogenous index (such as RPI).

- *Option 4 – Propose the same regulation for Ethernet accommodation as that for LLU accommodation services*. We also note that the OFFR Second Consultation proposes to include LLU accommodation products (e.g. LLU co-mingling) in a basket of their own subject to an RPI-0% price cap. It further proposes that the relevant volumes to take into account when setting the control will include the use of these services by non-LLU customers (e.g. Ethernet services such as WES/BES) as it is not appropriate to set different charges for the same accommodation services as between LLU and Ethernet.

5.14 Taking all of the above into account our proposed approach needs to be consistent with that proposed in the OFFR Second Consultation. We therefore propose to:

- *Include Ethernet accommodation products in a basket of their own, subject to an RPI-X% price cap.* We note that as Ethernet and LLU accommodation services are not defined by Ofcom as a market, but as a technical area required in the provision of services in a particular market (e.g. Ethernet or LLU), we cannot propose to include these two accommodation products in the same basket. In order to be able to propose a charge control remedy on Ethernet accommodation services as part of the LLCC framework we propose including these services in a basket of their own.

- *Retain consistency with the regulation on LLU accommodation services as proposed in the OFFR Second Consultation*. However even if we cannot include Ethernet and LLU accommodation services in the same basket, we need to retain consistency in the regulation and price cap applied to the two products. This means we propose to apply the same price cap on Ethernet accommodation services as the one proposed for LLU accommodation in the OFFR Second Consultation i.e. RPI-0%. As set out in the OFFR Second Consultation the relevant volumes to take into account when setting the control will include the total demand for these services by Ethernet and LLU customers where appropriate.

- *Price regulate the additional charges*. With regard to the additional new charge (e.g. the Access Locate administration fee) we propose that each of these charges should be subject to a cap of to RPI - 0%.

Question 5.2 Do respondents agree with Ofcom's proposal of linking the regulation of the Ethernet accommodation and LLU accommodation products in the manner described and the overall price cap of RPI-X% (with X probably close to zero) proposed on the Ethernet accommodation products?

We propose to charge control ancillary services

5.15 We propose to charge control ancillary services used in the provision of AISBO services. Due to the low level of materiality associated with these services (revenues of £6m in 2006/07) including these products in the overall AI basket would not result in an effective control of their prices. Instead we propose including these services in a basket of their own, where the change in the aggregate charges will be limited to RPI-0%.

5.16 BT is also required to comply with cost orientation and other *ex ante* obligations and its general obligation to comply with competition law as we set out in the BCMR Statement.

Question 5.3 Do respondents agree with Ofcom's proposal to include ancillary charges in a basket of their own subject to RPI-0%?

BT re-stated its 2006/07 revenues for AISBO services

5.17 BT's published 2007/08 RFS's show that, in the AISBO market, the prior year comparatives have been restated to reflect the restatement in Openreach's segmented results in BT Group plc's Annual Report and Accounts for the year ended 31 March 2008. This was as a result of system improvements following the creation of new internal operating divisions (BT Design and BT Operate), identifying additional internal usage.

5.18 The effect of this re-statement is to increase the volume and revenues associated with WES circuits as shown in Table 5.1 below.

Table 5.1 BT re-statement of Openreach's WES circuit volumes and revenues in 2006/07 RFSs

Services	Additional number of circuits	Additional revenues (£m)
WES 10 Mbit/s	2,142	10
WES 100 Mbit/s	1,190	17
WES 1000 Mbit/s	367	19
Total	**3,699**	**46**

5.19 Due to the materiality of the re-statement we asked Analysys-Mason to conduct an independent review of it. Details of the Terms of Reference ("ToR") for this review and the Analysys-Mason report can be found on the web-site[73].

- The Analysys-Mason review[74] identified that the additional volumes are a result of a discrepancy between the volumes reported by Openreach and other BT internal systems (e.g. Powerhouse), where the former identified around 5,000 more circuits than the latter. Of these extra 5,000 circuits 3,699 related to the WES services (as indicated in Table 5.1 above). In Analysys's opinion the remaining 1,000 circuits are not included in the re-stated 06/07 volumes.

5.20 We will be working closely with BT during the consultation period to refine the base year inputs. For the purposes of this consultation document we have reflected the additional volumes in both our base year profitability analysis for 2006/07 and in developing our LLCC model.

We propose adjusting BT's 2006/07 base year costs for AISBO services

5.21 As with the TI basket of services, we make a number of adjustments to BT's base year costs for AISBO services as per its RFSs, to make sure that these are relevant for the purposes of developing a forward looking charge control.

[73] http://www.ofcom.org.uk/consult/condocs/llcc/analysysmason.pdf
[74] Analysys-Mason report, Section 7.

5.22 Table 5.2 identifies the key items of cost adjustments, our estimate of the value of these adjustments and the reason for the proposed adjustments. The type of cost adjustments we identified are the same as those described in Section 4, paragraphs 4.57 to 4.74, for TI terminating and trunk services. However, we note that not all cost adjustments relevant to TI terminating and trunk services are relevant to AISBO services (for example the RAV adjustment) and the reasons for this are explained further in the paragraphs below. For completeness we also show the effect of BT's restatement of Openreach circuits revenues in 2006/07.

5.23 For more details on the calculations of our proposed cost adjustments see Annex 8, Table A8.7.

Table 5.2 Proposed adjustments to Openreach's 2006/07 costs for AISBO services as per the RFSs.

Description of cost adjustments	Type	Revenue adj £m	Cost adj £m	Rationale
Exclusion of out of scope services (paragraph 5.24)	1		6	We exclude the costs of ancillary services as we propose to include these in a basket of their own.
Exclusion of our of scope services			***6***	
Transmission equipment costs (paragraph 5.27)	2		2	The costs of transmission equipment located at either end of a circuit are recovered upfront in circuit connection charges. However there is a timing mismatch between when the revenues and costs are recognised in the RFSs which we are adjusting for.
Amendments to the RFSs			***2***	
Recalculate holding gains/losses (paragraph 5.30)	3		26	We recalculate holding gains/losses using estimates of asset price changes during the control period.
Regulatory asset value (RAV) (paragraph 5.32)	3		-	We do not propose making the RAV adjustments to services in scope of the AI basket.
Exclusion of 21 CN direct costs (paragraph 5.35)	3		5	We propose not to factor in any increases in efficiency gains resulting from migration to 21CN. For consistency, we exclude direct costs relating to 21 CN.
Payment terms (paragraph 5.37)	4		4	We modify debtors to reflect contractual payment terms.
Ofcom policies			***35***	
Re-statement of circuits revenues (net adjustment) (paragraph 5.17 and Table A8.8)		11		This adjustment is the net effect of Openreach's re-statement of WES circuit volumes and the price decreases implemented in June 2008.
Total net adjustments		***11***	***43***	

We propose to exclude out of scope services

5.24 We exclude the costs of ancillary services which are reflected in the costs of services within the scope of the AI basket, as these will be included in a basket of their own and subject to RPI-0% (paragraph 5.15).

5.25 We also note BT included the costs of Backhaul Network Services ("BNS") in the cost base for WES/WEES circuits. We therefore exclude the costs of BNS (£5m) from the cost base of WES/WEES services when undertaking our service profitability analysis as described in Annex 8.

5.26 The effect of our exclusions is to decrease base year 2006/07 costs of the AI basket by £6m. For details of our calculations see Annex 8.

We propose to exclude equipment costs included in the AI basket

5.27 The transmission equipment costs for AISBO services are recovered through upfront circuit connection charges. The aim of this cost adjustment is to amend the timing mismatch between the revenues and costs reported in the RFSs in 2006/07 where:

- The revenues associated with this equipment are all recognised in the circuit connection revenues that BT levied from customers upfront; whilst

- For accounting purposes the assets are capitalised and depreciated over the life of the underlying equipment.

5.28 In order to compare the prices of these services to the underlying costs of provision we need to ensure that revenues and costs are recognised on the same basis. In order to achieve this we propose to replace the total depreciation costs in the accounts with an estimate of BT's expenditure (based on contract prices).

5.29 The impact of our adjustment is to decrease BT's base year costs by £2m. For details of our calculation see Annex 8.

We propose to recalculate holding gains and losses

5.30 We propose to recalculate the holding gains/losses included in the 2006/07 cost base for AI services to take into account our assumptions with regards to future asset price changes. For details of our reasoning see Section 4 paragraph 4.60.

5.31 The impact of our adjustment is to decrease BT's base year costs by £26m. For details of our calculations see Annex 8.

We propose not to take into account the Regulatory Asset Value (RAV) for pre-97 access copper and duct

5.32 As explained in Section 4 paragraph 4.63, to prevent any under or over-recovery resulting from the change in the accounting treatment of the pre-97 copper access assets (duct and copper cable), we would in principle also need to allocate the RAV adjustments to services and products in scope of the AI basket (to the extent that they use these assets).

5.33 However there are three main reasons as to why we do not propose making this adjustment in the case of AI basket of services, specifically:

- *Ethernet services are entirely on fibre*. Therefore the RAV adjustment in relation to the access copper cable is not relevant for services in scope of the AI basket.

- *Ethernet services make less use of pre-97 duct*. Ethernet services were introduced post August 1997, and it is therefore likely that they will use pre-97 access duct to a lesser extent than other services (for example TI services).

- *The need not to reduce incentives to invest in new fibre services*. Unlike TI services, it is likely that there will be a significant amount of future investment by BT and potentially other CPs in infrastructure used to provide Ethernet services. It is important for us to set the correct pricing signals (by setting prices which reflect the replacement cost of the assets) to encourage efficient future investment in this area.

- We recognise that this approach introduces a possible inconsistency into charges for TI and AI services. In principle, to the extent that TI prices are relatively low as a result, the demand for TI services may be increased relative to that for AI services. However, the evidence set out in the BCMR Statement suggests that customer responsiveness to price differentials between TI and AI services is limited, and this is reflected in the conclusion that AI and TI services are sold in different markets. Any distorting effect is therefore likely to be small.

5.34 On balance we propose not to apply the RAV adjustments to AISBO services, given that future investment is most likely to be in this area and there is a risk that this investment could be deterred if this adjustment is made to the cost base.

Question 5.4 Do respondents agree with Ofcom's proposal not to take the RAV adjustment into consideration when adjusting Openreach's base year costs for 2006/07?

We propose to exclude direct costs of 21 CN

5.35 BT apportioned 21 CN costs to AISBO services in 2006/07. As with the TI basket of services, we are proposing to exclude direct costs relating to 21 CN from the AI basket because:

- Under the technologically neutral approach to modelling, we forecast the costs of services irrespective of the underlying technology that is used to deliver them. Therefore we model the costs of a "hypothetical" ongoing network which, for simplicity, is based on the costs of the current network i.e. an ongoing WES/BES network.

- We are not including, within the model assumptions, the efficiency gains BT will derive from moving to 21 CN.

- Our model assumes an "ongoing" hypothetical network, where we build in an explicit allowance for future capital expenditure requirements.

5.36 For details of our approach see Section 4 paragraph 4.69 on the TI basket. The effect of this adjustment is to decrease AI basket costs by £5m (out of a total £12m attributed to the AI basket of services, including "indirect" costs). Details of our calculations are in Annex 8.

Question 5.5 Do respondents agree with Ofcom's proposal to exclude 21 CN "direct" costs from Openreach's base year costs for 2006/07?

We propose to amend notional debtors to reflect contractual payment terms

5.37 As for TI basket of services, we propose to amend notional debtors to reflect contractual payment terms. For a more detailed explanation of this cost adjustment see Section 4 paragraph 4.72.

5.38 The impact of this adjustment is to decrease BT's base year costs by £4m. For details of our calculation see Annex 8.

Question 5.6 Do respondents agree with Ofcom's proposal to amend debtors when adjusting Openreach's base year costs for 2006/07?

Other issues

CCTV costs

5.39 As a result of the recent price decreases announced on CCTV services in April 2008, Openreach claim that around £48m of common costs will be un-recovered. Openreach proposal is that these costs are recovered via the AI basket of services within scope of the proposed charge controls.

5.40 As we have not been able to establish how and where Openreach currently account for the costs of CCTV circuits, our proposal at this stage is not to include these costs within the scope of the AI basket (as a proportion of CCTV costs could already be apportioned to AI services). However we will be working closely with Openreach during the consultation period to complete our review of CCTV common costs. We have also undertaken a sensitivity analysis of the effect of including these costs in the AI basket, which is included in Annex 9.

We considered whether the levels of charges at the start of the proposed control are appropriate

Openreach have proposed substantial price cuts at the start of the control

5.41 Openreach announced substantial price cuts to their Ethernet services on 24 November 2008, which they expect to come into effect shortly before the proposed charge controls are introduced (e.g. February 2009). Under their new pricing proposals, some of the key changes introduced are[75]:

- WES /WEES 10 Mbit/s connection charges reduced by up to 33%.
- WES/WEES 100 Mbit/s reduced to the same price as 10Mb products for both connection and rental, representing a reduction of up to 65% for connection and up to 16% for rental.
- WES/WEES 1000 Mbit/s connection charges reduced by up to 62% and rental by up to 33%.
- BES 10 Mbit/s connection charges reduced by 19%.

[75] For a full description of the proposed price changes go to http://www.openreach.co.uk/orpg/news/productbriefings/ethernet/downloads/briefing_ETH072_08.pdf

- BES 100Mbit/s reduced to the same price as BES 10 Mbit/s for connection and rental, representing a reduction of up to 65% for connection and up to 26% for rental.

- BES 1Gb product connection reduced by up to 62% and rental by up to 31%.

5.42 The overall effect of their proposed price changes would be to decrease AI basket revenues by around £80m calculated using 2008/09 forecast volumes. We also note that the reduction in the WES/WEES 100 Mbit/s connection and rental prices account for around 50% of the proposed revenue reduction.

5.43 We have compared the proposed prices to the costs of providing these services in 2006/07, specifically we:

- *Compared the latest proposed prices to the unit costs of providing these services*. We note that we calculated unit costs on a CCA FAC basis for 2006/07 after all our proposed cost adjustments discussed in Table 5.2 and following paragraphs.

- *Compared the new prices to our estimates of Distributed Stand Alone Costs ("DSACs") and Distributed Long Run Incremental Costs ("DLRICs").* We estimate the adjusted floors and ceilings relative to our adjusted unit FAC costs (by assuming the same ratios between unit FAC costs and ceilings/floors reported in the RFSs). We used the DSAC/DLRIC/FAC values from the 2007/08 RFSs to calculate these ratios because they are at a more appropriate level of granularity than the ones reported in the 2006/07 RFSs.

5.44 Our analysis indicated that further adjustments to the level of prices may be required, because some charges remain above DSAC, even allowing for some possible imprecision in our DSAC estimates. We discuss these further in the paragraphs below.

We do not propose further one-off adjustments to the starting charges of AISBO services

5.45 We need to balance various considerations when deciding on whether to propose further one off adjustments to the starting charges of these services. As described in Section 3, we have generally preferred in the past RPI-X regulation using "glide paths", under which charges are brought into line with costs over a number of years, to one-off adjustments to starting charges. This is because the use of glide paths leads to greater stability and predictability (by avoiding sudden changes to charges), and also because they improve cost reduction incentives by allowing BT to keep unanticipated efficiency gains for a longer period.

5.46 The case for making off adjustments to starting charges will generally be stronger where:

- *Charges were previously not regulated*. The 2003/4 Market Review concluded that AISBO services were a nascent market and that imposing a charge control at that time was inappropriate and could impede market development, so these services were made subject to cost orientation obligations under SMP. It is only now that we are proposing to subject these services to a formal charge control.

- *Some charges are materially out of line with the underlying costs of provision*. Our analysis indicates that even after Openreach's recent price cuts some WES and BES rental prices will be above their DSAC value.

5.47 In addition, we want to incentivise efficient investment in new and innovative products such as “bandwidth hungry” broadband services. A number of LLU operators use BESs and their bandwidth requirements are likely to grow over time, as broadband speeds improve. They are likely to consider moving to EBD services over time. Currently BES products account for a material portion of the cost stack for LLU (15%-20% in average exchanges, this proportion increasing to 30%-50% in marginal exchanges). Lower prices for BES/EBD may therefore have a role to play in stimulating the development of higher speed broadband services.

5.48 On the other hand, there are some arguments for not proposing further one off adjustments to charges at the start of the control period. In particular:

- *Openreach have already introduced substantial price cuts at the start of the control*. Overall their ROCE across Ethernet services within the scope of the AI basket would be reduced from 38% to 26%. This estimate is based on 2006/07 unit FAC costs and volumes. In addition, Openreach has argued that following the introduction of these price changes, it expects the ROCE actually earned on these services to fall below its cost of capital in the 2009/10 financial year.

- *We want to give Openreach confidence that it will be allowed to benefit from the efficiency gains which are expected to result from its 21CN investments*. This may be necessary to give Openreach appropriate incentives to invest in new technologies like 21CN, where the benefits may only accrue some time after the initial costs have been incurred.

- *The RPI-X form of control will ensure that the average price across the AI basket is reduced further in each year of the control*. In the absence of one off reductions to start charges the value of X will be higher and therefore average prices will decrease by a bigger amount in real terms in each year of the control. This means that customers will ultimately still benefit from the same reductions in prices, although these will occur more gradually and over a longer period of time than if one-off cuts had been imposed.

5.49 Taking account of all the above arguments, we do not propose further one-off adjustments to the starting charges for the services within the AI basket. However, we do propose that Openreach should be required to ensure:

- That prices for low bandwidth AISBO services do not increase in nominal terms between the implementation of the charge control and 1 October 2009; and

- That the prices of all the services in the AI basket are brought within the DLRIC floors and DSAC ceilings, within 12 months of the implementation of the charge control. Openreach should review its charges during 2009/10 in the light of the latest available DSAC/DLRIC information, and rebalance prices where required to bring them within the floors and ceilings, appropriately measured. In this context we would note that the onus is on Openreach to comply with its regulatory obligations and we cannot fetter our discretion about any future adjustments which this may necessitate.

Question 5.7 Do respondents agree that there should be no further one off adjustments to the starting charges for services within scope of the AI basket and that prices should be brought within the DLRIC floors and DSAC ceilings within the 12 months of implementation?

We forecast base year costs to the end of the proposed charge control

5.50 Once we determined the relevant cost base for charge control purposes, the next stage is to determine the total costs that Openreach will need to recover by the end of the next charge control period (e.g. by end of September 2012). In order to do this we developed a cost forecasting model (the "LLCC model") which is based on a methodology consistent with that used by Ofcom in developing its proposals for the current PPC charge controls and which includes both the TISBO and AISBO services. Full details of this model can be found in Annex 9.

5.51 As described in Section 4 the inputs into the model consist of:

- The base year costs and revenues from BT's RFSs adjusted as explained in Table 5.2; and

- A number of assumptions for the parameters of the model, a parameter being a variable within the model which when alternative values are used, results in different values of X.

5.52 The key input parameters of the model which affect the value of X are summarised in the table below.

Table 5.3 Key input parameters used in the LLCC model

Parameter	Description	Range of assumption
Service volume forecasts (see paragraphs 5.54)	Forecasts for the individual AISBO services in scope of the AI basket	Ofcom ±10%
Future efficiency gains (see paragraphs 5.65)	BT efficiency savings in every year of the next control period	1% to 3% per annum
Weighted average cost of capital ("WACC") (see paragraphs 5.67)	BT's WACC used to calculate the return on capital employed (ROCE) which is added into the cost stack of individual services	10.25% to 11.75% (Same as TI basket)
Asset volume elasticities ("AVEs") (see paragraphs 5.71)	% change in the gross replacement cost of assets for a 1% change in volume	Varies by asset category
Cost volume elasticities ("CVEs") (see paragraphs 5.71)	% change in the values of operating costs for a 1% change in assets	Varies by operating cost
Asset price changes (see paragraphs 5.74)	% change in asset prices	Varies by asset category

5.53 BT provided Ofcom with its view of each of the model parameters. In forming our view on the appropriate ranges for the input values, we used the data submitted by BT as well as information available to us from work carried out on other charge controls, work related to the BCMR, and work carried out on our behalf by external consultants. Our views on each of the input parameters are summarised in the paragraphs below.

Ethernet services are expected to grow materially over the next charge control period

<u>We propose to use Openreach's growth forecasts</u>

5.54 The volume forecasts for the services within scope of the AI basket are used to derive the total capital and operating costs that BT will need to recover by the end of the proposed charge control period. The values of X are sensitive to these forecasts due to the interaction between volumes and the asset volume elasticities / cost volume elasticities, which reflect economies of scale.

5.55 As described in Section 4, paragraph 4.101 the generic approach to forecasting demand for services at the wholesale level is to derive these from the underlying volume forecasts at the retail level. This is because wholesale demand is "derived" from demand for products and services at the retail level. We were unable to find independent third party forecasts for leased lines services either at the retail or wholesale level.

5.56 We have instead relied on Openreach's volume growth forecasts for AISBO services which we have applied to 2007/08 actual volumes from the RFSs. Openreach adopted the following methodology when forecasting future volumes for these services at the wholesale level:

- CPs are required to supply Ethernet product forecasts (by product type and bandwidth) on a regular basis. Openreach takes these forecasts, together with a comparison against its own market analysis, and creates a calendarised two year forecast, with projections up to five years. This forecast is used to align capabilities for the delivery and maintenance of the product set, as well as driving product development roadmaps.
- Openreach uses a similar approach for forecasting internal volumes as well.

5.57 We also tested the sensitivity of our model outputs to ±10% changes in the absolute level of volumes.

<u>We expect the Ethernet market to exhibit strong growth</u>

5.58 Overall markets trends seem to indicate that:

- Substitution of Ethernet for SDH circuits is like to drive further significant growth in the demand for Ethernet services.
- The need to move increasingly large amounts of data and have it instantly available is driving the need for greater bandwidth. As a result, the bandwidth profile of Ethernet services is likely to change over time, with a trend towards higher capacity circuits.
- Increasing demand for broadband and greater capacity required by end-user applications is driving the backhaul bandwidth requirements of LLU operators and broadband providers.
- The deployment of Next Generation Access ("NGA") and new services over it will further increase the requirement for backhaul capacity (although perhaps not within the timescales of the next proposed charge control).

5.59 Openreach have taken the above general market trends into consideration when putting their forecasts together.

<u>Openreach's volume forecasts reflect the potential high demand for Ethernet services</u>

5.60 Openreach has provided volume forecasts for AISBO services within the scope of the charge control up to 2012/13. These volumes are broken down into circuits provided internally to BT, and circuits sold to other CPs (and include forecasts for new services over BT's next generation backhaul network).

- For ease of presentation (and reasons of confidentiality) we have analysed total volume forecasts (e.g. the sum of internal and external volume forecasts).

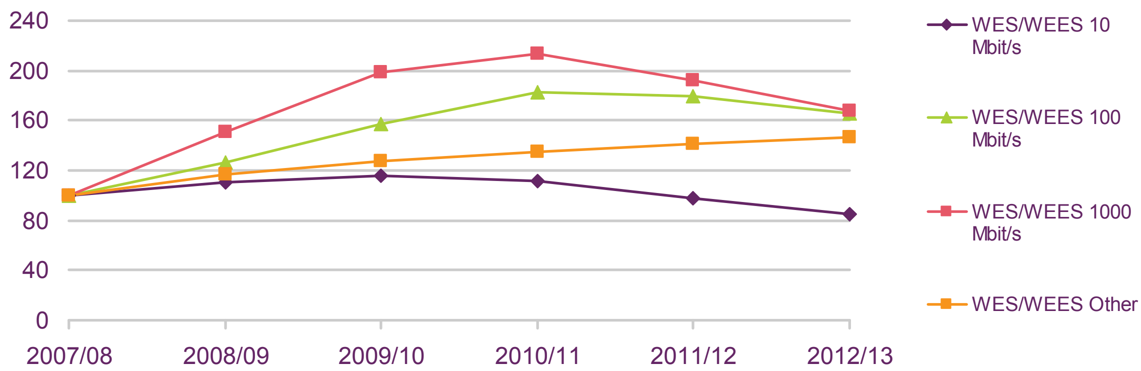
- We have plotted forecast volume indices for the various services, where volumes are set to 100 in the first year. This is to show how the trend in the volume forecasts of particular services is predicted to change over the control period.

- For comparison we also note the Compound Annual Growth Rate ("CAGR") implicit in the volume forecasts. We note that a CAGR calculation takes into account the volumes at the end and start of a particular time period (as discussed below) and therefore ignores the year to year trends shown in the figures below.

5.61 Firstly we look at the growth profiles of current Ethernet products, excluding the newly launched EBD/BTL services:

- Total WES/WEES circuits are forecast to increase by 11% per annum (CAGR) between 2007/08 and 2012/13. The growth rates are very much driven by 100 Mbit/s and 1000 Mbit/s services which are expected to grow at a rate of 12% per annum during the same period.

Figure 5.1 Volume forecasts for total sales of current WES/WEES

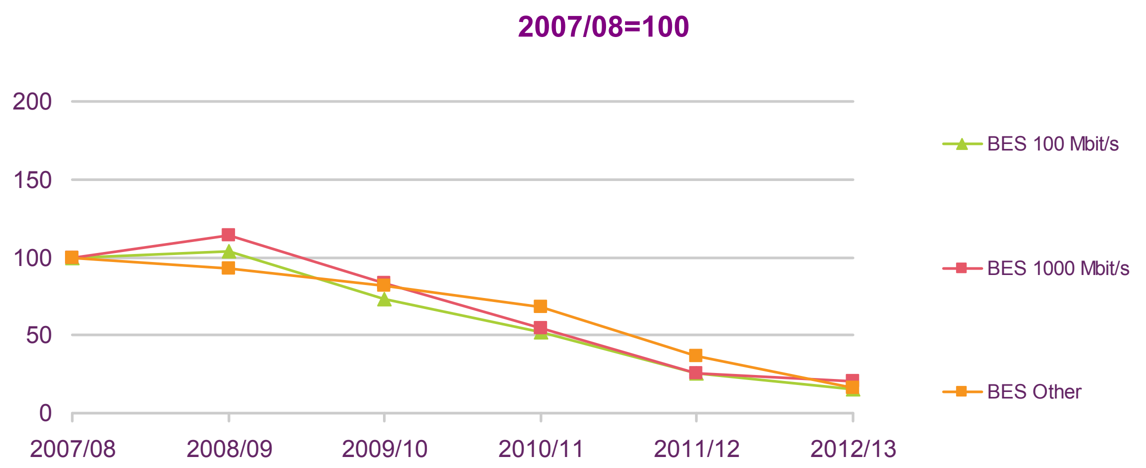


200

7/08=100

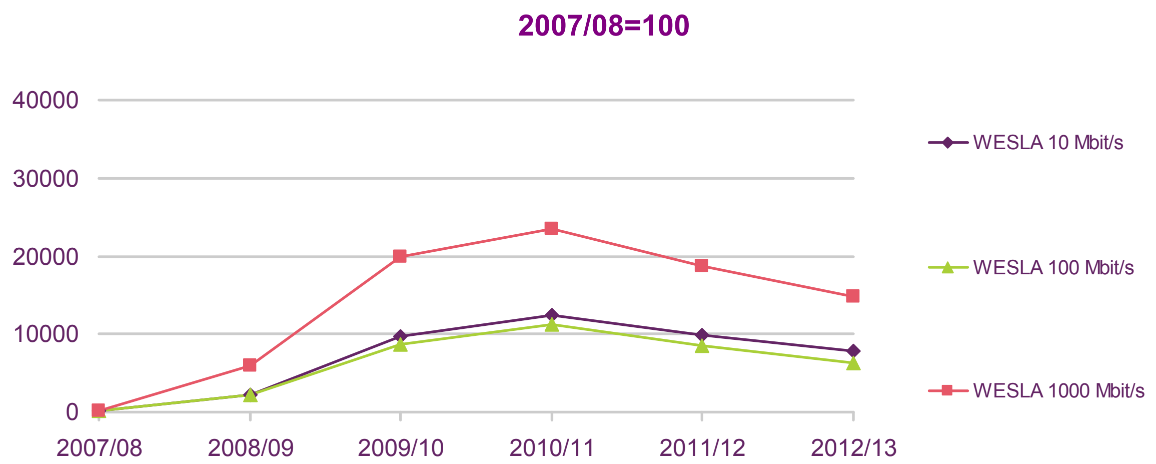
- Total BES circuits are forecast to decrease by 32% per annum (based on CAGR between 2007/08 and 2012/13). The decrease is mainly driven by migration to the networked EBD/BTL products.

Figure 5.2 Volume forecasts for total sales BES services



- Total WESLA circuits are forecast to increase by 33% per annum (based on CAGR between 2007/08 and 2012/13). The decrease observed from 2010/11 onwards is due to the take up of EAD volumes.

Figure 5.3 Volume forecasts for total sales of WESLA

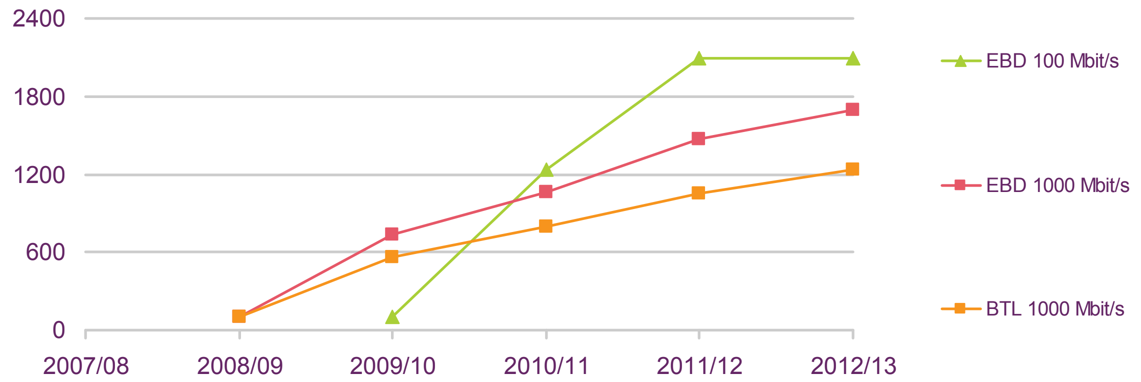


5.62 The volume forecasts become more aggressive for EBD/BTL products:

- Total EBD 100 Mbit/s services volumes are forecast to increase by 176% per annum (CAGR between 2009/10 and 2012/13), whilst EBD 1000 Mbit/s services and BTL services are set to increase by 103% per annum and 87% per annum (CAGR between 2008/09 and 2012/13).

Figure 5.4 Volume forecasts for total sales of EBD and BTL

2008/09=1000 (EBD&BTL 1000 Mbit/s), 2009/10=100 (EBD 100 Mbit/s)

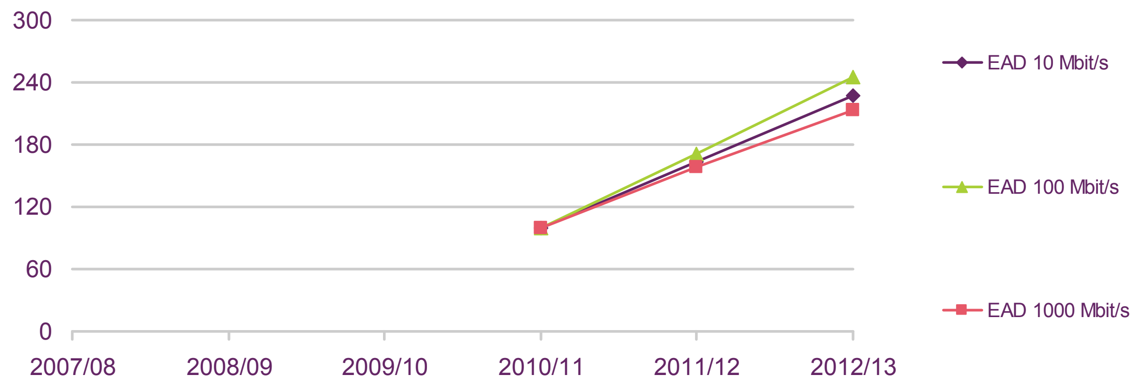


5.63 The volume forecasts for EAD services:

- Total EAD circuits are forecast to increase at a rate of 53% (CAGR between 2010/11 and 2012/13).

Figure 5.5 Total volume forecasts for sales of EAD services

(2010/11=100)



5.64 We have attempted to cross-check Openreach's forecasts against a reasonable view of future trends in the demand for TI and AI leased line services. It has however proved difficult to obtain an independent view of such trends. Our modelling so far has therefore been based on BT's external and internal volume forecasts. However we are keen to receive stakeholders' views on appropriate volume assumptions.

Question 5.8 Do respondents agree with the volume forecasts used in the LLCC model for AI basket of services? If not, please provide your views on the future volume forecasts of wholesale services within the scope of the AI basket.

We expect Openreach to realise efficiency gains of between 1% and 3% per annum

5.65 We did not conduct a separate analysis of Openreach's future efficiency gains for AISBO services. Instead we rely on the work completed and discussed in the "A New Pricing Framework for Openreach" consultation published in December 2008 ("OFFR

Second Consultation")[76] which proposed a range of 2% to 4% for Openreach's forward looking efficiency gains (based on the level of compressible costs, which are estimated to be around 70%).

5.66 As we will be applying the efficiency assumptions to the total level of operating cost forecasts included in our model, we propose to amend the efficiency range to 1.0% to 3.0% (which equates to 70% of the range from 2% to 4%).

Question 5.9 Do stakeholders agree with our proposed forward looking efficiency range of 1% to 3% to apply to services within the scope of the AI basket?

We assume the same WACC for all AI services

5.67 As discussed in Section 3, Ofcom's practice is to set 'X' so that the value of BT's rate of return projected by the LLCC model for the last year of the price control is equal to the cost of capital. This approximates to the workings of a competitive market in which excess profits are gradually eroded by competition.

5.68 Also in Section 3 we discussed our view that the AI basket of services (like the TI basket of services) should not be classified within BT's access network for the purposes of an assessment of risk levels. Since these services are mostly bought by SME and corporate customers of BT, future demand for these services, particularly in the case of the demand for new circuits, is likely to be more closely correlated with the economy-wide level of economic activity than other access services This view is in line with our conclusion in "*Ofcom's approach to risk in the assessment of the cost of capital*" in 2005[77].

5.69 In the same section we explained why we do not accept Openreach's proposed methodology, either for setting the range for the WACC to apply in general, or as a justification for a higher cost of capital on a project-specific basis.

5.70 Therefore, on current information, we propose to apply a WACC in the range 10.25% to 11.75% to AI services. However, we will consider in the light of any evidence provided in response to this consultation, whether to allow a higher WACC on AI services to reflect project-specific risk arising from uncertainty over demand for new high-speed broadband services.

Question 5.10 Do respondents agree with the range of WACC proposed for services within scope of the AI basket?

We use AVE/CVE assumptions we applied for the TI basket of services

5.71 AVEs and CVEs measure the percentage change in capital and operating costs for a 1% change in volumes (see Section 4). As discussed in paragraph 4.118, BT submitted revised estimates for its AVEs and CVEs for the TI basket of services by using the cost volume relationships for the relevant classes of assets as per its LRIC model (see Annex 9 on modelling) Openreach has not done provided AVE and CVE values for services within the scope of the AI basket.

5.72 We considered three different options for the AVEs and CVEs of components used by AI services.

[76] http://www.ofcom.org.uk/consult/condocs/openreachframework/
[77] http://www.ofcom.org.uk/consult/condocs/cost_capital2/statement/final.pdf

- *Option 1 - BT's current assumptions of AVEs and CVEs of 1*. Currently BT assumes that the capital and operating costs for Ethernet services increase in direct proportion to volumes of circuits (i.e. BT assumes an AVE of 1). This more closely reflects the current usage of assets and overheads by the AISBO services (which are dedicated, point to point links). However we note that this is likely to overestimate the capital costs because although the cost of network terminating equipment is dedicated, the cost of duct and in some cases fibre is common with other services and it is unlikely to increase in direct proportion to volumes. The same arguments are also applicable in the case of overhead costs.

- *Option 2 - The AVE and CVE values used in the 2004 PPC Statement*. In order to better reflect the economies of scale and scope we considered using AVE and CVE values used in the 2004 PPC Statement. This is a reasonable approach as Openreach has provided capital cost breakdowns for the same asset categories as for the TI services (which allows us to calculate components specific AVEs for AISBO services as explained in Annex 9). These result in weighted average AVEs and CVEs across all components of 0.39 and 0.24 respectively.

- *Option 3 – The AVE and CVE values as re-calculated by BT for the TI basket of services*. As discussed in Section 4 BT has re-calculated the values of AVEs and CVEs for the cost components used by TI services. We have also considered using the simple average of the values provided. For AVEs this is 0.66 and for CVEs is around 0.5.

5.73 Taking all of the above into consideration we propose using Option 2. This is consistent with the assumption used for the TI basket of services and therefore seems appropriate given our proposals for modelling the migration of demand from TI to AI services, described in Section 4 and paragraph 5.75. However we have also carried out a sensitivity analysis using Option 3.

Question 5.11 Do respondents agree with our proposed AVEs/CVEs for Ethernet services?

We use the average historic five year trend in real asset price changes

5.74 With regards to future asset price changes we use the average historic five year trend in the real asset price changes, as we have for the TI basket. For details of our reasoning see Section 4, paragraph 4.122.

Question 5.12 Do respondents agree with our proposed use of the average historic five year trend in the real asset price changes when forecasting the costs of AI services?

We propose alternatives to dealing with BT's narrow definition of cost components

5.75 As discussed in Section 4, paragraph 4.123, in forecasting the future costs for services in scope of the AI baskets we need to take into account the fact that BT's cost components are defined in a very service specific way. In forecasting the future costs for services in scope of the AI basket (as for TI basket) we need to take into account likely customer migration between TI and AI services. BT's narrow definition of costs components, in which most components are defined in a technology-specific way, tends to understate the potential for assets to be re-used as migration occurs.

5.76 We therefore apply the same methodology discussed in Section 4 to the AI basket of services. The effect of this is to shift around 75% of the fixed common costs from the TI basket to the AI basket by the end of the charge control period.

We bring prices in line with costs at the end of the control to determine the initial value of X

5.77 Having determined the potential adjustments to Openreach's 2006/07 base year costs, starting charges and likely ranges for the key input parameters Ofcom's proposals (and ranges where appropriate) for the values of X for each of the proposed charge control baskets are set out in the Table below. Our proposed range is based on sensitivity analysis we conducted on the key modelling parameters and is discussed in Annex 9.

5.78 We also propose that in the first year of the control (i.e. up to 1st October 2009) BT should not introduce any further price increases, following the one-off adjustments to the starting charges which are due to come into effect on 1st February 2009.

Table 5.4 Ranges for the value of X for the AI basket

Basket	**Range of X** **(after proposed start charge adjustments)**	**Proposed sub-caps**
AI	RPI - 3.25% to RPI - 11.50%	RPI-0% (WES) RPI-0% (BES) RPI-0% (connections) RPI-0% (rentals)
Accommodation (AI)	RPI-0%	None
Ancillary services (AI)	RPI-0%	None

5.79 Ofcom will consider the responses to this consultation, in particular in relation to the input values for each of the parameters in the model, and use these to inform its final view of the values of X for these charge control baskets.

Kingston Communications has given us voluntary price commitments

5.80 We concluded in the BCMR Statement that Kingston Communications ("KCOM's") has SMP in the wholesale market for low bandwidth AISBO in Hull. KCOM has given us a draft commitment to decrease the prices of WES/WEES circuits each year by around RPI-16% over the period to 2012. This would lead to prices which are still significantly higher than those projected for BT by the end of the period. We would welcome stakeholder views on these proposals (Annex 12).

Question 5.13 Do respondents consider that we should accept KCOM's commitment to reduce low bandwidth AISBO prices by RPI-16% a year over the period to 2102?

Conclusions

5.81 Our key proposals for the AISBO services provided by Openreach are summarised in the Table below.

Table 5.5 Summary of our proposals for the AISBO services

Basket	Description	Range of X (after proposed start charge adjustments)
AI	Wholesale low bandwidth AISBO (≤ 1 G bit/s) – connection and rental Including the new services: Ethernet Backhaul Direct Bulk Transport Link Ethernet Access Direct	RPI – 3.25% to RPI – 11.50% RPI-0% (Sub-cap on WES sub-basket) RPI-0% (Sub-cap on BES sub-basket) RPI-0% (sub-cap on connections) RPI-0% (sub-cap on rentals)
Accommodation Services (AI)	Access Locate Access Locate Plus	RPI-0% (mid point of the range suggested in the OFFR Second Consultation)
Ancillary Services (AI)		RPI-0%

5.82 We propose that in the first year of the control (i.e. up to 1 October 2009) BT should not introduce any further price increases, following the one-off adjustments to the starting charges which are due to come into effect on 1 February 2009.

5.83 We also propose to accept KCOM's draft commitment to reduce the price of its low bandwidth AISBO services by RPI-16% a year over the period to 2012.

Section 6

Implementation of the new charge control

Introduction

6.1 This section discusses the following issues relating to the implementation of the proposed leased lines charge controls:

- The details of the proposed new SMP conditions;
- The charges to be used at the beginning of the control;
- The rules that BT needs to follow to determine compliance with the control; and
- The interaction between charge controls and other remedies.

6.2 This section explains how the charge control conditions would work and how BT would be expected to comply with those conditions.

6.3 We then explain how we think the charge control proposals:

- Meet relevant legal tests, such as the requirements of the Communication Act; and
- Why we think we have taken into account other relevant guidance (e.g. the EC's SMP guidelines).

We are proposing imposing new SMP conditions relating to charge controls

6.4 The BCMR Statement revoked all of the SMP conditions imposed on BT in the 2003/04 Review with the exception of those SMP conditions relating to charge controls which expired on 30 September 2008. Therefore, in order to introduce the proposed charge controls, we need to impose new proposed SMP conditions. We set out below details of our proposed charge control conditions, including particular compliance issues.

Detail on the proposed drafting to introduce new charge controls

6.5 The proposed charge control conditions follow the "market by market" structure. That is:

- SMP conditions G4, GG4 and GH4 set the charge control for relevant Traditional Interface ("TI") services (PPC terminating segments) at Low, High and Very High (155 Mbit/s only) bandwidths respectively;
- SMP condition H4 sets the charge control for TI trunk segments; and
- SMP condition HH4 sets the charge control for relevant Alternative Interface ("AI") services at low bandwidths.

For the remainder of this section, references to paragraphs within the SMP conditions for TI services, refer to Conditions G4, GG4, GH4 and H4, unless otherwise stated.

6.6 The proposed conditions reflect:

- The proposed baskets of services which the controls will apply to;

- Proposed one off adjustments to start charges;

- The proposed compliance formula, which needs to be amended to reflect:

    - o The delay in introducing the proposed controls to TI terminating and trunk services; and

    - o The fact that new AI services (at lower prices) will be introduced during the control period for which we want to credit BT.

- The proposed values of X for the various baskets of services.

We propose three baskets in each of the TI and AI markets

6.7 In respect of the TI terminating and trunk services, we propose three main baskets in the construction of the charge control:

- The first basket (the "TI basket") will include connection, rental and maintenance charges for TI terminating and trunk services (paragraph 4.1 (a). Within this basket, sub-basket controls will be applied to TI terminating services (paragraph 4.1(b)), connections (paragraph 4.1(c) and rentals paragraph 4.1(d). The relevant services are listed in Annex A to each condition G4, GG4, GH4 and H4.

- The second basket will include equipment and infrastructure charges (paragraph 4.1(e)) relating to the provision of TI terminating segments (the "Equipment and Infrastructure basket"). Within the Equipment and Infrastructure basket, we propose imposing further safeguard caps (paragraph 4.1(f)) on each individual price of equipment and infrastructure. The relevant equipment and infrastructure are listed in Annex B to each condition G4, GG4, GH4 and H4.

- The third basket (the "TI Ancillary Services basket") will include all ancillary services relating to the provision of TI terminating segments and trunk services (paragraph(4.1(g)). The relevant ancillary services are listed in Annex C to each condition G4, GG4, GH4 and H4.

- The services and equipment listed in Annexes A, B and C to conditions G4, GG4, GH4 and H4 reflect Ofcom's proposals on the scope of the charge controls on TI services as discussed in Section 4.

6.8 In respect of the AISBO services, we propose three main baskets in the construction of the charge control:

- The first basket (the "AI basket") will include connection, rental and maintenance charges for AISBO services (paragraph HH4.1(a)). Within the AI basket, four sub-baskets will also be controlled:

    - o A sub-cap will be applied to connections (paragraph HH4.1 (b) and a separate sub-cap will be applied to rentals (paragraph HH4.1(c); and

    - o A sub-cap will be applied to WES services (paragraph HH4.1(d)) and a separate sub-cap will be applied to BES services (paragraph HH4.1(e)).

    - o The relevant services are listed in Annex A to condition HH4.

- The second basket (the “AI Accommodation Services basket”), will include accommodation charges (paragraph HH4.1(f)). We propose no additional sub-caps for the Accommodation basket. The relevant accommodation services within the scope of the charge controls are listed in Annex B to condition HH4.

- The third basket (the “AI Ancillary Services basket”) will include all ancillary services relating to the provision of AISBO services in scope of the AI basket (paragraph HH4.1(h)). The relevant ancillary services are listed in Annex C to each condition HH4.

- The services listed in Annexes A, B and C to condition HH4 reflect Ofcom’s proposals on the scope of the AI charge control as discussed above in Section 5.

<u>Our proposed new conditions will recognise new starting charges that we may mandate</u>

6.9 In this consultation document, our charge control options include proposed starting charge adjustments for some of the products and services within the scope of the TI basket. Following this consultation, we may decide in our final statement that it is appropriate that the charge control mandates starting charge adjustments for some of BT’s products and services.

6.10 If this is the case then we will need alternative wording for Paragraphs 4.3, 4.4 and 4.5 of Conditions G4, GG4, GH4 and H4 for TI services. The alternative proposed wording is as follows:

> “Save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.
>
> In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the “Starting Charge Adjustment Value” as specified in Annex D to this condition. If a “Starting Charge Adjustment Value” for specific product or service i is not listed in Annex D to this condition then p0,i is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider. ”

6.11 We are minded to mandate some adjustments to the start charges of some services within scope of the TI basket, although we note that BT is voluntarily proposing to introduce these. These alternative charge control conditions would require BT to make those initial starting charge adjustments for particular services at the start of the first year of the charge control. The proposed starting charge adjustments are listed in Annex D to each condition G4, GG4, GH4 and H4. For more discussion on this see paragraph 66.25 in this section.

6.12 The formulation of the charge control in terms of baskets allows BT flexibility to change the prices of individual services, provided the conditions regarding the overall sub-baskets and main baskets are met. The charge control allows further flexibility for BT to make price changes at any point throughout each charge control year, provided these changes are sufficient to satisfy the requirements over the year as a whole. Paragraph 4.2 to each condition (G4, GG4, GH4, H4) recognises that price changes may be implemented after the first day of the charge control year and indicates the required magnitude of later price reductions in order to achieve compliance.

We propose appropriate formulae for the various charge control baskets

6.13 The formulae to be used in calculating the percentage change in the charges for services over the charge control year differs for the different baskets and sub-baskets.

- The formula to be used in respect of the TI basket (covering connection, rental and maintenance for TI terminating segments and trunk services) and its corresponding sub-baskets is set out at paragraphs 4.3 and 4.4 (of conditions G4, GG4, GH4 and H4).

- The formula to be used in respect of the AI basket (covering connection, rental and maintenance for AISBO services) and its corresponding sub-baskets is set out at paragraphs HH4.2 and HH4.3.

- The formula to be used in respect of the TI Equipment and Infrastructure basket is set out at paragraphs 4.4 and 4.5 (of conditions G4, GG4, GH4 and H4).

- The formula in respect of TI Ancillary Services basket in set out at paragraph 4.4 of conditions G4, GG4, GH4 and H4.

- The formula to be used in respect of the Accommodation Basket for AI services is set out in paragraph HH4.4.

- The formula in respect of AI ancillary Services basket is set out at paragraph HH4.4.

We also propose to amend the compliance formula to credit BT for the introduction of new services

6.14 As described in Section 3 (paragraph 3.61) we propose to credit BT where it introduces new products and services at much lower prices compared to its legacy AISBO services. For example, such new products include EBD and BTL which, due to their networked nature, are more efficient and therefore lower in cost.

6.15 The new proposed charge control formulae for products and services within the AI basket are set out at paragraphs HH4.2 and HH4.3. There are three aspects to the proposed new formulae as described below.

6.16 First, we propose BT calculates an average unit price for products and services within the AI basket, by the relevant existing product type and bandwidth. The specific formula we propose for this calculation is set out at paragraph HH4.2.

- For example for a BES product type of bandwidth 100 Mbit/s (i.e. existing product type BES 100 Mbit/s) we propose an average price is calculated by taking into account all of the revenues BT accrued on BES 100Mbit/s services plus the revenues it accrued on equivalent new services (i.e. EBD 100 Mbit/s and the relevant proportion of BTL 1000 Mbit/s products) divided by the total volumes of such services.

- This calculation will require BT to use in year volume forecasts for the relevant services.

6.17 Second, we propose BT calculates the Percentage Change in the aggregate of all unit prices within the AI basket by using the average unit prices defined in the above paragraph. The specific formula we propose for this calculation is set out at paragraph HH4.3.

6.18 Third, to the extent that the in year volume forecasts used by BT to calculate the average unit price in paragraph 6.16 are over or under-estimated we propose BT makes an adjustment to the required Controlling Percentage in the following year by an amount *k.* The specific formulae we propose for this calculation are set out in paragraph HH4.9.

- Our proposed adjustment factor *k* is similar to the carry over provisions we propose as set out at paragraphs HH4.7 and HH4.8. The only key difference is that the *k* factor is also subject to an uplift, to be calculated in proportion to an appropriate interest rate increased by a fixed amount *(I).* We propose to include such an uplift to ensure that BT has the incentive to forecast volumes as accurately as possible.

- Our proposed interest rate *(I)* is the rate BT itself uses for over and under-payments in its contract with its customers uplifted by a fixed amount.

We need to map relevant existing products onto new products

6.19 We include a Table in the Conditions, paragraph HH4.13, which maps the new products onto the existing legacy Ethernet services. In many cases we assume there is a one to one relationship, with the exception of BTL services. This mapping will be used in calculating the average price for the relevant product and bandwidth as set out in Condition HH4.2 and discussed above.

6.20 For example a legacy BES 1000 Mbit/s service would be provided using one EBD 1000 Mbit/s and one BTL 1 Mbit/s service as shown in Table 6.1 below.

Table 6.1 Proposed mapping of relevant existing products onto new Ethernet services

	"Relevant existing product"	**"Relevant new product" used in the delivery of existing products** For the avoidance of doubt one unit of relevant existing product (i) is equivalent to the weighted sum of one unit of each of the relevant new products used in the delivery of existing products where the weights are shown in the table below in row (i).					
		EBD 100	EBD 1000	BTL 1000	EAD 10	EAD 100	EAD 1000
i = 1	BES 10	No equivalent product					
	BES 100	1		x			
	BES 1000		1	1			
	WES 10	No equivalent product					
	WES 100	1		x		1	
	WES 1000		1	1			1
	WESLA 10				1		
	WESLA 100					1	
	WESLA 1000						1
	ONBS 10	No equivalent product					
	ONBS 100	1		x			
	ONBS 1000		1	1			
i = n	BNS		1	1			

x = to be determined

Question 6.1 Do stakeholders agree with our proposed charge control formulae for AISBO services? We would welcome stakeholder views on our proposed mapping of existing products on to Openreach's new products set.

The proposed new conditions will reflect the new proposed ranges for the values of X

6.21 The possible ranges for the values of 'X' are set out in paragraph 4.6a in relation to conditions G4, GG4, GH4 and H4 for TI markets and to condition HH4.6 for AI markets, and result in:

- The main connection, rental and maintenance basket of charges being controlled by RPI – 0.00% to RPI – 7.00% for TI terminating and trunk services (paragraph 4.6a(a));
    - o The sub-basket for TI terminating segments being controlled by RPI – 0% (paragraph 4.6a(b)).
    - o The sub-basket for connections charges being controlled by RPI-0% (paragraph 4.6a(c)).
    - o The sub-basket for rental charges being controlled by RPI-0% (paragraph 4.6a(d)).
- The basket of equipment and infrastructure being controlled by RPI – 0% (paragraph 4.6a(e));
    - o Each charge in the Equipment and Infrastructure basket not being allowed to increase more then 5% in nominal terms (paragraph 4.6a(f)).
- The basket of ancillary services used in the provision of TI services being controlled by RPI-0% (paragraph 4.6a(g));
- The main connection, rental and maintenance basket of charges being controlled by RPI – 3.25% to RPI-11.50% for AI services (paragraph HH4.6(a));
    - o The sub-basket for connections charges being controlled by RPI-0% (paragraph HH4.6(b))
    - o The sub-basket for rental charges being controlled by RPI-0% (paragraph HH4.6 (c))
    - o The sub-basket for WES and WEES services being controlled by RPI – 0% (paragraph HH4.6(d));
    - o The sub-basket for BES services being controlled by RPI – 0% (paragraph HH4.6(e)); and
- The basket of AI accommodation being controlled by RPI – 0% (paragraph HH4.6(f));
- The basket of ancillary services used in the provision AI services being controlled by RPI-0% (paragraph HH4.6(g)).

Other points to note

6.22 The proposed charge controls will commence on 1 October 2008 and end on 30 September 2012 for TI services. This is reflected in the definition of ‘Relevant Year’ set out at paragraph 4.13 in each of the conditions G4, GG4, GH4 and H4. We note that for TI services BT has given a voluntary commitment to backdate the proposed charge control to 1st October 2008 (we discuss this point further in Section 7).

6.23 For AI services, the proposed charge controls will commence on 1 April 2009 (e.g. the actual date on which the proposed charge control become effective) and end on 30 September 2012. This is reflected in the definition of ‘Relevant Year’ set out at paragraph HH4.14.

6.24 Additional points to note about the new proposed SMP services conditions G4 through to HH4 are:

- The charge control provisions are explicitly without prejudice to the general cost orientation obligations which are already in place as a result of conditions G3 through to HH3 as set out in the BCMR Statement). This means that, irrespective of the charge controls, BT is still subject to cost orientation obligations in charging for TI and AI baskets of services.

- We included paragraphs 4.7 to 4.8 for TI services and HH4.8 to HH4.9 for AI services so as to allow Ofcom to calculate BT's compliance with the charge in the Relevant Year, and also to allow some flexibility to the operation of the charge control in terms of carryover discussed in paragraph 66.39. However, carryover provisions apply only to the main baskets and not to the sub-baskets since the general expectation is for the charge levels to be lower than that required by the sub-basket conditions (as is necessary for at least one charge within each sub-basket in order for the overall main basket conditions to be met).

- In interpreting the price control conditions, the definitions that apply for the purposes of the current SMP services conditions set by the BCMR Statement should be referred to, except where specific definitions apply by virtue of paragraphs 4.13 and 4.14 in respect of TI services and paragraphs HH4.14 and HH4.15 in respect of AI services.

- The definition of 'Partial Private Circuit' in paragraph 4.14 necessarily limits the concept of PPC to a circuit provided by BT to CPs, as it is the price charged by BT to others that is required to be controlled. However, this definition should not be construed by BT as implying that it is not required to consider the volumes of equivalent circuits and services which are used by its own retail arm in demonstrating compliance with the charge control. As set out above, consideration of BT to BT volumes is specifically required in respect of the connection, rental and maintenance charge controls in each bandwidth (TISBO and trunk services).

The control will be applied to the new starting charges as defined by our analysis

6.25 In this document, we have set out our proposals for the introduction of a charge control for wholesale TI terminating segments and trunk services. In determining the charge controls for these services, we also considered the appropriate starting charges for particular services.

6.26 If we select a charge control option that does not entail any starting charge adjustments then the relevant price assumed at the start of the charge control year (P_0) will be the price in force for the relevant product or service. However, we are also considering a number of options with regards to starting charges:

- We are minded to mandate BT to make the necessary one off adjustments to the starting charges of some services to come into effect at the start of the proposed charge controls.

- However, we also note that BT Wholesale are considering introducing a number of changes to the start prices of some services. These will come into effect on the first day of the proposed charge controls (as discussed in Section 4, paragraph 4.84):

- Provided the price rebalancing proposed by BTW is introduced, we are minded not to require any further one-off changes when the proposed controls are introduced.

- In addition, any other charges which are outside the appropriately measured LRIC floors and DSAC ceilings should be brought within this range no later than 1 October 2009.

- BT has undertaken to keep TI prices constant in nominal terms until 1st April 09 and we have developed our proposals on the basis of this assumption.

6.27 The proposed adjustments would therefore mean that the price assumed at the start of the charge control year (P_0) would be adjusted for the affected services. For any other services, where we have not stipulated a starting charge adjustment, we would instead rely on the current prices in place when the charge control comes into effect. As such any required reduction in charges seen in the first year of the control would be relative to the prior year (P_0) value.

BT is required to follow a number of rules to determine compliance with the charge control

New services are within the scope of the TI or AI baskets

6.28 In Section 3, we discussed the potential migration of customers using AI and TI services to "emulated" services on the 21CN platform. Under our proposed technology neutral approach, our charge control would apply to AI and TI services, irrespective of the underlying technology used to provide these services. This means that new services could fall within the scope of the proposed AISBO or TISBO charge controls, but this only applies where those services can be viewed as "replacement" services to the existing charge controlled services. Therefore, it is not the case that any service on BT's 21CN platform necessarily falls with the scope of the leased lines charge control.

6.29 We set out in Annexes A, B and C of our proposed charge control conditions the services falling within the scope of our proposed charge controls and the extent to which these include new services. In summary, the following "new services" would be subject to the provisions of the charge control for the AI basket:

- Ethernet Backhaul Direct ("EBD") up to and including 1 Gbit/s;

- Bulk Transport Link ("BTL") up to and including 1 Gbit/s; and

- Ethernet Access Direct ("EAD") up to and including 1 Gbit/s.

6.30 This means that for the AI basket, a new service replacing services within the scope of the control (namely WES, BES, WEES, WESLA) would also be subject to an overall charge cap placed on this basket. Similarly, for TISBO/trunk services, any replacement TDM or "emulated[78]" services would be subject to the TI basket control.

[78] An "emulated" service might be defined as a service that appears to the user to be an identical or technically equivalent to a wholesale TI services, but is not necessarily provided over the same underlying SDH/PDH technology.

New services within the scope of the charge control would not be subject to sub-basket provisions

6.31 We do not propose to subject the new services to the sub-baskets within AI and TI baskets. We expect that BT will be using the new services on an EOI basis and that it is likely to price these at a lower level then legacy services to encourage migration. However, we also want to continue to give existing users of WES, BES and TISBO services sufficient protection against potential future price increases.

6.32 If we were to allow new services in the sub-caps, it would allow BT to offset any reductions in 21CN service prices with increases on the legacy products, which would defeat the purpose of the sub-caps. For example, BT has recently introduced 21CN backhaul products known as EBD and BTL[79]. Under our proposals, these would be charge controlled under the main AI basket, but would not fall within the BES sub-basket. EBD is a product that BT's downstream arm and CPs will use, whereas BT does not use BES. If we, for example, proposed to include EBD within the BES sub-basket then this would allow BT to re-balance charges for EBD and offset those with increases on BES services. This would undermine the intended purpose of the BES sub-basket, which is to limit the potential price increases in this sub-basket to RPI-0%.

6.33 In summary, there is a need to ensure that BT provides CPs with incentives to migrate to 21CN based on the right price signals to customers. We also need to be aware of the different incentives on BT when its downstream arm utilises a "new service", compared to an existing services that it does not. Hence, we would propose that new service (within scope) would fall under the overall service basket, but not within any sub-baskets.

Compliance will be monitored by calculating a weighted average change in the charges for each basket

6.34 BT's freedom to set charges for the services controlled by the four main charge control baskets, and the sub baskets, will be constrained so that the average charge in each basket at the start of the control year cannot be increased by more than RPI adjusted by the relevant value of 'X' set out in the Conditions. RPI (i.e. the controlling value of RPI) is the term used to represent the percentage change in the Retail Prices Index in the 12 months up to June preceding the start of the relevant charge control year (the relevant year).

6.35 In order to calculate the average change in the prices proposed by BT and to assess BT's compliance with the controls we need to determine the appropriate basket weights. Regulators who have applied this form of control have generally used one of two main methods of calculating these weights – "prior year revenue weights" or "current year revenue weights".

6.36 For TISBO services we are proposing to use the prior year revenues of services in a basket to determine the appropriate weights.

---

[79] This would provide the same functionality as BES and WESB services by backhauling traffic from relevant exchanges to Openreach handover points. The main difference for the EBD product is that these services are networked. Rather than providing dedicated fibre for each circuit, Openreach will instead reserve a proportion of that networked backhaul link to provide dedicated capacity to a CP.

6.37 For AISBO services we propose to combine a control on the average revenue from circuits at each bandwidth with a prior year weighted price cap on the AISBO basket as a whole (this is discussed in Section 3, paragraph 3.69). This could be done by:

- First calculating the average revenue of point to point and networked AISBO circuits at each relevant bandwidth. This would of course require that a method of allowing for relevant differences between the types of circuits could be agreed and would welcome comments on the feasibility of this.

- The average revenue so calculated could then be interpreted as the "price" of circuits at each bandwidth controlled by the prior year weighted control at the basket level, and could also be subject to average revenue subcaps if desired.

Certain discounts will not contribute towards BT meeting its charge control obligations

6.38 As discussed in detail in Section 3, paragraph 3.203, none of the discounts offered by BT will count towards meeting their charge control obligations. More specifically:

- Volume discounts are not permitted. This reflects our conclusions in the BCMR Statement.

- Geographic discounts will not count towards BT meeting its charge control obligations. In respect of geographic discounts, the charge control would allow BT to offer variations by location in the price of wholesale products but we propose that these discounts would not count towards meeting the price changes required by the charge control.

- We propose term discounts will not count towards BT meeting its charge control obligation. Our initial view is that we would not necessarily object to the introduction of term discounts. We propose, however, that discounts (that attach conditions relating to contract duration) would not count towards meeting the regulatory requirements for price reductions.

BT is allowed to carry over differences in the average charge for a basket to the next charge control year

6.39 For the main charge control baskets, namely the TI, AI, Equipment and Infrastructure and Accommodation baskets, BT will be able to carry over any price reductions it makes in excess of the requirements of the charge control for that year. That is, if BT's average charge for these baskets at the end of the Relevant Year is lower than required by the associated RPI minus 'X' constraint, it will be able to carry over the difference into the next charge control year. This means that the benchmark for assessing BT's compliance with the control in the following year will be the level of charges BT was required to achieve, rather than the level it actually achieved.

6.40 Conversely, if its average charge is higher than the required level, it has to take the excess into account in the following year. These 'carry over' provisions will not apply to the sub-baskets within the main baskets, since the general expectation is for the charge levels to be lower than that required by the sub-basket conditions (i.e. where we have set a negative X, it would be necessary for at least one charge within each sub-basket to fall in real terms in order that the overall main basket condition is met).

BT needs to follow the required Notice period for changes to charges

6.41 In the BCMR Statement we placed requirements on BT relating to the notification period for changes to any charges (for services provided by BT within the markets in which it was found to have SMP). Conditions G6, GG6, GH6, H6 and HH6 require BT to provide 90 days' notice of a change to a charge or the structure of the charge. We propose to waive this requirement only in respects of the adjustments proposed to starting charges of some TI services(and discussed in Section 4, paragraph 4.84).

Question 6.2 Do stakeholders agree that the required notification period should be waived in respect of the proposed starting charge adjustments to some TI services?

The control works alongside other remedies

Non-discrimination and cost-orientation

6.42 The BCMR Statement imposed an *ex-ante* obligation on BT not to discriminate unduly in the provision of wholesale services where it was found to have SMP. Therefore, in meeting its charge control obligations, BT is still required to ensure that each and every charge does not discriminate unduly in favour of particular companies or parties.[80]

6.43 BT is required to secure and be able to demonstrate that every charge it makes for relevant wholesale services subject to SMP regulation is cost orientated. Cost orientation requires that those charges are based on a forward looking long run incremental cost approach and allowing an appropriate mark up for the recovery of common costs and an appropriate return on capital employed.

6.44 The charge control baskets in general relate to a group of services (with some sub-basket provisions), whereas the cost orientation obligations relate to individual services or different charges for individual services. Therefore, in addition to ensuring that the prices it sets are consistent with the requirements to comply with its charge control obligations, BT needs to ensure its individual prices are consistent with cost orientation.

Accounting separation and cost accounting

6.45 Ofcom has imposed ex-ante financial obligations on BT requiring it to prepare and publish financial information for relevant wholesale AISBO and TISBO and trunk services in order for it to demonstrate its compliance with its cost orientation and non-discrimination obligations. The financial information also helps to enable Ofcom to make determinations on specific charges or to assess whether BT has breached competition rules. The basis of preparation of this financial information is set out within BT's Accounting Documents and as expanded within its secondary accounting documents available on BT's website (http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/index.htm).

6.46 BT has the freedom within each individual basket to set charges subject to a cost-orientation obligation for each individual service (and without prejudice to its other ex-ante obligations) as explained above.

[80] Specifically, BT "shall not unduly discriminate against particular persons or against a particular description of persons, in relation to matters concerned with Network Access."

6.47 Given the above cost orientation and charge control obligation, we require regulatory reporting to be capable of providing reliable preliminary data in respect of each wholesale service within the leased line markets in which BT has been found to have SMP.

We have applied the relevant Communications Act tests

The legal framework for imposing charge controls

6.48 In considering the imposition of charge controls, Ofcom has had regard for its duties under the Act and the EC framework for communications regulation. It has also taken account of relevant guidelines produced by the EC, the ERG, Oftel and Ofcom.

Communications Act tests

6.49 Section 87(1) of the Act, which implements Article 8 of the Access Directive, provides that, where Ofcom has made a determination that a person is dominant in a particular market, it must set such SMP conditions as it considers appropriate and as are authorised under the Act.

6.50 One of the SMP conditions which Ofcom is authorised to impose on a dominant provider is a price control.

6.51 Section 88 of the Act states that Ofcom may not set a price control as an SMP condition, except 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 distortions and 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.

6.52 As well as being appropriate, as required by Section 87(1) of the Act, and meeting the test under section 88 of the Act, a price control, similar to all other SMP conditions, must also satisfy the tests set out in Section 47(2) of the Act. These are that each condition must be:

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

6.53 In considering whether price controls are an appropriate SMP remedy to impose, we have had regard to our general duties as set out in Section 3 of the Act. Section 3(1) states that Ofcom's principal duty is to further the interests of citizens in relation to communications matters and consumers in relevant markets, where appropriate, by promoting competition. Specifically, Section 3(2)(b) states that Ofcom must secure the availability throughout the UK of a wide range of electronic communications services. Also, pursuant to Section 3(4) of the Act, we must have regard to the desirability of promoting competition in relevant markets. Finally, pursuant to section 3(5) of the Act, in furthering the interests of consumers, we must have regard to choice, price, quality of service and value for money.

6.54 Section 4 of the Act sets out the duties of Ofcom to act in accordance with its Community obligations which flow from Article 8 of the Framework Directive, and include the duty:

- To promote competition;
- To contribute to the development of the internal market;
- To promote the interests of all EU citizens;
- Not to favour one type of network, service or facility over another;
- To encourage network access and service interoperability in order to promote efficiency and competition; and
- To encourage compliance with relevant international standards.

6.55 Recital 27 of the Framework Directive provides that ex ante regulation should only be imposed where competition is not effective and where competition law remedies are not sufficient to address the problem. In order to provide a full analysis, Ofcom has, therefore, considered the option of no ex ante regulation, and whether it would be sufficient to rely on competition law alone.

6.56 We are also required under Section 6 of the Act to ensure that regulation by Ofcom does not involve the imposition or maintenance of unnecessary burdens and to consider the scope of effective self-regulation.

6.57 In Ofcom's view, the price controls proposed for BT in this section satisfy the relevant requirements specified in the Act and relevant Directives. This is explained later in this section.

Relevant guidelines

6.58 In formulating our charge control proposals, we have also taken into account relevant guidelines. In particular:

- The Commission's SMP Guidelines[81];
- The Access Guidelines published by Oftel in September 2002[82]; and
- The Revised ERG Common Position on the approach to appropriate remedies in the regulatory framework for electronic communications networks and services (the ERG Remedies Position)[83].

---

[81] Commission guidelines on market analysis and the assessment of significant market poser under the Community regulatory framework for electronic communications networks and services (2002/C 165/03)

[82] http://www.ofcom.org.uk/static/archive/oftel/publications/eu_directives/2002/intg0902.htm

6.59 The Commission's SMP Guidelines state at paragraph 15 that regulation should aim to promote an open and competitive market, and at paragraph 16 that ex-ante regulations should be imposed to ensure that an SMP provider cannot use its market power to restrict or distort competition on the relevant market or leverage market power onto adjacent markets. In assessing the appropriateness of regulatory remedies and pursuant to Article 5(3) of the Framework Directive, Ofcom has taken into account, in the BCMR Statement, paragraphs 21 and 114 of the EC's SMP Guidelines which state that NRAs must impose one or more appropriate SMP services conditions on a dominant provider, and that it would be inconsistent with the objectives of the Framework Directive not to impose any SMP services conditions on an undertaking which has SMP.

6.60 The European Regulators Group ("ERG") have agreed a Common Position Paper on 1 April 2004 relating to appropriate remedies in the new regulatory framework for electronic communications. The ERG Common Position paper (the "ERG Paper") aims to ensure a consistent and harmonised approach to the application of remedies by NRAs in line with the Community law principle of proportionality, and with the new framework's key objectives of promoting competition, contributing to the development of the internal market and promoting the interests of EU citizens.

6.61 The ERG paper sets out four principles that should be adhered to when imposing remedies. These are:

- The need to produce reasoned decisions;
- Where infrastructure competition is not likely to be feasible, access to wholesale inputs should be made available;
- Where infrastructure competition is feasible, remedies should assist in the transition process to a sustainable competitive market; and
- Remedies should, where possible, be incentive compatible.

Communications Act duties and tests

6.62 In the remainder of this Section, we have set out below why we think we have met the relevant Communications Act duties and tests. In addition, we have set out in Annex 11 our Impact Assessment for our proposals.

6.63 We note that our analysis as set out below applies equally to all our proposed baskets of services and related charge control proposals, as similar considerations apply.

Ofcom's duties

6.64 Section 3 of the Act imposes general duties on Ofcom, in carrying out its functions, to further the interests of citizens in relation to communications matters and of consumers in relevant markets, where appropriate by promoting competition.

6.65 We consider that our proposed charge control conditions fulfil these general duties under section 3 of the Act, having regard to the outcome expected to be achieved by them, namely that charges for wholesale services are set at a level that enable communications providers to compete downstream. Section 3 also sets out certain

[83] http://www.erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf

matters to which Ofcom must have regard in performing its general duties. In considering which remedies to impose, Ofcom has had regard to these matters, in particular to the matters in section 3(4) and 3(5) of the Act, including the desirability of promoting competition in relevant markets, and the interests of consumers in respect of choice, price, quality of service and value for money, as set out below.

6.66 Section 4 of the Act sets out the Community requirements on Ofcom which flow from Article 8 of the Framework Directive. In considering which, if any, SMP services conditions to propose, we have taken account of all of these requirements. In particular, we have considered the requirement to promote competition and to secure efficient and sustainable competition for the benefit of consumers.

6.67 We have placed particular emphasis on the promotion of competition, which we consider is likely to be the most effective way of furthering citizen and consumer interests in the markets under review.

6.68 We will always seek the least intrusive regulatory measures to achieve its policy objectives, in accordance with our duty under section 6 of the Act to minimise the burden of regulation.

6.69 In addition to the overarching objective referred to above, we have taken into account a number of secondary objectives, including:

- *Prices*: to ensure that services are available at prices that are reasonably related to the efficient costs of supply, preferably as a result of effective competition; and

- *Investment and innovation*: to promote efficient investment in the development of new and innovative service.

6.70 We have carried out a full regulatory impact assessment in relation to the implementation of a charge control for leased lines as required by section 7 of the Act. This is set out in Annex 11 to this consultation document, which when read alongside Sections 4 and 5 of this document fulfils the requirements of section 7 of the Act.

We have conducted the Section 87 and 88 tests

6.71 Section 87(1) of the Act states that where we have made a determination that a dominant provider has significant market power in an identified services market, Ofcom shall set such SMP conditions authorised by section 87 of the Act as Ofcom considers it appropriate to apply to that dominant provider in respect of the relevant network or relevant facilities and apply those conditions to that person. Section 87(9) authorises the setting of SMP services conditions imposing on the dominant provider rules concerning the recovery of costs.

6.72 As we identified BT as having SMP in a number of TI and AI markets as concluded in the BCMR Statement we believe charge controls are appropriate under section 87(1) of the Act. In the absence of such charge controls services will not be available at the best possible price to customers. This is evidenced by the high returns in the TI trunk and AISBO (as concluded in the BCMR Statement). We did not impose a charge control on these services in the 2004 PPC charge control despite the finding of SMP, as the former was found to be prospectively competitive and AISBO services were a nascent market.

6.73 Moreover, section 88 states that Ofcom should not set a price control condition except where it appears to it from the market analysis that there is a relevant risk of adverse effects arising from price distortion and it also appears that the setting of the condition is appropriate for the purposes of:

- Promoting efficiency;
- Promoting sustainable competition; and
- Conferring the greatest possible benefits on the end-users of the public electronic communications services.

Our proposed charge controls will promote efficiency and sustainable competition

6.74 Ofcom further considers that the charge control condition is appropriate for the purposes of promoting efficiency and sustainable competition and conferring the greatest possible benefits on the users of public electronic communications services.

6.75 In respect of efficiency, in the absence of competitive pressures, BT would have limited incentives to seek to reduce its costs of providing wholesale leased lines services. The RPI-X charge control is intended to promote efficiency in the costs of providing wholesale services by requiring it not increase its charge by more than a fixed amount each year. As discussed in Section 4 and 5 of this document in coming to a view of the likely efficiency of BT's costs, we have looked at a range of evidence including benchmarks from other markets (Section 88(4)(a)) and we have had regard to the appropriate cost accounting methods (as provided for Section 88(4)(b)). As discussions in Sections 4 and 5 show, where appropriate, we have adjusted our view of BT's regulatory statements to ensure we have an appropriate basis to assess its prices and costs.

Our proposed charge controls will promote sustainable competition

6.76 Ofcom considers that imposition of a charge control condition satisfies Section 88 of the Act, since without it there is a relevant risk of adverse effects arising from price distortion by BT. Section 88(3) of the Act determines that there is a relevant risk of adverse effects if a dominant provider might fix and maintaining some or all of its prices at an excessively high level, so as to have adverse consequences for end users of pubic electronic communications services.

6.77 In the BCMR Statement, we have found BT to have SMP in relevant wholesale markets. As there are barriers to competitors providing their own services or purchasing from third parties other than BT, they will be reliant on BT's wholesale products to compete in relevant downstream markets. This means that BT will be able to behave to an appreciable extent independently of its competitors (including in respect of the price is able to set for wholesale leased lines services). Hence, we believe that the market analysis conducted in the BCMR, suggests there is sufficient risk that BT might fix or maintain some or all of its prices at an excessively high level (Section 7 in the BCMT Statement). Preventing excessive pricing will promote sustainable competition.

Our proposed charge controls will confer greater possible benefits to end users

6.78 As discussed in Section 3 of this document, the RPI-X also provides incentives for BT to seek further efficiency savings by allowing it to keep any returns associated with efficiency gains over and above those forecast when the charge control is set.

The benefits of lower costs can then be passed onto customers when the next charge control is set (if appropriate). Hence, a charge control should confer the greatest possible benefits on end-users of the public electronic communications services.

We have conducted the Section 47 tests

6.79 As well as being appropriate (see section 87(1)), any amendments to an SMP condition must also satisfy the tests set out in section 47 of the Act, namely that the amendment must be:

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

Our proposed charge control conditions are objectively justifiable

6.80 Clearly, our key rationale for setting a charge control is that in the absence of such a mechanism a lack of effective competition would meant that BT would be able to set excessive prices. The proposed conditions are objectively justifiable in that they impose an RPI-X charge control which will provide an effective mechanism to provide a cap on prices in circumstances where competition cannot be expected to do so.

Our proposed charge control conditions will not unduly discriminate

6.81 The proposed charge controls will not discriminate unduly against a particular person or particular persons because any provider of communications networks, services or associated facilities can request relevant leased lines services within the scope of the control from BT.

6.82 Moreover, while BT will be subject to proposed charge control obligations and Kingston Communications (“KCOM”) will not, we do not consider this to be unduly discriminatory. This is because formulating a charge control for KCOM would be disproportionate due to the relatively low number of leased lines in the Hull area. In addition, KCOM is subject to certain pricing commitments in respect of its wholesale leased lines services, as well as a cost orientation obligation and a non-discrimination obligation, and will be required to meet all reasonable requests for access.

Our proposed charge control conditions are proportionate

6.83 The proposed charge control conditions are proportionate because the charge controls will impose a glide path which sets the maximum amount that BT can increase charges for relevant leased line services. This will encourage BT to make cost savings over a four year period, in a market where Ofcom considers BT is likely to hold SMP over the period of the proposed control. Moreover, the proposed maximum charges BT is allowed to levy over the period of the control has been formulated using information on BT’s costs and a consideration of how these costs will change over time. In addition, we have also used a range of studies to form our proposals on potential efficiency gains BT might reasonably be expected to achieve (paragraph 4.112). This assessment was based on a range of assumptions that we used to inform our view of the likely magnitude of the required (range) of any cost reductions. The possible impacts of our charge control (relative to no charge control regulation) are set out in the Impact Assessment in this document.

6.84 We have proposed within the charge control structure relatively broad baskets in respect of AISBO and TISBO and trunk. This will allow BT to recover common costs efficiently. Additionally, we have proposed that the charge control includes baskets for WES and BES services, which impose proportionate restrictions on the ability of BT to price services in a suitably flexible manner within the main baskets. These sub-baskets are necessary to ensure that the charges for individual services fall over the duration of the control, taking into account relevant start charges and potential glide paths of those services; and also to limit BT's ability to rebalance its charges in a way which could damage competition.

6.85 The charge control proposals would also allow BT to offer geographically de-averaged charges, although any discounts offered by BT will not count towards meeting its charge control obligations. This balances the need to allow BT to react to any developments in competition that may arise in a localised area with the need to protect customers where BT faces no competitive pressures.

6.86 Overall, we consider that our proposals for the leased lines charge controls are proportionate and strike an appropriate balance between the interests of relevant parties and stakeholders.

Our proposed charge control conditions are transparent

6.87 We are consulting fully on our proposals for the proposed charge controls in this document. Our Final Statement document will set out our analysis of any responses and our basis for final decisions. Ofcom will therefore ensure that it has met the requirement for transparency set out in section 47 of the Act.

6.88 In proposing these charge controls, Ofcom is therefore satisfied that it has considered all of the relevant requirements of the Act.

Reliance on Competition Law alone is not sufficient

6.89 Another question in the context of our charge control is whether, alongside our proposed SMP conditions arising from the BCMR Statement, competition law would be sufficient to guard against our concerns regarding excessive pricing.

6.90 Where markets are effectively competitive, ex-post competition law is sufficient to deal with any competition abuses that may arise. Generally, the case for ex-ante regulation in communications markets is based on the existence of market failures which, by themselves or in combination, mean that competition might not be able to become established if the regulator relied solely on its ex-post competition law powers established for dealing with more conventional sectors of the economy. Therefore, it is appropriate for ex-ante regulation to be used to address these market failures and entry barriers that might otherwise prevent effective competition from becoming established. By imposing ex-ante regulation that will promote competition, it may be possible to reduce the need for such regulation as markets become more competitive, with greater reliance on ex-post competition law.

6.91 The European Commission has stated, in paragraph 3 of section 3.2 of the Explanatory Memorandum to its Recommendation, that *ex-ante* regulation is justified: "*[…] where the compliance requirements of an intervention to redress a market failure are extensive (eg the need for detailed accounting for regulatory purposes, assessment of costs, monitoring of terms and conditions including technical parameters etc) or where frequent and/or timely intervention is indispensable, or where creating legal certainty is of paramount concern.[…]).*"

6.92 This is the case for many markets where persistent SMP leads to a risk of a firm setting excessive prices and the need for efficiency incentives, where some form of control over prices would be justified, or where there is likely to be a need for intervention to set detailed terms and conditions for access to networks. We consider that the nature of SMP in relevant markets (as concluded in the BCMR Statement) for TISBO, AISBO and TI trunk requires ex ante regulatory provisions to promote wholesale access. In addition, in this document we discuss the potential for charge controls on all wholesale markets where we have found SMP, as we are concerned about excessive pricing.

6.93 In the BCMR Statement, we highlighted that trunk might be prospectively more competitive market than terminating segments. However, there are features of the trunk market that have prevented that competition from emerging sufficiently. We also noted that the trunk market was unlikely to tend towards effective competition within the relevant time horizon of the market review. In respect of TI terminating segments, there are further barriers to competition arising from the inability for CPs to realise economies of scope or scale, which creates bottlenecks in access and backhaul.

6.94 For TI terminating and trunk segments, BT's persistent high market share together with its high level of profits provides evidence that BT has SMP in this market. As noted in the BCMR Statement, CPs still depend significantly on BT for the supply of wholesale trunk and terminating segments.

6.95 Entry barriers arise from the very high investments that have to be sunk in order to have a substantial presence in these markets. Further, switching from acquired to self-supplied trunk services often requires substantial investments in new interconnect and associated infrastructure.

6.96 In our BCMR Statement, we were not able to identify any developments that would serve to reduce the high structural barriers to entry and expansion that characterise the market, which would generate sufficient competitive pressures within the next four to five years to alter the current finding of SMP. In particular, we considered that the low rate of growth which characterises many of the retail leased line markets that make up the majority of trunk segments is likely to prevent BT's wholesale competitors expanding to a scale where they can operate as efficiently as BT.

6.97 Ofcom is not aware of any CP plans to expand their trunk network coverage in the foreseeable future. It appears likely that such expansion would be too costly and time consuming for the prospect of it to provide a substantial constraint on BT's conduct. In addition, the nature of economic bottlenecks in backhaul is likely to prevent competition in AISBO and TISBO markets nationally. We therefore consider that, even on a forward-looking basis, BT would continue to have SMP in these markets, at least for a timeframe of the next four to five years.

6.98 In light of a lack of prospective competition, we would be concerned about reliance on competition law. It is generally acknowledged that general competition law is not an effective means to regulate prices. In the absence of ex-ante regulation (or the threat of prospective regulation), BT's returns, for example on its AISBO services, have been found to be significantly above the cost of providing those services. Reliance on competition law would typically rely on a complaint arising from a third party, and, as customers of a dominant provider, there may be a degree of reluctance in bringing any complaint. Therefore, an SMP provider might be able to maintain prices at above a competitive level, but below a level sufficient to trigger a competition act complaint.

6.99 In addition, courts are generally ill equipped for the long-term and fact-intensive task involved in the process of determining price cases, and are typically reluctant to engage in the ongoing monitoring role necessary to ensure that there is compliance with such regulation.

6.100 Taking all of the above arguments together, we consider that competition law would be insufficient to tackle the objectives of our charge control.

We will meet our obligations to the Commission, Other National Regulatory Authorities and the Secretary of State

6.101 Ofcom sets out in Annex 11 of the consultation the draft Notification under section 48(2) of the Act and a draft Direction under the above Notification.

6.102 As required by Article 7 of the Framework Directive, as implemented by sections 50 and 81 of the Act, draft decisions contained in the Notification will be sent to the European Commission and to the regulatory authorities (NRAs) of every other member State in accordance with sections 50(3) of the Act. Any comments received from the European Commission and other NRAs will be taken into consideration by Ofcom when reaching the conclusions in its Final Statement.

6.103 In addition, a copy of the draft decisions contained in the Notification will also be sent to the Secretary of State for Business, Enterprise and Regulatory Reform in accordance with section 50(1)(a) of the Act.

Conclusions

6.104 In this section, we have set out how we propose the charge control to operate and how we will judge compliance. In addition, we have set out why we think that we have taken appropriate steps in this consultation to make sure that our proposals meet the Communication Act requirements.

Section 7

Delay in the introduction of the proposed charge controls

Introduction

7.1 In this section, we set out the issues associated with the delay that has occurred to this charge control as a result of concerns over certain information in BT's regulatory accounts. We explain how we intend to ensure that BT will not benefit from this delay and ensure that we reduce any uncertainty regarding the outcome of this charge control process.

7.2 The current PPC charge controls expired on 30 September 2008 and our intention in formulating the new charge control was always for it to commence from 1 October 2008 to run for four-year period. On this basis, we were intending to publish a consultation document on the leased lines charge controls in early summer, with a view to issuing a Final Statement prior to 30 September.

7.3 However, certain material developments required us to amend the implementation timetable for the charge control. As discussed in Section 4, the material developments include BT's restatement of the TI (and AI service) revenues in the 2006/07 RFSs and the need for us to get these restatements reviewed by third party independent consultants.

7.4 In this section we discuss:

- Given the expiry of the 2004 PPC charge controls, the interim arrangements in place in respect of TI terminating segments; and
- The measures we propose to take to ensure that BT does not benefit overall as a result of the delay.

There are implications arising from a delay to the original timetable

7.5 The delay in our publication of the statement on leased lines charge controls has a number of implications (until the new controls come into effect):

- For TI terminating segments the current controls expired on 30 September 2008, hence there will be an intervening period when these services are not subject to a charge control; and
- The delay will also pushes back the implementation of the charge controls for currently uncontrolled services such as AISBO and TI trunk services.

7.6 In light of the above, we have sought to ensure sufficient protection during the interim period between the end of the 2004 charge control and commencement of the proposed controls. We also believe that BT should not benefit as a result of the delay, and that other stakeholders are on average no worse off than they would have been had the delay not occurred.

BT Wholesale ("BTW") has offered voluntary price commitments

7.7 BTW has made the following voluntary price commitments:

- For TI terminating and trunk services BTW offered to keep all current charges unchanged in nominal terms (i.e. at RPI-RPI) until the proposed charge controls commence.

- For SDSL services BTW offered to:

  - Continue to supply SDSL services to meet reasonable demand until 2010;

  - Not increase its prices for SDSL services more quickly than the rate of inflation (RPI-0%) for a period of two years following the publication of the BCMR Statement i.e. from 2008 to 2010;

  - Commit to a further two-year cap, the level of which would be agreed with Ofcom prior to 2011 and subject to the continuing viability of the service and the need to fully recover costs.

BTW has offered to backdate the new proposed charge controls

7.8 BT Wholesale ("BTW") has also indicated publicly that it would be prepared to backdate the implementation of the new charge controls for TI services, such that their effect would the same as if the controls had been introduced on 1 October 2008. Reflecting this, the proposed charge control on BTW will run for a period of four years from 1 October 2008 to 30 September 2012.

7.9 Given BT's commitments and the discussion in section 4, our expectations in relation to the pricing of BT's TI services are as follows:

- Prices will not be increased in nominal terms between 1 October 2008 and the introduction of the charge control;

- When the charge control is introduced, BTW will implement the rebalancing proposals discussed in section 4 (see Tables 4.6 and 4.10), which we understand will be revenue neural for external customers;

- No further one-off price changes would be made when the controls are introduced; and

- No nominal price increases will be introduced between the introduction of the control and 1 October 2009.

7.10 The overall impact of this approach will be to ensure that nominal prices paid by external customers will on average remain unchanged through the period from 1 October 2008 to 30 September 2009. This would be equivalent to an RPI-RPI price cap in the first year of the control. As RPI inflation was running at around 5% in the year to June 2008, this would be equivalent to RPI-5%, which is towards the upper end of the proposed range for the value of X for the TI basket (RPI-0.00% to RPI-7.00%).

7.11 With this approach, the proposed charge controls of RPI-0.00% to RPI-7.00% would apply to the TI basket in the second, third and fourth years of the control i.e. from 2009/10 to 2011/12.

7.12 Our provisional view is that this approach is likely to be consistent with the principle that BT should not benefit from the delay in the introduction of the control.

The commitment to backdate the proposed charge controls does not apply to Openreach

7.13 We propose that the charge controls for Openreach run from the date of their introduction to 30 September 2012. This will ensure that the proposed charge controls on TI and AI services are aligned. By developing potential future charge controls together it will ensure that a common and consistent methodological approach is applied to both AI and TI services. Given the the process of migration from TI to AI services, we consider it important that the charge controls for the two service categories should be linked in this way.

7.14 The alternative would be for the proposed charge controls on AISBO services to run for a four year period from the date of their introduction (e.g. 1 April 2008). A potential advantage of this approach is that it would the proposed charge controls on AISBO services to be aligned with the wider charge controls proposed on Openreach by the OFFR Second Consultation. On balance, however, we consider alignment with TI leased line services to be more important.

7.15 Following the implementation of the recently announced price reductions for Ethernet services, we would not expect to see any increase in nominal charges for low bandwidth AISBO services prior to 1 October 2009. The RPI-X control will then be applicable. As discussed in Section 5, given the scale of the planned price reductions, we do not consider that Openreach should be required to make any further reductions in nominal prices before 1 October 2009.

Question 7.1 Do respondents agree that the charge controls on AISBO services should run from the introduction of the new proposed controls to 30 September 2012?

Conclusions

7.16 In this section, we have set out the implications that arise from the late introduction of the new proposed charge controls and how we plan to handle these.

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 **2 February 2009.**

A1.2 Ofcom strongly prefers to receive responses using the online web form at http://www.ofcom.org.uk/consult/condocs/llcc/howtorespond/form , 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 lara.stoimenof@ofcom.org.uk attaching 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.

Lara Stoimenova
Floor 4
Competition Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7783 3333

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 Lara Stoimenova on 020 783 4130.

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 March 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

Consultation questions

A4.1 Here is a list of our consultation questions:

Question 3.1 Do respondents agree that RPI is the best index for the charge control?

Question 3.2 Do respondents agree that an RPI-X control is the appropriate form of charge control for the regulation of TI terminating, trunk and Ethernet services?

Question 3.3 Do respondents agree that a four-year duration for the charge controls on TI terminating segments, trunk and Ethernet services is appropriate?

Question 3.4 Do respondents agree with our proposed technology neutral approach to modelling?

Question 3.5 Do respondents agree with Ofcom's proposal to continue to use prior year weights to assess compliance with the proposed control on charges for TISBO and trunk services?

Question 3.6 We would welcome views on the merits of an average revenue control for AISBO services and on whether this could be combined with a prior year weighted price cap on the AISBO basket as a whole

Question 3.7 Do respondents agree with the application of the "k factor"? We would also welcome stakeholder views on the appropriate level of the interest and penalty rates to be applied.

Question 3.8 Do respondents agree that CCA FAC is the appropriate cost basis for setting the proposed charge controls?

Question 3.9 Do respondents agree with our proposal that, in principle, costs truly incremental to 21 CN should be excluded from our base year 2006/07?

Question 3.10 Do respondents agree with the use of national costs to set the charge controls for the 34/45 and 14-/155 Mbit/s in the non-CELA region?

Question 3.11 Do respondents agree with our proposed ranges for the WACC for TI and Ethernet services?

Question 3.12 Do respondents agree with our proposed approach to discounts, in particular the proposed treatment of geographic and term discounts under the charge control?

Question 4.1 Do respondents agree with Ofcom's proposal of a single TI basket including TI terminating segments and trunk services?

Question 4.2 Do respondents agree with a sub-cap of RPI-0% on the sub-basket of TI terminating segments in the TI basket?

Question 4.3 Do respondents agree with Ofcom's proposal that sub-caps of RPI-0% are required for the sub-baskets of rental and connection charges?

Question 4.4 Do respondent agree with Ofcom's proposal to include equipment and infrastructure charges in a separate basket of their own (the "Equipment and Infrastructure basket") and subject to an overall cap of RPI-0%? Do respondents also agree that each charge in this basket should not be allowed to increase more then 5% in nominal terms in any control year?

Question 4.5 Do respondents agree that ancillary services are included in a basket of their own and subject to an overall basket cap of RPI - 0%?

Question 4.6 Do respondents agree that RBS, SDSL and BT Netlocate should not be subject to our formal charge control?

Question 4.7 Do respondents agree that holding gains/losses should be recalculated for the TI basket of services by using the historic five year average in the trend of real asset price changes? Do respondents agree that no allowance should be made for "other" holding gains/losses in the TI basket of services?

Question 4.8 Do respondents agree that the RAV adjustment should be applied to the base year costs of the TI basket?

Question 4.9 Do respondents agree that the direct costs relating to 21 CN should be excluded from the 2006/07 base year costs of the TI basket?

Question 4.10 Do respondents agree that the debtors in the TI basket should be amended to reflect contractual payment terms?

Question 4.11 Do respondents agree that 3rd party PoH costs should be recovered via separate per circuit PoH charges included in the TI basket?

Question 4.12 Do respondents agree with the proposed approach towards prices for the TI basket of services during the period to 30 September 2009?

Question 4.13 Do respondents agree with the proposed one-off adjustments to the starting charges of equipment prices as proposed by BT?

Question 4.14 Do respondents agree with the volume forecasts used in the LLCC model for the TI basket of services? If not, please provide your views on the future volume forecasts of services within scope of the charge control.

Question 4.15 Do respondents agree with Ofcom's proposed efficiency assumption range of 0% to 5% when forecasting BT's future costs in the TI basket?

Question 4.16 Do respondents agree with Ofcom's assumptions on AVEs and CVEs when forecasting the costs of the TI basket?

Question 4.17 Do respondents agree with Ofcom's proposal to use the average historic five year trend in asset price changes as proxy to future prices when forecasting costs of the TI basket?

Question 4.18 Do respondents agree with Ofcom's approach of re-allocating fixed costs from the TI services to the AI services?

Question 5.1 Do respondents agree with Ofcom's proposal of a single AI basket with separate sub-caps of RPI-0% on each of the sub-baskets of WES and BES services? Do respondents also agree with the sub-cap of RPI-0% on each of the sub-baskets of connections and rentals?

Question 5.2 Do respondents agree with Ofcom's proposal of linking the regulation of the Ethernet accommodation and LLU accommodation products in the manner described and the overall price of RPI-X% (with X probably close to zero) proposed on the Ethernet accommodation products?

Question 5.3 Do respondents agree with Ofcom's proposal to include ancillary charges in a basket of their own subject to RPI-0%?

Question 5.4 Do respondents agree with Ofcom's proposal not to take the RAV adjustment into consideration when adjusting Openreach's base year costs for 2006/07?

Question 5.5 Do respondents agree with Ofcom's proposal to exclude 21 CN "direct" costs from Openreach's base year costs for 2006/07?

Question 5.6 Do respondents agree with Ofcom's proposal to amend debtors when adjusting Openreach's base year costs for 2006/07?

Question 5.7 Do respondents agree that there should be no further one off adjustments to the start charges for services in scope of the AI basket and that prices should be brought within the DLRIC floors and DSAC ceilings within the 12 months of implementation?

Question 5.8 Do respondents agree with the volume forecasts used in the LLCC model for AI basket of services? If not, please provide your views on the future volume forecasts of wholesale services in scope of the charge control.

Question 5.9 Do respondents agree with our proposed forward looking efficiency range of 1% to 3% to apply to services within the scope of the AI basket?

Question 5.10 Do respondents agree with the range of WACC proposed for services within scope of the AI basket?

Question 5.11 Do respondents agree with our proposed AVEs/CVEs for Ethernet services?

Question 5.12 Do respondents agree with our proposed use of the average historic five year trend in the real asset price changes when forecasting the costs of AI services?

Question 5.13 Do respondents consider that we should accept KCOM's commitment to reduce low bandwidth AISBO prices by RPI-16% a year over the period to 2102?

Question 6.1 Do stakeholders agree with our proposed charge control formulae for AISBO services? We would welcome stakeholder views on our proposed mapping of existing products on to Openreach's new products set.

Question 6.2 Do stakeholders agree that the required notification period should be waived in respect of the proposed starting charge adjustments to some TI services?

Question 7.1 Do respondents agree that the charge controls on AISBO services should run from the introduction of the new proposed controls to 30 September 2012?

Annex 5

TISBO and AISBO service charges and cost recovery

Costs recovered via the different AISBO and TISBO service charges

A5.1 The below table summarises the capital and operating costs recovered via key TISBO and AISBO service charges.

Figure A5.1 Costs recovered via the key TISBO and AISBO service charges

Physical elements of service	Traditional interface								Alternative interface[1]		
	Circuit charges				Equipment & infrastructure charges				Circuit charges		
	Rentals			Conns	Third party link		Point of handover		(Local) ends		Per metre
	Local end	Link	Per km		Conns	Rentals	Conns	Rentals	Conns	Rentals	Rentals
Third party customer access link											
Customer specific											
Transmission equipment					x				x		
Blown fibre					x					x	
Copper drop wire					x				na		
Non-customer specific											
Transmission equipment	x									na	
Spine fibre	x									x	
All other elements of copper pair	x									na	
Duct	x									x	
Customer and non-customer specific											
Maintenance costs (all elements)	x									x	
Indirect costs (all elements)	x									x	
Core transmission											
Equipment located at terminating exchanges		x									na
All other transmission equipment			x								na
Fibre & duct			x								x
Circuit set up				x					x		
PPC point of handover link (not migrated links)											
Customer specific											
Transmission equipment							x				
Blown fibre							x				
Equipment maintenance								x			
Non-customer specific											
Spine fibre	x									not applicable to AI	
Duct	x										
Elements both customer and non-customer specific											
Maintenance costs (save equipment)	x										
Indirect costs (all elements)	x										

Note 1: current (point-to-point fibre) services only

Annex 6

Report for Ofcom
Study of BT's regulatory Financial Statements for business connectivity markets:
Analysys-Mason

Introduction

A6.1 We appointed Analysys-Mason to conduct an independent review of the volume and revenue data restated by BT for 2006/07 and the improved methodologies used to prepare BT's 2007/08 RFS's. This report is published separately with this consultation.

A6.2 We asked Analysys-Mason to provide:

- An assessment of the accuracy of the revised turnover calculation and supporting volume data;
- An opinion on whether or not the recognition and measurement basis on which turnover is calculated for price control calculations and the RFS's is relevant, reliable and fit for purpose, including a review of the options available;
- An appraisal of the capability of BT's source systems and processes to deliver reliable volume data;
- If appropriate, recommendations for further quality improvements to the data used in setting leased line charge controls, and changes to the regulatory financial reporting of the relevant markets.

A6.3 In summary, Analysys-Mason's key findings were that:

- The approach taken by BT in making its 2006/07 restatement for TISBO services, wholesale trunk and technical areas appears to be reasonable, given the limited historical data available.
- The volumes reported in the RFS are reasonably well aligned with the revenue measure appropriate for the LLCC model.
- The current systems and processes, although complex, are potentially capable of delivering reliable volume data for TISBO and related services, provided that care is taken at each stage.

A6.4 Analysys-Mason also provided a numerous suggestions where further questioning of BT, data analysis or clarification is recommended. We will be fully considering each of these suggestions and taking appropriate action, including asking BT for additional explanations or data, to enhance the confidence we have in the data used in our models. The indicative ranges of potential values of "X" in our proposed charge controls partly reflects our view that this further work could result in small adjustments to the operational and financial data used in our models.

A6.5 Overall Analysys Mason's assessment is that BT's restated operational and financial data for 2006/07 appears to be reasonable. We believe therefore that, when combined with our assessment and an additional internal review carried out by BT, the restated data provides a reasonable information base for charge control modelling.

A6.6 In the below table we show the impact of BT's re-statement of revenues and volumes for 2006/07 on the individual services in scope of the TI basket.

Figure A6.1 Impact of BT's re-statement on individual services within the TI basket

	64 kbs				2 mb/s					34 / 45 mb/s				140 / 155 mb/s				622 mb/s	Total
	Conns	LE	Link	Trans	[1]Conns	LE	[1]Link	Dist	Trunk	LE	Link	Dist	Trunk	LE	Link	Dist	Trunk	Trunk	
Volumes (000s)																			
Originally reported	4.8	199	558	13,192	24	328	153	1,913	2,099	7.0	4.7	68	84	2.0	4.1	52	84	13	
Restated	5.8	148	443	11,193	22	201	140	1,317	1,717	5.1	4.5	51	78	2.0	2.9	29	61	12	
Movement																			
Absolute	1.1	(50)	(115)	(1,999)	(2)	(127)	(13)	(596)	(382)	(1.9)	(0.2)	(17)	(6)	(0.0)	(1.1)	(23)	(23)	(1)	
%	22	(25)	(21)	(15)	(10)	(39)	(9)	(31)	(18)	(27)	(5)	(25)	(7)	(0)	(27)	(44)	(27)	(9)	
Revenues (£m)																			
Originally reported	2	51	39	50	58	210	71	90	215	20	15	32	46	25	43	64	22	17	1,070
Restated	3	39	31	43	37	128	65	63	175	14	14	24	43	24	31	36	16	15	801
Movement																			
Absolute	1	(12)	(8)	(7)	(21)	(82)	(6)	(27)	(40)	(6)	(1)	(8)	(3)	(1)	(12)	(28)	(6)	(2)	(269)
%	50	(24)	(21)	(14)	(36)	(39)	(8)	(30)	(19)	(30)	(7)	(25)	(7)	(4)	(28)	(44)	(27)	(12)	(25)

Abbreviations: Conns = Connections, LE = local ends, Trans = transmission (combines distribution & trunk), Dist = Distribution

Note 1: Revenues exclude £16m / £23m included for Site Connect within the 2006/07 restated RFSs under 2 mb/s connections & links; restated volumes did not include Site Connect

Annex 7

PoH related costs

Background

A7.1 In the 2002 PPC pricing direction Oftel allowed BT to recover certain POH costs via a surcharge on external third party local end rental charges. Oftel described these costs as “network overheads” in the direction. This adjustment has been called the “local end adjustment” since.

A7.2 Oftel increased the price it would otherwise have determined for third party local end charges by 31% (sub 2 mb/s) and 38% (above 2 mb/s) to recover these costs.

A7.3 In the regulatory financial statements BT deflated the external price by 23%, equivalent to inflating the internal price by 30%, to arrive at the internal price. Therefore in the published statements local end rentals shows two different prices for ostensibly the same services.

A7.4 The “local end adjustment” lived in relative obscurity until we, as part of our Replicability work, flagged it up as a difference between the way BT charged communication providers and itself.

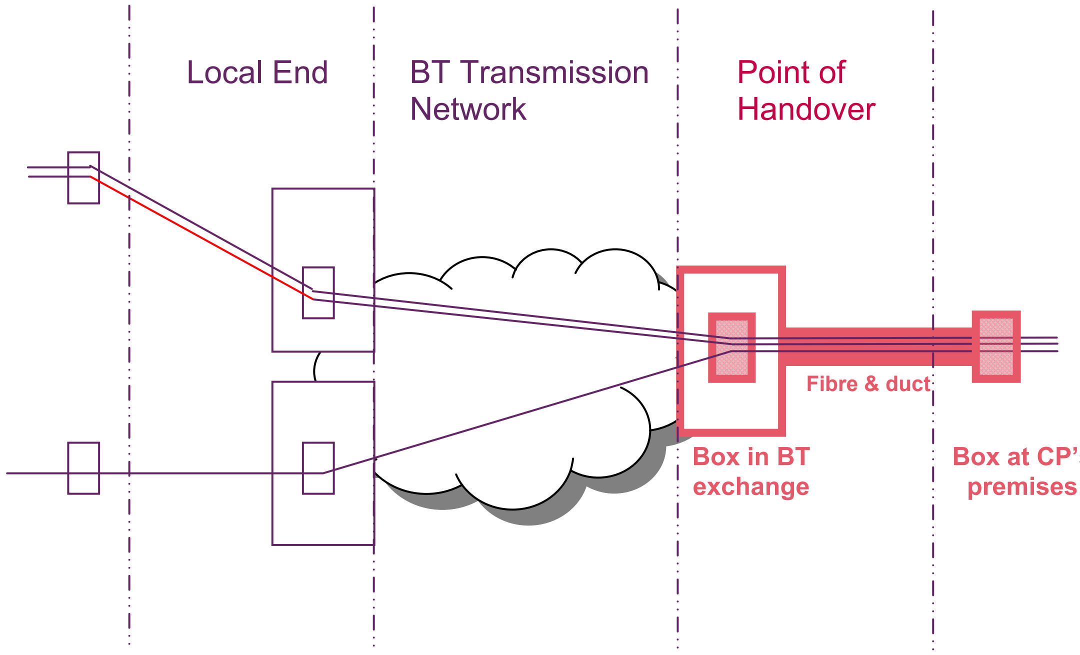
What does a point of handover link comprise of?

A7.5 Each and every PPC circuit purchased by a CP needs to be delivered by BT to it via a POH link. This link comprises the physical infrastructure (fibre & duct) as well as two boxes at the end of it.

A7.6 Diagram 1 highlights the elements of a PPC POH link. In addition to the equipment and infrastructure elements shown in the diagram BT will also incur maintenance costs for the link. It also shows how a number of PPC circuits purchased by a single communication provider can be funnelled through to the CP’s over this single bearer.

A7.7 Once set up BT can handover as many individual circuits as the capacity of the link will allow at no further cost. The costs involved therefore are driven by the link itself (i.e. the bearer) rather than the individual circuits delivered over it.

Figure A7.1 Elements of a PPC point of handover[84]



Source: BT

How does BT currently recover these costs?

A7.8 BT recovers the cost of these links through a combination of PPC POH connection and rental charges as well as through a surcharge on all circuits delivered over this link i.e. the local end adjustment. As this absolute value of this surcharge varies by bandwidth the extent of this cost recovery depends on both the number and bandwidth of the circuits delivered.

A7.9 BT's policy is to recover customer-specific capital costs through connection charges and all other costs through rental charges. The capital costs BT considers to be customer-specific is any equipment it deploys at either end of the link and that element of the fibre pair between BT's exchange building and the CP's premises that it cannot re-use (i.e. the blown fibre element).

A7.10 All in all there are about ~50 different connection charges on the PPC price to cover all the different permutations of handover offered. The minimum bandwidth BT offers is however 155 mb/s.

A7.11 BT has told us that the POH rental charges are designed to recover contractual maintenance charges from their equipment suppliers. This means that the surcharge recovers all other costs, both operational and capital.

The table below seeks to translate all this into a simple-to-understand matrix, mapping the elements to the charge through which BT recovers their costs.

[84] The diagram above depicts customer sited handover i.e. where BT delivers the PPC circuits right into a communication provider's premises deploying a box located in one of its exchange buildings. The other option is in-span handover which involves BT providing the fibre up to a footway box located near its exchange. Here the communication provider connects its fibre to BT's fibre with itself, rather than BT, providing the box in its exchange building.

Table A7.1 Recovery of different cost elements for PPC point of handover links

		Wholesale charges		
		Point of handover link		Surcharge on
		Connection	Rental	LE rental
Point of handover links				
Capital	Equipment	✓		
	Blown fibre	✓		
	Spine fibre			✓
	Duct			✓
Mtce	Equipment		✓	
	Blown fibre			✓
	Spine fibre			✓
	Duct			✓
Other	Accommodation[1]			✓
	Selling[2]			✓
	Other[3]			✓

Notes
1 Exchange operating costs i.e. accommodation, security and the like
2 Wholesale selling costs
3 Other indirect costs attributable to these services

A7.12 Note that the same surcharge applies whether there is a distance related element (customer-sited handover) or not (in span handover).

A7.13 The analysis provided by BT that only 300 out of a total 21,000 boxes of equipment used in handovers are used in PPC handovers, and therefore the number of PPC circuits delivered in this way appears to be in the minority.

A7.14 There are no distance related charges for Point of Handover except for the MSH product. The MSH network is a high capacity overlay of BT's SDH network. Connection to the MSH network allows the customer to bypass much of the SDH Tiers but access to this network is available at far fewer nodes than SDH. In these cases the point of handover link length would be typically much longer. BT informs us that it has not sold this service.

The different handover arrangements for migrated PPCs

A7.15 In practice however there has been another way that BT delivers a PPC to a communication provider over its network. The other option, which we now understand to be by far the most common, results from reclassifying an existing circuit purchased on retail terms, as a wholesale PPC.

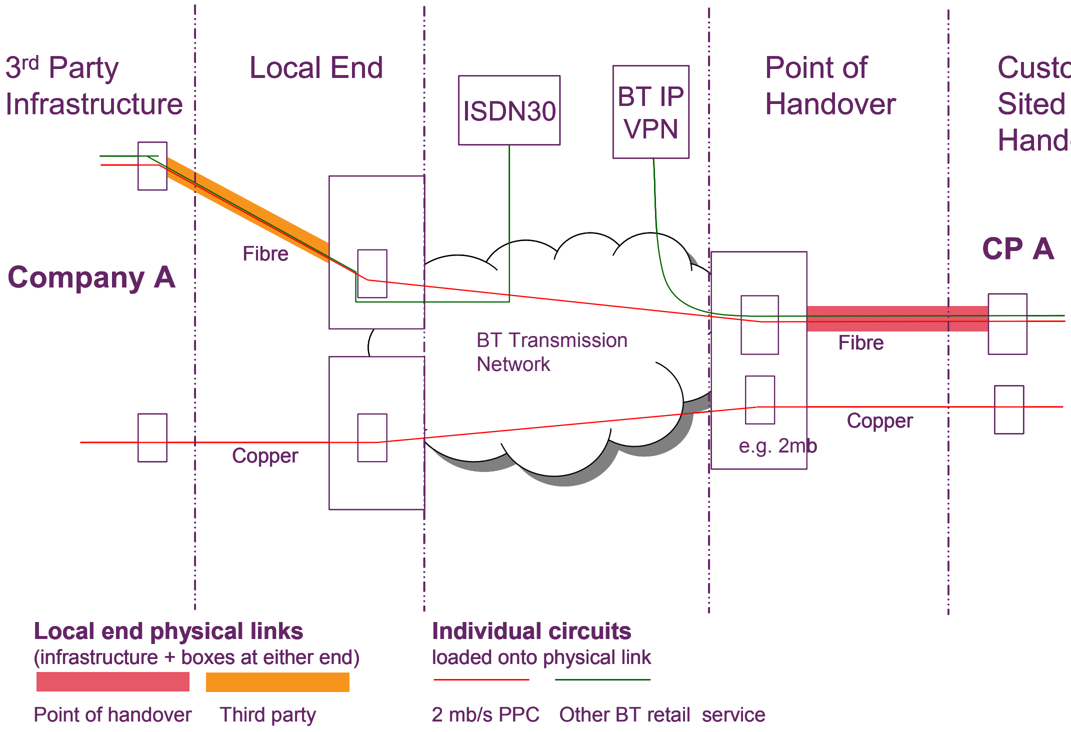
A7.16 BT delivers migrated PPCs to a communication provider on the pre-existing local end infrastructure. The bandwidth of this infrastructure ranges from a 64 kb/s copper link to a 2.5 gb/s fibre link and on every bandwidth in-between.

A7.17 BT uses this pre-existing equipment and infrastructure to deliver other leased line services to the communication provider, including to a significant extent services sold on a retail terms.

A7.18 This means that the handover link is often not unique to PPCs, and therefore the proportion of the links costs attributable to the PPC depends on what else is delivered over the link.

A7.19 Diagram 2 shows one example of a migrated POH where the link delivers not only the migrated PPC but also the VPN tail sold by BT to the same communication provider on retail terms.

Figure A7.2 PPC circuits handed over on links shared with non-PPC services (migrated PPCs)



Source: BT

A7.20 The only charge BT makes for delivering these PPC circuits to a communication provider is the surcharge on third party local ends,

Does this result in differences in the costs to be recovered between two types of handover?

A7.21 In short, yes. Table 2 contrasts how BT seeks to recover the different cost elements firstly over a PPC link and secondly over a migrated link.

Table A7.2 Comparing & contrasting cost recovery between PPC and migrated POH links

		Wholesale charges			Retail[4]
		Point of handover link		PPC charges	Circuit charges
		Connection	Rental	LE rental	Rental & conn
PPC point of handover links (=> 155mb/s)					
Capital	Equipment	✓			not applicable
	Blown fibre	✓			not applicable
	Spine fibre			✓	not applicable
	Copper	not applicable	not applicable	not applicable	not applicable
	Duct			✓	not applicable
Mtce	Equipment		✓		not applicable
	Blown fibre			✓	not applicable
	Spine fibre			✓	not applicable
	Copper	not applicable	not applicable	not applicable	not applicable
	Duct			✓	not applicable
Other	Accommodation[1]			✓	not applicable
	Selling[2]			✓	not applicable
	Other[3]			✓	not applicable
Migrated POH links (=> 2 mb/s)					
Capital	Equipment				✓
	Blown fibre				✓
	Spine fibre			✓	
	Copper				✓
	Duct			✓	
Mtce	Equipment			✓	
	Blown fibre			✓	
	Spine fibre			✓	
	Copper			✓	
	Duct			✓	
Other	Accommodation[1]			✓	
	Selling[2]			✓	
	Other[3]			✓	

Notes

1 Exchange operating costs i.e. accommodation, security and the like

2 Wholesale selling costs

3 Other indirect costs attributable to these services

4 Retail charges relate to prior periods when CP bought circuits on retail terms

Items where the recovery differs highlighted in colour as follows

Equipment and blown fibre capital

Equipment maintenance

Copper

A7.22 Although equipment maintenance costs are recovered through specific charges for PPC POH links, exactly the same surcharge applies to the two different handover arrangements.

A7.23 For migrated PPCs it is assumed that any customer-specific capital expenditure has already been recovered through retail charges. BT has however pointed out that, as communication providers can, and do, migrate a circuit onto wholesale PPC terms after one year on retail terms, it does not fully recover these costs.

BT estimate of "local end adjustment" costs and revenues

A7.24 BT did not separately account for the costs of POH links from third party local end rentals. As a result it is not able to isolate the costs currently recovered by the local end adjustment directly using regulatory accounting data. BT has instead estimated the total cost to be recovered by identifying the volume of POHs (both types) and multiplying by its estimate of the associated unit costs. These unit costs are the result of a similar approach to that used to estimate the unit costs of the services in the equipment and infrastructure basket.

A7.25 The table shows a cost and revenue breakdown for 2006/07. This summarises BT's cost estimate. We calculated the revenues based on the restated revenues for external local end rentals.

Table A7.3 Estimate of overall "local end adjustment" 2006/07 costs & revenues

All in £m	Cost[1]	Revenue
Accommodation[2]	6.6	
Access fibre/copper/duct	1.8	
Equipment maintenance[3]	1.5	
Selling	1.2	
	11.1	10.0

Notes

1. BT's estimate of annual costs including ROCE based on bottom up calculatic
2. Exchange operating costs i.e. accommodation, security and the like
3. Only in relation to migrated links

We propose to improve the transparency of POH link cost recovery

A7.26 We wanted to devise a cost recovery regime for POH links that created charges more closely causally related to costs than they currently are. However in investigating the nature of the costs involved we learnt that:

- There were two distinct types of handover, POH links and migrated links, leading to no clear separation between the bearer (i.e. the PPC technical area) from the PPC circuits carried over that bearer.
- In the case of migrated links the cost of handing over a circuit depends, among other things, on what other (often non-PPC) circuits BT has supplied to the communication provider over that handover.
- Although there may be some degree of cross-subsidy between the different arrangements it is not apparent if the status quo significantly disadvantages any individual CP.
- CPs are loath to re-arrange circuits once BT had set them up blunting any incentive to response to a revised cost recovery regime.
- The sum involved, BT's estimate of £11m, was not particularly significant in terms of overall external circuit costs of approximately £150m per year after all adjustments.

A7.27 Whilst it would be possible to create bearer-based rental charges for PPC point of handover links this would only address a minority of the relevant circuits. BT would also need to be able to distinguish on a circuit-by-circuit basis for billing purposes which circuits it delivered over PPC POH links and which over migrated links.

A7.28 Given this situation we conclude that there is little merit in trying to create a more complex recovery regime than we currently have. Instead we propose that BT identifies the relevant costs & revenues separately from third party local ends in future through newly created POH rental charges. This proposal also clearly signals to BT that it should cost and price its internal third party local ends on exactly the same basis as external local ends in its regulatory financial statements.

A7.29 In terms of the total sum to be recovered this proposal is equivalent to updating the current local end adjustment to reflect the latest costs for POH and third party local end rentals. We have calculated BT's estimate of POH rental costs to be 21% of third party local end rental costs.

A7.30 We have arrived at our individual proposed charges by multiplying the unit costs for third party local ends by 21%. This approach retains the bandwidth gradient present in the current regime. This results in the following proposals:

Per external circuit £ per year

- 64kb £110
- 2mb £180
- 34/45 mb/s £930
- 140/155 mb/s £1,800

A7.31 We will continue to work with BT to refine our estimates of BT's costs, revenues and volumes whilst we consult on our leased line charge control proposals.

Annex 8

Base year costs, revenues and volumes

Introduction

A8.1 We populate the base year of our RPI-X charge control model with actual data (costs, revenues and volumes) supplied by BT adjusted to ensure the data is reliable and relevant. These adjustments are significant for some services.

Objective of this annex

A8.2 The objective of this annex is to describe how we have arrived at our base year costs, revenues and volumes for services within the scope of the leased line charge control. In particular we set out the adjustments we make to our source cost, revenue and volume data.

Purpose of the analysis

A8.3 Our calculation of BT's costs, revenues and volumes for the base year (2006/07) serves two distinct purposes. Primarily we need to establish the relevant base year information for forecasting purposes. This information is one of the key inputs into our RPI-X model. We describe this model in Annex 9.

A8.4 Secondly we assess whether we should propose one-off cuts or increases to current service prices at the outset of the control based on BT's service profitability. We therefore also construct service profitability information based on the adjusted costs, revenues and volumes for 2006/07.

Summary

A8.5 We have made significant adjustments to the source data/information provided by BT either from its Regulatory Financial Statements ("RFSs"), its Additional Financial Statements ("AFSs") or specified information requests. Our adjustments can be categorised into two main reasons:

- to reflect a more reliable and consistent accounting view e.g. correcting for errors and matching costs to revenues
- to reflect positions on a variety of methodological issues e. g. technological neutrality

How base year data informs our charge control proposals

A8.6 Below we explain in outline how we have used the outputs of our base year calculations to inform our pricing proposals.

Forecasting over the period of the RPI-X price control

A8.7 We extrapolate BT's costs, revenues and volumes over the proposed period of the RPI-X charge control period using adjusted base year information as our starting point. This 2006/07 information is therefore one of the key determinants of the value of 'X' for each charge control basket. We describe our forecasting model further in Annex 9.

Assessing the case for one-off price adjustments at the start of the control

A8.8 We use service profitability information to inform whether we should propose one-off price changes at the outset of the charge control. The extent to which BT earns profits, which we consider both at basket and individual service level, may suggest one-off price changes are appropriate.

A8.9 We set out our proposals based on this profitability information in sections 4 (traditional interface services) and section 5 (alternative interface services).

Our analytical approach to base year costs, revenues and volumes

A8.10 We undertook three different sets of analyses, one for each of our proposed baskets:

- Traditional interface services
- Alternative interface services
- Equipment and infrastructure services

A8.11 The first two baskets comprise of circuit connection and rental services for the two different interfaces. The latter basket in contrast primarily consists of connection charges in relation to equipment and infrastructure deployed at the ends of traditional interface circuits. These charges typically support a number of circuits.

A8.12 Below we explain the types of adjustments we made, the outputs we produce and the inputs we use across all three sets of analyses.

Types of adjustments

A8.13 We have indicated that we needed to significantly adjust the source data BT provided us. The table below categorises and sets out the reasoning for these adjustments. These adjustments are not relevant to the equipment and infrastructure basket.

Table A8.1 Types of adjustments

#	Question	Type	Examples
1	Do BT's reported figures provide a relevant & reliable accounting view of BT's service costs and profitability for 2006/07?	Corrections to source data	Mismatch between costs and revenues e.g. PPC local ends AI connection charges
		Need for greater granularity	BT didn't identify backhaul per metre charges within its AI services
2	Does our adjusted accounting view provide a suitable basis for price controls in terms of:		
a	reflecting one-off events or abnormal levels of cost or revenue?	Smoothing of costs & revenues i.e. adjusting to reflect expected levels of future costs or revenues	Normalisation of current cost holding gains/losses Smoothing of peaky reported costs identified from trend analysis

#	Question	Type	Examples
b	how we expect BT to recover particular items of cost in future?	Implementing our cost recovery methodologies through adjustments to cost, revenues and volumes	Cost recovery profile for certain assets to be consistent with BT's regulatory asset value (RAV) Change in the way in which costs are recovered for certain point of handover costs (previously "the local end adjustment")

A8.14 We recognise that there are some interdependencies between the adjustments we have made. In this annex we list the adjustments in the order we have processed them and believe that any re-sorting of this order would not result in a materially different result.

A8.15 We will continue to work with BT to refine these adjustments to costs, revenues and volumes whilst we consult on our leased line charge control proposals.

Outputs

Base year information for forecasting

A8.16 We calculate the value of each adjustment aggregated across all the services within scope of the traditional and alternative interface baskets. We then ensure that these values are appropriately reflected within the base year costs, revenues and volumes used in our RPI-X forecast model. We explain this further under 'Inclusion of accounting adjustments into the cost modelling' within paragraphs A9.87 to A9.105 in Annex 9.

A8.17 Our proposals for the equipment and infrastructure basket do not require us to forecast service costs over the price control period.

Base year profitability

A8.18 We prepared two different types of profitability analysis, both drawn from the same underlying adjusted base year information:

- individual service profitability based on comparing unit costs (including the cost of capital) to prices or average unit revenues
- basket & service profitability based on return on capital employed ("ROCE") in the case of the two main baskets (where the capital employed is significant) and a return on sales ("ROS") for the equipment and infrastructure charges basket (where capital employed is insignificant and ROCE is therefore a poor measure of profitability)

A8.19 Mean capital employed values reflect the extent to which BT had already depreciated its assets over their estimated useful economic life. We did not attempt to adjust MCE values to reflect "steady state" investment on an asset-by-asset basis. We however note that, across both the TI and AI baskets, the ratio of net replacement cost ("NRC") to gross replacement costs ("GRC") was 44% (38% for TI basket, 53% for AI basket), the same overall NRC/GRC ratio when we last set a price control for leased lines in 2004.

A8.20 In our individual service and basket profitability analysis we use a fully attributed cost ("FAC") approach. This is the same costing method that BT uses to prepare its RFSs.

Inputs

A8.21 The starting point for our analysis was BT's regulatory accounting information. This information is designed to provide costs and revenues at a granular level prepared on a basis suitable to be the starting point for regulatory decision making such as these charge control proposals. For example costs are prepared on a current basis, the basis most relevant to give a view of the long run economic costs of providing these services. The information published in the regulatory statements is also subject to an independent audit.

A8.22 We took regulatory accounting information for 2006/07 from BT's

- Audited published regulatory financial statements (RFSs)
- Unaudited additional financial statements (AFSs) provided to Ofcom
- Responses to our supplementary information requests

A8.23 For both our two main charge control baskets, the traditional and alternative interface baskets, we used information drawn directly from BT's regulatory accounting systems. However for the equipment and infrastructure basket, we were not able to follow this approach as BT does not expense this equipment and infrastructure in its regulatory costing system. Instead we use bottom-up unit costs provided by BT as our source information. BT incorporated contractual prices for equipment in its unit cost calculations.

The rest of this annex

A8.24 In the following sections we describe in detail for each basket separately

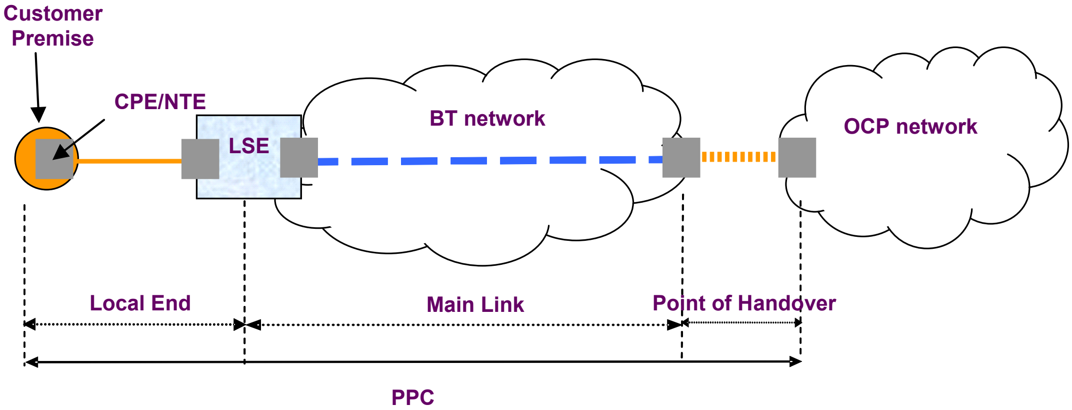
- The services involved;
- The inputs we use / their granularity;
- The adjustments we make; and
- The outputs.

Traditional interface ("TI") basket services

A8.25 This basket comprises circuit rental and circuit connection charges. We illustrate circuit rental charging elements in the figure below. Main link charges comprise the fixed (' per link') charges and variable per kilometre charges for distribution and truck transmission.

A8.26 We discuss the recovery of point of handover costs in Annex 7. Point of handover refers to the bearer link across which BT delivers individual PPC circuits to CPs

Figure A8.1 The different rental charging elements for a partial private circuit



Key

CPE/NTE	Customer Premise Equipment/Network Termination Equipment
CU	
ADM	Add Drop Multiplexor

A8.27 BT's regulatory costing system separately identifies many of the services within the scope of our proposed traditional interface basket. We list out these services at paragraph A8.32. There are however two sets of exceptions, enhanced maintenance and sub 2 mb/s circuits, which we discuss below.

<u>Enhanced maintenance</u>

A8.28 Enhanced maintenance charges relate to the premium repair service that communication providers can opt to purchase to top up the service level associated with standard circuit rental charges. BT levies further fixed and variable distance charges for each PPC. For 2 mb/s circuits enhanced maintenance costs roughly a further 10%. In 2006/07 BT sold all PPC circuits with enhanced maintenance according to the RFSs. Here BT includes, but does not separately identify, enhanced maintenance within the revenues and costs for its circuit rental services. We therefore assess the level of circuit charges reflecting BT's attribution of enhanced maintenance.

<u>Sub 2 mb/s circuits</u>

A8.29 BT offers sub 2 mb/s circuits in multiples of 64 kb/s up to 1,024 kb/s for link and per kilometre charges. Prices for these services do not reflect a straight bandwidth gradient. In the RFSs BT only identifies 64kb channels rather than circuits for these link and per kilometre services. We therefore assess the profitability of these services by comparing average unit revenue for a 64 kb/s channel with the corresponding average unit cost.

A8.30 Furthermore BT does not separately identify per kilometre charges for trunk and distribution services. Instead it presents these two services together. We therefore assess profitability of distribution and trunk charges on a combined basis.

Inputs / granularity

A8.31 Our main financial data set are the costs & revenues reported within BT's AFSs for 2006/07. These AFSs provide profit & loss and mean capital employed statements for all the services BT reports within its published RFSs in the same format as these published statements. The AFSs are not audited but agree in aggregate to the amounts appearing for each market reported in the audited RFSs.

A8.32 We used the AFSs for 2006/07 for the following TI basket services:

<u>64 kb/s</u>

Connection

Link

Transmission

Local end

<u>2 mb/s, 34/45 and 140/155 mb/s</u>

Connection (2 mb/s only)

Link

Transmission

Local end

Trunk

<u>622 mb/s</u>

Trunk

A8.33 We excluded from our analysis services within the wider traditional interface markets which are out of scope of the traditional interface basket (radio backhaul (RBS) and SDSL services). We also excluded any of the costs and revenues BT reported under Technical Areas (Point of Handover) from our analysis.

A8.34 We sourced volume information, split internal and external, for these services from the RFSs.

Adjustments

A8.35 In the table below we set out the adjustments we made in the order in which we made them.

Table A8.2 Adjustments to originally reported 2006/07 costs, revenues and volumes for traditional interface (TI) basket services

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
1	Third party customer local end (LE) equipment & infrastructure costs	The costs for local end rental services include third party customer local end equipment & infrastructure. BT however recovers these costs through its equipment & infrastructure connection charges which are not in the scope of the TI	BT supplied us with profit & loss and MCE statements for the local end services which disclosed the costs of fibre, copper and transmission equipment within each of the following categories:

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
		basket. We eliminate these costs from local end rentals. We illustrate the cut-off point between those elements BT recovers through connections and rentals in the figure 8.2 immediately after this table.	*Profit & loss costs* • depreciation access • depreciation switch & transmission • CCA adjustments *Mean capital employed* • access copper • access fibre • transmission BT also supplied us with estimates of the proportion of these costs which are recovered in its connection charges as follows: • fibre (47%) • copper (30%) • transmission (34% P&L / 25% MCE). We applied these proportions to the absolute costs identified to calculate the costs to eliminate.
2	Point of handover (POH) link costs	The costs for local end rental services also include most of the costs for point of handover links. Point of handover links relate to the technical area market rather than third party local end rentals. We eliminate these costs from local end rentals.	BT supplied us with an estimate of the POH costs it recovers through the surcharge on external local end rentals i.e. the POH costs it does not recover through specific POH charges We eliminated this estimate across the bandwidths identified by BT.
3	Current cost normalisation	BT prepares its statements under current cost accounting (CCA) principles. These costs reflect the actual level of asset inflation experienced and the impact of any changes to the methodologies used to value assets. Therefore, one period's CCA adjustments are unlikely to provide a robust forecast for future years. We therefore substitute our own estimate of future asset price inflation and eliminate the impact of any methodology changes.	We eliminated the amounts identified in the AFS profit & loss statement against: • holding (gain)/loss • other CCA adjustments We calculated our forecast holding gain by multiplying asset values as per the MCE statement by the geometric mean of the past 5 years' asset inflation figures as supplied by BT. We explain the source of our asset inflation assumptions under 'Asset price changes' within paragraphs A9.35 to A9.39 in Annex 9.
4	Regulatory asset value (RAV)	As set out in section 4 we believe it appropriate to adjust BT's current cost depreciation and asset values for pre-1997 access copper & access duct. This is to ensure full and fair cost recovery over the life of these assets across all the	We attributed the total value of the RAV adjustment (duct & copper separately) across all relevant BT access service components based on deprecation (P&L adjustment) and net replacement costs (MCE adjustment).

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
		services (including voice) that use these assets.	We then identified the overall impact of this adjustment on the *services* in the scope of the TI basket and applied it accordingly, depreciation & MCE elements separately. On the assumption that only local end rental services would consume pre-97 access copper and duct, we only applied this adjustment to these services.
5	Technological neutrality (21CN)	TI basket services include an element of the cost BT is investing in its 21CN network. As set out in section 4 we believe that these costs should be recovered against services delivered over the 21CN network, and not against current services which do not use this network. We therefore eliminate an estimate of 21CN costs reflected in TI services. Note that this adjustment only affects 'core' network services. Therefore the PPC services affected were • link • distribution per kilometre • trunk per kilometre	We have used an analysis of the attribution of BT's plant[85] group costs (profit & loss and MCE separately) across its network components to ascertain the relevant amounts. This analysis is taken from additional financial information (AFI) schedule 13 – provided to Ofcom. In 2006/07 BT identified the following plant group categories for this first time: • 21CN MSAN (PG851A) • 21CN MetroNode (PG852A) • 21CN I-Node (PG853A) • 21CN Backhaul (PG871T) Plant groups, in the same way as BT's network components, comprise not just direct costs such as for equipment but also indirect costs such as accommodation & security as well as corporate costs. We isolated the aggregate value of 21CN plant group costs attributed to the network components for links, distribution & trunk. We then calculated the proportion that these costs were of the total component costs. We used an analysis of plant group costs provided by BT which identified which costs were truly specific to 21CN (e.g. equipment and software) and reduced the proportion of costs to eliminate from link, distribution & trunk service costs.
6	Payment terms	We allow in the capital employed services the cost to BT of financing	We substituted the internal and external debtor figures reflected in the

[85] Plant groups reflect primary functions of BT's network such as local lines fibre cable or core transmission multiplexors. BT describes the role of plant groups in its regulatory costing system in its regulatory accounting documentation, which can be accessed at http://www.btplc.com/Thegroup/RegulatoryandPublicaffairs/Financialstatements/2008/Regulatoryfinancialstatements2008.htm

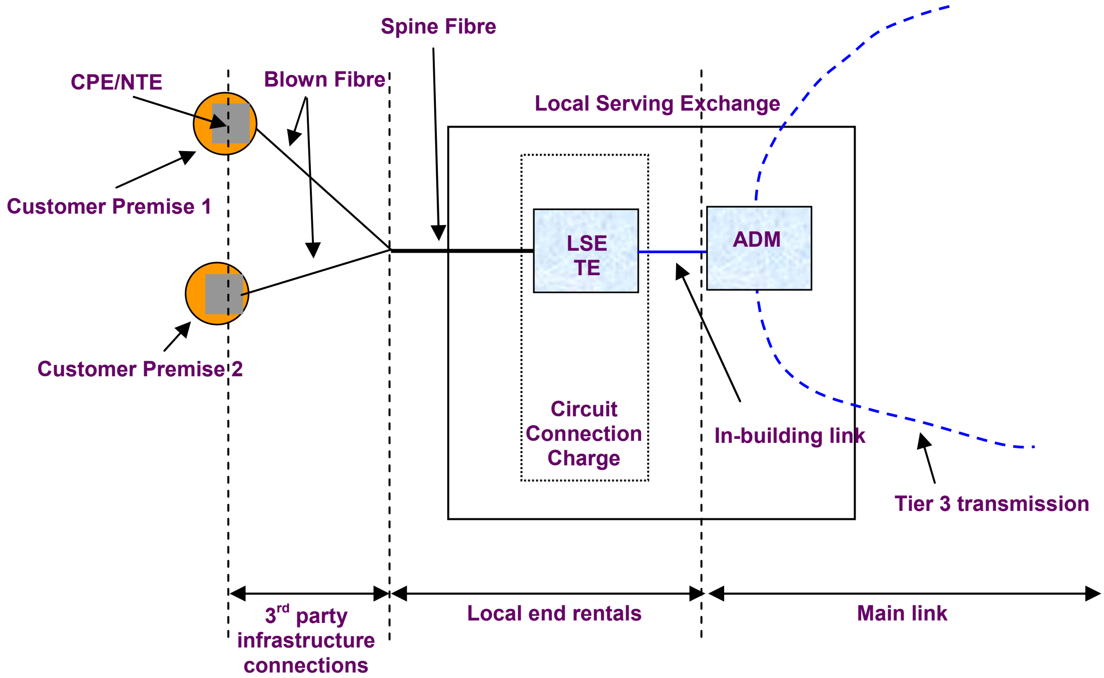
#	Adjustment	Issue and proposed treatment	Mechanics / source data used
		the payment terms it offers. We express this cost as notional debtors. We calculate its value using the number of days between when BT (on average) provides the service and when it expects to be paid. We then multiple this number of days over 365 days by its annual revenues to arrive at the value to include in MCE. BT's value for notional debtors reflects the same 59 days (2006/07) of revenues across all services (amended to 43 days from 2007/08), which differs from the terms actually offered on individual services. We therefore adjusted notional debtors to reflect BT's actual payment terms for each service. For further detail of the principles involved here see Determination of a dispute between THUS and BT about payment terms for PPCs, IECs and IBCs published in January 2007[86].	Additional Financial Statements, which reflect 59/365'ths of internal and external revenues, with a revised calculation based on 16/365 days and 31/365 days for rental and connection services respectively. *Rentals* 16 days represents the average interval for services billed monthly in advance. This includes a day for bill preparation. *Connections* 31 days represents the average interval for services billed immediately after provision. This period includes a day for bill preparation.
7	Ancillary services (e.g. excess construction charges (ECCs))	BT includes the cost of providing ancillary services within the base data for TI basket services. Ancillary services do not however fall within the TI basket and we therefore eliminate an estimate of the cost of these services.	BT was unable to provide us with an estimate of the cost of providing these services in 2006/07 but was able to provide us with a breakdown of its external sales for PPCs based on billing system data which included ancillary services. In this analysis 1.8% of external revenues related to ancillary services. We therefore used this % as an estimate of the extent to which the costs reflected in the reported cost base related to ancillary services. We eliminated this % of the cost base from all TI basket services.
8	Circuit revenues & volumes	BT restated its circuit revenues and volumes for 2006/07. We therefore adjust our revenues and volumes to reflect this restatement. We learnt that BT had included the revenues (but not the volumes) for	*Revenues* For each service in the TI basket we compared BT's restated 2006/07 revenues as published in its 2007/08 regulatory financial statements with the corresponding values drawn from the original additional financial

[86] http://www.ofcom.org.uk/bulletins/comp_bull_index/comp_bull_ccases/closed_all/cw_916/thusbt.pdf

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
		Site Connect, a mobile connectivity service, within its restated TI basket revenues. We therefore excluded these revenues from this adjustment.	statements for 2006/07 and identified the difference. We identified the value of Site Connect revenues reported within 2mb/s connections and links from BT's report on its restatement and excluded these amounts from the values drawn from the restated financial statements. *Volumes* For each service in the TI basket we compared BT's restated 2006/07 service volumes as published in its 2007/08 regulatory financial statements with the corresponding volumes drawn from the 2006/07 Regulatory Financial Statements. Having identified the differences between revenues and volumes for each TI basket service we processed these as individual adjustments.
9	Site Connect costs	We found that the cost of TI basket services also included costs that related to Site Connect (see note 8 above). We therefore eliminate an estimate of these costs.	BT provided a breakdown of the component costs (2 mb/s & 140/155 mb/s bandwidths only) which we eliminated against the relevant services (P&L costs only). BT also supplied the total MCE figure which we eliminated against service MCE in direction proportion to the elimination of P&L costs.
10	Resilient circuit costs	BT's restated data separately identifies the revenues, but not the costs, for resilient & protected path variants circuits. As these services do not fall within our TI basket we have eliminated an estimate of the costs. We also assume that the volumes for TI basket services do not reflect resilient & protected path variant circuit volumes.	We estimated the cost of these services to equal the revenues as identified in the regulatory financial statements. We eliminated our estimates of resilient circuits' costs in proportion to the costs of the affected services. We processed these adjustments market by market i.e. our estimate of low bandwidth resilient circuit costs against low bandwidth services.
11	Third party customer LE equipment & infrastructure selling costs	BT incurs costs in selling third party customer LE equipment & infrastructure. As explained in adjustment 1 these services do not fall within the TI basket. As BT does not account for these services separately from local end rentals we assume that these selling costs are also reflected in the local end rental cost base.	BT provided us with an estimate of its selling costs (£6m) for equipment & infrastructure it provided both to external parties and to itself in 2006/07. We eliminated this sum from local end services in proportion to local end service P&L costs.

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
		We therefore eliminate an estimate of these costs from the local end rental cost base.	
12	Local end adjustment	As set out in section 4 we propose that BT recovers certain point of handover link costs through separate charges rather than through a surcharge on the price of external local end rentals. We therefore eliminate an estimate of the value of this surcharge from external local end rentals revenues to reflect our proposal.	In BT's RFS's the internal unit price for local ends is 23% lower than the external price. We therefore reduced the external price by 23% to exclude this recovery from external third party local ends.
13	POH circuit rental charge	As set out in section 4 we propose to recover POH costs not recovered in POH link connection or rental charges through a separate charge which fall in the Technical Areas for TI markets.	BT provided us with an estimate for 2006/07 of the costs not recovered through other charges. This sum equated to 21% of external local end rental costs after all adjustments. We therefore multiplied unit 3rd party local end rental costs by 21% to set charges in aggregate equal to BT's estimated cost.

Figure A8.2 Adjustment 1: cut-off between elements recovered in connection and rental charges



Key

CPE/NTE	Customer Premise Equipment/Network Termination Equipment
LSE TE	Local serving exchange transmission equipment
ADM	Add Drop Multiplexor

A8.36 To implement our proposed policy for the recovery of certain point of handover ("POH") we needed to make 3 separate adjustments (adjustments 2, 12 & 13 in the above table). The net impact of these 3 adjustments (+£1m of revenues) reflects the need to slightly increase overall revenues to ensure overall recovery of the relevant POH costs.

Outputs

Base year information for forecasting

A8.37 In the tables below we have summarised the financial impact of these adjustments step by step on all TI basket services taken together.

Table A8.3 Traditional interface basket: adjustments step by step

	TI basket services (£m)					Costs
	Revenues	Costs	MCE	Order	Type	incl. ROCE
Before adjustments (note 1)	1,070	807	1,770			1,009
Adjustments						
Third party customer local end (LE) equipment	-	(39)	(185)	1	c	(60)
Point of handover (POH) link costs	-	(11)	-	2	c/p	(11)
Current cost normalisation	-	(78)	-	3	s	(78)
Regulatory asset value (RAV)	-	(5)	(33)	4	p	(9)
Technological neutrality (21CN)	-	(5)	(109)	5	p	(17)
Payment terms	-	-	(142)	6	c/p	(16)
Ancillary services	-	(12)	(23)	7	c	(15)
Circuit revenues	(269)	-	-	8	c	-
Site Connect costs	-	(23)	(47)	9	c	(28)
Resilient circuit costs	-	(34)	-	10	c	(34)
Third party customer LE equipment selling costs	-	(6)	-	11	c	(6)
Local end adjustment	(10)	-	-	12	p	-
POH circuit rental charge	11	11	-	13	p	11
After adjustments	802	605	1,230			745

Notes
1.Revenues & costs for TI basket services as per BT's 2006/07 additional financial statements
Adjustment types: c = correction; s = smoothing; p = policy

A8.38 In the table below we show how our adjustment to circuit revenues (adjustment 9) reconciles to the restated 2006/07 revenues for the relevant TI markets as summarised on page 102 of BT's 2007/08 regulatory financial statements. It also shows the differential impact of the restatement on internal and external revenues.

Table A8.4 Traditional interface basket: reconciliation of circuit revenue adjustment to net restatement of traditional interface market revenues

	Revenues (£m)			% drop		
	Total	Internal	External	Total	Internal	External
Net adjustment to *circuit* revenues	(269)	(179)	(90)	(25%)	(22%)	(35%)
Revenues previously omitted						
Third party customer local end equipment	57	22	35			
Site Connect	39		39			
Resilient circuits	34	27	7			
Excess construction	14	10	4			
Total omissions	144	59	85			
Net restatement	(125)	(120)	(5)	(11%)	(15%)	(1%)

2006/07 base year profitability

A8.39 Below we summarise the return on capital employed after our adjustments. Note this table does not include our proposed POH circuit rental charges (where we have set charges equal to FAC cost).

Table A8.5 Traditional interface basket: revenues and return on capital employed (ROCE) after all adjustments 2006/07

Revenue/	Aggregate		Local end		Main link		Distribution		Conns		Trunk	
ROCE	£m	%	£m	%	£m	%	£m	%	£m	%	£m	%
64 kb/s	114	✂	37	✂	31	✂	43	✂	3	✂	d	
2 mb/s	461	✂	122	✂	65	✂	63	✂	36	(MCE)	175	✂
45 mb/s	93	✂	13	✂	15	✂	23	✂	<£0.5m		42	✂
155 mb/s	108	✂	24	✂	32	✂	36	✂	<£0.5m		16	✂
622 mb/s	15	✂	nr		nr		nr		nr		15	✂
Overall	**791**	**16**	543							4	248	74

nr not regulated
d BT does not separate out 64kb/s trunk from 64kb/s distribution
(MCE) negative mean capital employed (and therefore not meaningful to calculate ROCE)

Alternative interface ("AI") charges analysis

A8.40 Here we refer to local end rental & connection charges for WES/WEES, end rental & connection charges for BES services, and the per metre backhaul fibre charges which applies to both categories of service. BT currently levies the same per metre charge across both WES/WEES and BES backhaul.

A8.41 We illustrate circuit rental charging elements in the figures below.

Figure A8.3 Wholesale end-to-end service (WEES)

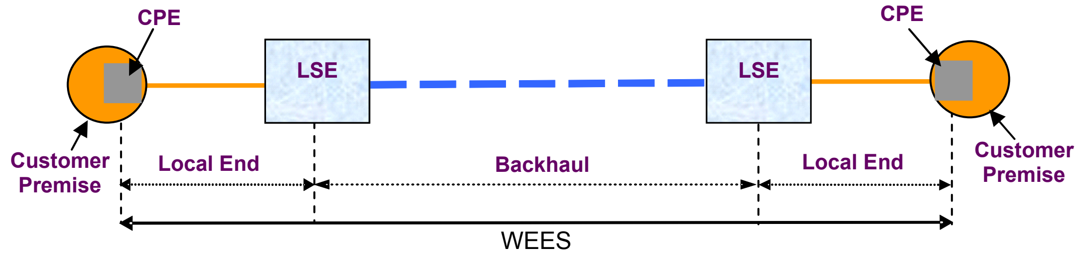


Figure A8.4 Wholesale extension service (WES)

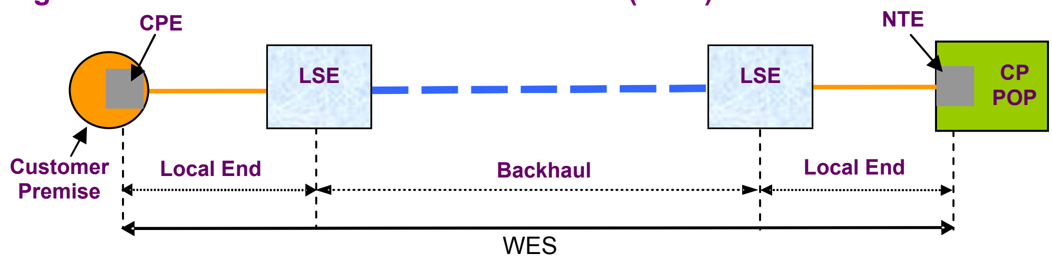
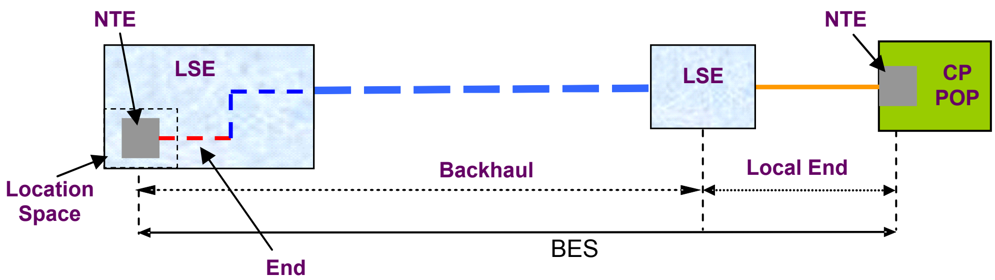


Figure A8.5 Backhaul extension circuit (BES)



Key

CPE	Customer Premises Equipment (located at a business end user's premises)
LSE	Local Serving Exchange
NTE	Network Terminating Equipment (located at communication provider's premises)
CP PoP	Communication Provider's Point of Presence

Inputs / granularity

A8.42 We used the costs and revenues reported in the 2006/07 AFSs as the starting point of our analysis of services in the AI basket.

A8.43 We wished to asses the profitability of the following services in the scope of AI basket, namely

<u>WES/WEES services</u>

- Per metre backhaul

Local end connection and rental services for the following bandwidths

- 10 mb/s
- 10 mb/s local reach

- 100 mb/s
- 155 mb/s
- 622 mb/s
- 1,000 mb/s

BES services

- Per metre backhaul

End connection and rental services for the following bandwidths

- 10 mb/s
- 100 mb/s
- 155 mb/s
- 1,000 mb/s

BT reported no volumes for 622 mb/s in 2006/07.

A8.44 As the AFSs did not provide this granularity BT supplied us with an additional analysis of its costs and volumes. BT re-analysed the costs it had attributed to the AISBO market in the RFSs across the services listed out in the above paragraph. It performed this exercise separately for WEES/WES and BES services.

A8.45 WEES/WES and BES services as currently supplied by BT comprise of point-to-point fibre (backhaul as well as access) as well as the electronics located at either end of the circuit. BT collects the costs relating to these 3 activities within plant groups. Each plant group had its own cost and MCE analysis. Both fibre plant groups reflected the cost of the associated duct.

A8.46 We summarise the approach taken by BT to prepare this analysis below.

Table A8.6 BT's cost analysis for alternative interface (AI) services

#	Service	Summary methodology
1	Backhaul	BT attributed the proportion of the Openreach backhaul fibre plant group (PG170B) costs that, according to its regulatory costing system, relates to WES/WEES and BES rental services to the backhaul service.
2	Local end rentals	BT attributed the proportion of the access fibre plant group (PG111C (capital) & PG111M (maintenance)) costs that, according to its regulatory costing system, related to WES/WEES and BES services respectively to local end rentals. It then further attributed the costs identified as relating to WES/WEES and BES services respectively across the different individual local end bandwidths pro-rata to rental volumes at 30 September 2006. BT's cost attribution also included an "other" plant group cost to this service, representing the balancing figure of all other plant groups relating to this service. Across all WES/WEES services this represented 13% and 11% of profit & loss and mean capital employed respectively, and for BES services 20% and 16%

#	Service	Summary methodology
		respectively.
3	Local end connections	BT attributed the proportion of the SHDS (short haul data services) electronics plant group (PG447A) that, according to its regulatory costing system, related to WES/WEES and BES services respectively to local end connections. It then further attributed the costs identified as relating to WES/WEES and BES services respectively across the different individual local end bandwidths prorata to factored connection volumes for the year to 31 March 2007. BT factored connection volumes to take account of the fact that the higher bandwidth services use more expensive electronics. BT's cost attribution also included an "other" plant group cost to this service, representing the balancing figure of all other plant groups relating to this service. Across all WES/WEES services this represented 14% and 21% of profit & loss and mean capital employed respectively, and for BES services 16% and 23% respectively.

Adjustments

A8.47 In the table below we set out the adjustments we have made to BT's base year information taken from the AFSs. Most of the adjustments are common to BES and WES/WEES services. We indicate any differences between these services in the table.

Table A8.7 Adjustments to originally reported 2006/07 costs, revenues and volumes for alternative interface (AI) basket services

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
1	Circuit revenues	BT restated its WES/WEES revenues.	We compared BT's restated revenues for WES/WEES services as published in the 2007/08 RFS's with corresponding values drawn from the original AFSs for 2006/07 and identified the difference.
2	Plant group costs & service volumes	We wish to assess profitability on a more granular basis than BT reflects in its AFSs as set out in paragraph A8.43. We therefore requested BT provide us with a cost and volume (internal & external sales combined) analysis which did give us this level of service disaggregation and which was based on it regulatory costing information.	*Costs and volumes* BT supplied us with an analysis based on its plant group cost and its service volumes by bandwidth. BT's plant group costs do distinguish between local end and backhaul. For local end connection and rentals BT supplied circuit information. We multiplied these figures by two to derive end counts. The "adjustment" shown in the summary adjustment tables are next to nil, indicating that, overall, the costs BT supplied were consistent with those reflected in the additional financial statements for the AISBO market. *Volumes restatement*

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
			When BT restated its AI service revenues it supplied us with a set of revised volumes.
3	BT price rebalancing	During 2006/07 and through to June 2008 BT significantly modified the prices of individual AI services. This was in response to the need to rebalance the pricing of these newly developed "equivalence of input" (EOI) services between a) connections & rentals and b) services of different bandwidth. We therefore used BT's latest prices (June 2008) to generate the most meaningful base year revenues (before any one-off price adjustments) to compare with costs.	We took the prices for WES/WEES and BES services from Openreach's price list as at 2 June 2008 and multiplied them by the revised volumes supplied by BT (see adjustment 2 above) to generate expected future revenues based on 2006/07 volumes. As these volumes only relate to WES/WEES and BES services our revised revenue calculations will not include revenue in respect of BNS services (see adjustment 9).
4	Equipment costs	BT recovers the cost of the transmission equipment deployed at either end of an AI circuit and which are wholly dedicated to that service, through the local end connection charges. However BT capitalises and then depreciates this equipment over its useful economic life. We therefore need to match costs and revenues by eliminating this measure of equipment cost reflected in BT's connection cost base and replace it with a measure based on fully expensing on connection the cost to BT of deploying this equipment based on equipment supplier costs.	Depreciation and MCE relating to equipment costs is reflected within the short haul data services (SHDS) electronics plant group. BT had attributed the costs of this plant group to its connection services based on connection volumes factored by the cost of electronics for each bandwidth. We therefore eliminated the equipment element of the SDHS electronics plant group costs that had been attributed to the connection services of different bandwidth. In its place we attributed the full cost of the relevant boxes (plus an estimate of the installation costs), one box for each WES/WEES/BES connection service. BT had supplied us with the costs of transmission equipment based on its supplier contract price list as at September 2006. We estimate the cost of installing a piece of equipment at one end of a circuit to be £200. The 'equipment' cost that we did not exclude we re-classified from being recovered through connection charges to being recovered through rental charges. This was because these costs were primarily of a rental nature, covering such activities as maintenance and housing.
5	Current cost	BT prepares its statements under	We eliminated the amounts identified in

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
	normalisation	current cost accounting (CCA) principles. These costs reflect the actual level of asset inflation experienced and the impact of any changes to the methodologies used to value assets. Therefore, one period's CCA adjustments are unlikely to provide a robust forecast for future years. We therefore substitute our own estimate of future asset price inflation and eliminate the impact of any methodology changes.	the AFS profit & loss statement for WES/WEES and BES services against: • holding (gain)/loss • other CCA adjustments as described below. *Elimination of reported gains* We assumed that the 'rentals' CCA adjustments primarily related to duct. We therefore eliminated the total CCA adjustment between backhaul and access services pro-rata to the ratio of the attribution of backhaul fibre plant group profit & loss costs to access fibre plant group profit & loss costs. We further attributed the element of the CCA adjustment estimated to relate to access between local ends on the basis of volumes. *Calculation of forward looking estimate* We calculated our forecast holding gain by multiplying asset values as per the MCE statement for WES/WEES and BES services in aggregate by the geometric mean of the past 5 years' asset inflation figures as supplied by BT. We explain the source of our asset inflation assumptions under 'Asset price changes' within paragraphs A9.35 to A9.39 in Annex 9. *Attribution to individual services* We assumed that the holding gain on "transmission" assets reported within rental services related to backhaul and the holding gain on all other assets reported within rental services related to local end rentals. We attributed our calculated holding gain *across* local end rentals and connections on the basis of volumes.
6	Technological neutrality (21CN)	TI basket services include an element of the cost BT is investing in its 21CN network. As set out in section 4 we believe that these costs should be recovered against services delivered over the 21CN network, and not against current services which do not use this network. We therefore eliminate an estimate of 21CN costs reflected in current AI services.	We have used an analysis of the attribution of BT's plant group costs (profit & loss and MCE separately) across its network components to ascertain the relevant amounts. This analysis is taken from additional financial information (AFI) schedule 13 – provided to Ofcom. In 2006/07 BT identified the following plant group categories for this first time: • 21CN MSAN (PG851A) • 21CN MetroNode (PG852A) • 21CN I-Node (PG853A)

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
		Note that this adjustment only affects 'core' network services. Therefore the only AI basket service affected was backhaul.	• 21CN Backhaul (PG871T) Plant groups, in the same way as BT's network components, comprise not just direct costs such as for equipment but also indirect costs such as accommodation & security as well as corporate costs. We isolated the aggregate value of 21CN plant group costs attributed to AISBO network components (Wholesale & LAN extension services fibre etc and Backhaul extension services fibre etc). We then calculated the proportion that these costs were of the total component costs. We used an analysis of plant group costs provided by BT which identified which costs were truly specific to 21CN (e.g. equipment and software) and reduced the proportion of cost to eliminate from backhaul services.
7	Payment terms	We allow in the capital employed of price controlled services the cost to BT of financing the payment terms it offers. We express this cost as notional debtors. We calculate its value using the number of days between when BT (on average) provides the service and when it expects to be paid. We then multiple this number of days over 365 days by its annual revenues to arrive at the value to include in MCE. BT's value for notional debtors reflects the same 59 days (2006/07) of sales across all services (amended to 43 days from 2007/08), which differs from the terms actually offered on individual services. We therefore adjusted notional debtors to reflect BT's actual payment terms for each service. For further detail of the principles involved here see Determination of a dispute between THUS and BT about payment terms for PPCs, IECs and IBCs published in January	*Elimination of existing values* We ascertained the aggregate figure for internal and external debtors reflected within the AFSs for WES/WEES and BES services and then eliminated these values across the respective sets of services using the following methodology: *Rentals debtors* We attributed the AFS debtor value for rental services between local ends and backhaul pro-rata to our revenue calculations. We then further attributed the local ends debtor figure across the different bandwidth pro-rata to their respective volumes. *Connections debtors* We attributed the AFS debtor for connection services across the different bandwidths pro-rata to our calculated revenue for each bandwidth to our calculation of total revenue for connections. We then eliminated these values from the respective services. *Replacement with revised values* *Rentals* 16 days represents the average interval for services billed monthly in advance.

#	Adjustment	Issue and proposed treatment	Mechanics / source data used
		2007[87].	This includes a day for bill preparation. *Connections* 31 days represents the average interval for services billed immediately after provision. This period includes a day for bill preparation. *Replacement with revised values* We then included a revised calculation for debtors based on 16 days for rental services and 31 days for connection services i.e. 15/365ths and 60/365ths of our calculated revenue values from step 2.
8	Ancillary services (e.g. excess construction charges (ECCs))	BT includes the cost of providing ancillary services within the base data for AI basket services. Ancillary services do not however fall within the AI basket and we therefore eliminate an estimate of the cost of these services. .	In the absence of any other information we used the percentage (1.8%) that we had applied to our equivalent analysis for traditional interface services. We used this % as an estimate of the extent to which the costs reflected in the reported cost base related to ancillary services.
9	Backhaul network services (BNS)	Backhaul network services do fall within the scope of the AI basket. BT has included the costs for BNS within the cost for WES/WEES circuits We therefore eliminate an estimate of cost of BNS services from the cost base for WES/WEES circuits.	BT supplied us with the figures (profit & loss and MCE) that had been reflected within total WES/WEES costs are included within the totals. From this we calculated what percentage this related to the reported WES/WEES profit & loss and MCE costs respectively and applied this as a % deduction to all WES/WEES service costs.

Outputs

Base year information for forecasting

A8.48 In the table below we have summarised the impact of processing all these adjustments step by step on all AI services. We provide two further tables to show the impact on all WES/WEES services within the AI basket taken together separately from all BES services within the AI basket taken together.

[87] http://www.ofcom.org.uk/bulletins/comp_bull_index/comp_bull_ccases/closed_all/cw_916/thusbt.pdf

Table A8.8 Alternative interface basket: adjustments step by step 2006/07

	AI basket services (£m)					Costs
	Revenues	Costs	MCE	Order	Type	incl. ROCE
Before adjustments (note 1)	298	171	630			243
Adjustments						
Circuit revenues	46	-	-	1	c	
Plant group costs	-	(0)	1	2	c	
BT price rebalancing	(35)	-	-	3	p	
Equipment costs	-	5	(62)	4	c	(2)
Current cost normalisation	-	(26)	-	5	s	(26)
Technological neutrality (21CN)	-	(1)	(32)	6	p	(5)
Payment terms	-	-	(33)	7	c/p	(4)
Ancillary services	-	(6)	-	8	c	(6)
Backhaul network services (BNS)	-	(4)	(8)	9	c	(5)
After adjustments	309	139	496			195

Notes
1.Revenues & costs for AI basket services as per BT's 2006/07 additional financial statements
Adjustment types: c = correction; s = smoothing; p = policy

Table A8.9 WES/WEES adjustments step by step

	WES/WEES services (£m)					Costs
	Revenues	Costs	MCE	Order	Type	incl. ROCE
Before adjustments (note 1)	249	160	586			227
Adjustments						
Circuit revenues	46	-	-	1	c	
Plant group costs	-	(0)	0	2	c	
BT price rebalancing	(28)	-	-	3	p	
Equipment costs	-	(0)	(56)	4	c	(7)
Current cost normalisation	-	(24)	-	5	s	(24)
Technological neutrality (21CN)	-	(1)	(30)	6	p	(5)
Payment terms	-	-	(28)	7	c/p	(3)
Ancillary services	-	(5)	-	8	c	(5)
Backhaul network services (BNS)	-	(4)	(8)	9	c	(5)
After adjustments	267	125	465			179

Notes
1.Revenues & costs for WES/WEES services as per BT's 2006/07 additional financial statements
Adjustment types: c = correction; s = smoothing; p = policy

Table A8.10 BES adjustments step by step

	BES services (£m)					Costs
	Revenues	Costs	MCE	Order	Type	incl. ROCE
Before adjustments (note 1)	49	11	44			16
Adjustments						
Circuit revenues	-	-	-	1	c	
Plant group costs	-	0	1	2	c	
BT price rebalancing	(6)	-	-	3	p	
Equipment costs	-	5	(6)	4	c	5
Current cost normalisation	-	(2)	-	5	s	(2)
Technological neutrality (21CN)	-	(0)	(2)	6	p	(0)
Payment terms	-	-	(5)	7	c/p	(1)
Ancillary services	-	(1)	-	8	c	(1)
Backhaul network services (BNS)	-	-	-	9	c	-
After adjustments	43	13	32			17

Notes
1.Revenues & costs for BES services as per BT's 2006/07 additional financial statements
Adjustment types: c = correction; s = smoothing; p = policy

Base year profitability

A8.49 Below we summarise the return on capital employed after our adjustments to costs and revenues for price control purposes in two tables, one for WES/WEES services, the other for BES services.

Table A8.11 WES/WEES: revenues and return on capital employed (ROCE) after all adjustments 2006/07

Revenue/	Aggregate		Connections		LE rentals		Backhaul	
ROCE	£m	%	£m	%	£m	%	£m	%
10			12	✂	106	✂		
10 LR			<£0.5m		7	✂		
100			20	✂	56	✂		
155			<£0.5m		6	✂		
622			<£0.5m		1	✂		
1000			3	✂	21	✂		
Overall	**267**	**30**	36	✂	197	✂	34	✂

Table A8.12 BES revenues and return on capital employed (ROCE) after all adjustments 2006/07

Revenue/ ROCE	Aggregate £m	%	Connections £m	%	End rentals £m	%	Backhaul £m	%
10			<£0.5m		<£0.5m			
100			10	✂	7	✂		
155			<£0.5m		1	✂		
622			-		2	✂		
1000			9	✂	8	✂		
Overall	43	**93**	20	✂	18	✂	5	✂

3rd Party Equipment and Infrastructure basket charges and Point of Handover ("POH") Equipment Charges

A8.50 This relates to 3rd party link infrastructure connection charges and POH infrastructure and rental charges.

Approach to analysis of equipment basket charges

A8.51 In attempting to estimate the profitability of the equipment basket, for 3rd party equipment and infrastructure charges and POH, BT supplied total bottom up cost calculations, together with volumes and costs for external sales in 2006/7.. For internal sales, BT only recorded the volumes on a bandwidth basis. With this information, assuming the volumes of individual equipment items sold in each bandwidth followed the same distribution as external sales, BT was able to build up an analysis for Internal 3rd party equipment and infrastructure charges[88].

A8.52 In reviewing the bottom up figures on 3rd Party Equipment:

- We checked volumes were consistent with those in the restated Regulatory Financial Statements ("RFSs")[89] for 2006/7.
- We agreed prices to the relevant Carrier Price List ("CPL").
- We understood the basis of the equipment charge, which was calculated as the cost of equipment purchased plus the cost of installation. Installation labour is split on the on the ratio 1:3 between Exchange and Customer site.
- We satisfied ourselves that the cost for Copper or Fibre was reasonable. On average BT incurred the cost of a local end copper pair or four fibres for each connection. This cost basis was reasonably consistent with the average local end charges in the restated 2006/7 RFSs.

---

[88] The exception was 64k internal sales where BT calculated an overall average.
[89] The exception being on external 2Mbit where the revenue of £37m in the regulatory accounts exceeded the revenue in the bottom-up analysis by £10m. The explanation of the difference was that the equipment basket does not include revenue in connection with provisioning, where connection activity occurs without the need for new equipment.

- We understood the basis of the Selling, General and Administration ("SG&A") costs. These were set at 13% of price which were based on the ratio of total PPC SG&A costs to revenue in the 2006/7 RFSs.

- We understood the basis Direct Overheads. These were based on 11% of equipment and copper/fibre cost. The 11% is based on the ratio of overheads to capital cost for the BT assets deployed in providing 3rd party equipment over its average life.

A8.53 In reviewing the bottom up figures on POH we followed the same process with the following exceptions.

- As equipment cost is based on contract price we verified some of the significant items.

- Installation costs amount to 7.7% of equipment cost.

- For direct overheads, a figure of 23% is applied to equipment and copper/fibre costs. The principle was the same as with 3rd party equipment, where the ratio of overheads to capital cost for the BT assets related to 3rd party equipment over its average life but was based on different data.

Analysis of the equipment basket profitability – summary by bandwidth

A8.54 The information provided by BT yielded the following results by bandwidth.

Table A8.13 Current returns in the Equipment and Infrastructure basket for 2006/07 with 2008 prices

	64 kbit/s		2 Mbit/s		34/45 Mbit/s		140/155 Mbit/s		PoH	Total
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Ext	
Revenue (£m)	3.2	1.9	13.3	21.8	4.2	2.6	1.8	0.9	1.9	51.6
Profit (£m)	(1.5)	(0.9)	(0.4)	(0.5)	2.3	1.4	0.0	0.1	(0.4)	0.1
RoS (%)	(49%)		2%		55%		1%	8%	(19%)	0%

A8.55 2Mbit equipment and infrastructure charges accounts for 68% of the total basket, the majority of it sold externally. This drives the calculated zero return on sales.

A8.56 Excluding POH, in all other baskets internal sales exceed external sales. These baskets have a high variability of margins.

A8.57 After BT's proposed first stage price re-balancing the overall returns change as shown in the Table below. The effect is broadly revenue neutral.

Table A8.14 Returns in the Equipment and Infrastructure basket for 2006/07, following BT's price re-balancing

	64 kbit/s		**2 Mbit/s**		**34/45 Mbit/s**		**140/155 Mbit/s**		**PoH**	**Total**
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Ext	
Revenue (£m)	4.1	2.4	13.6	22.3	2.3	1.5	1.8	0.8	2.1	50.9
Profit (£m)	(0.6)	(0.4)	(0.1)	(0.1)	0.7	0.5	0.0	0.0	(0.2)	(0.2)
RoS (%)	(17%)		0%		29%	36%	0%		(10%)	0%

Concerns and implications

A8.58 BT's internal sales are unlikely to have the same mix as the external sales, however we have been unable to determine what this could be.

A8.59 We are also unsure about some of BT's assumptions. For example, the costs of external sales may not readily map across to internal sales. For example external selling and admin costs are based on a mark-up of 13% on revenues. This may not be appropriate for internal sales where there is likely to be less sales processing involved.

Annex 9

Ofcom's forecasting model

Introduction

A9.1 As explained in Section 3, we have developed a cost forecasting model ("the LLCC model") in order to calculate a value of X for the main baskets in the charge control. For each basket the X is the average amount by which BT will be required to reduce charges in each year of the charge control. This annex:

- Sets out our methodology;
- Provides an overview of the model;
- Provides details of the construction of the model and the model's calculations;
- Examines a number of key quantitative issues; and
- Provides results based on different assumptions of key inputs.

Technology neutrality

A9.2 The business connectivity services offered by BT are in a state of flux. Numbers of low bandwidth traditional interface based services are falling, whilst high bandwidth Ethernet services are on the increase. In addition we expect to see the same services provided using different underlying technologies (e.g. 21 CN and next generation backhaul services).

A9.3 As discussed in Section 3 we propose to have a "technology neutral basket" approach under which the same charge would apply to a given service whichever technology was used by BT to provide it. This would give BT good incentives to utilise whichever network minimised costs and also avoid the need for detailed projections of the costs of the new technologies and the rate of migration.

A9.4 Consequently we propose a "technologically neutral" approach to our cost modelling with two main elements:

- Volume forecasts include all services that are within the scope of our proposed charge control irrespective of the underlying network used to deliver them (e.g. we include Openreach's volume forecasts of their new Ethernet Backhaul Direct and Bulk Transport Link services in our Backhaul Extension Service volumes)
- Costs are projected based on underlying volumes. Although direct 21 CN costs are excluded, the costs of providing the additional volumes are included, and are assumed to be the same as existing technology.

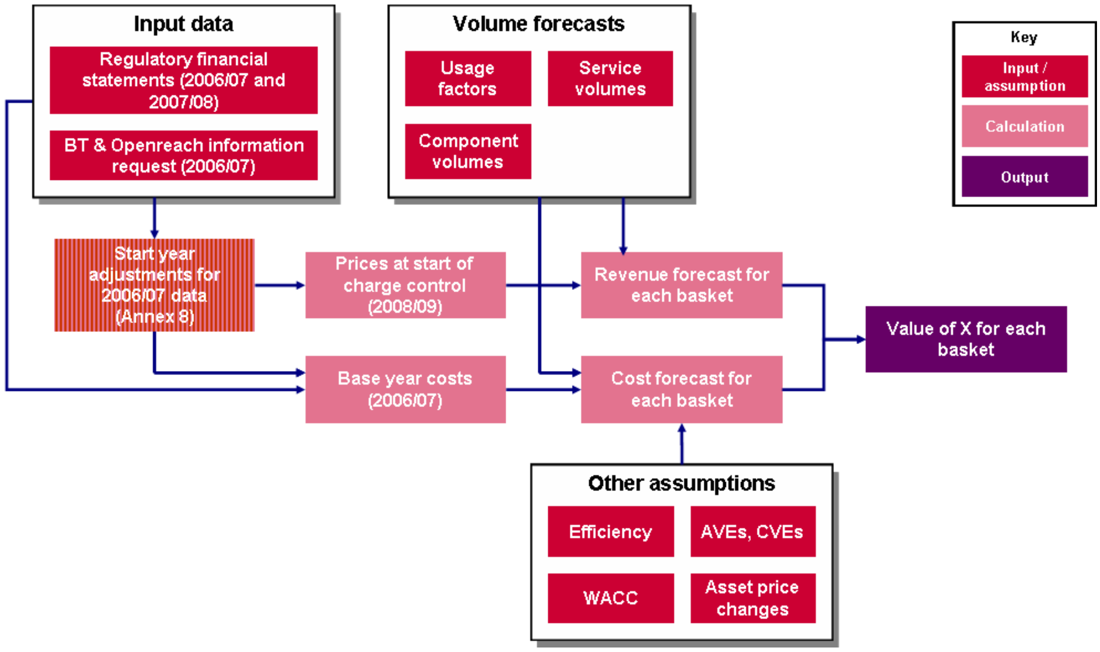
A9.5 The details of this approach are described in further detail below.

Overview of model structure

A9.6 The objective of the model is to forecast how the costs to BT of providing the relevant services will change over the period of the proposed charge control. We will explain how the model achieves this with reference to the data inputs, modelling assumptions and outputs.

A9.7 This structure is illustrated below. The input data and assumptions are used to determine the cost and revenue forecasts for each service within a basket. The basket X is set such that total revenues within each basket are equal to costs in the final year of the charge control described in detail in A9.54.

Figure A9.1 The LLCC model structure



A9.8 In setting the X for each basket, we require cost and volume forecasts on a service-level basis. To calculate service-level costs and volumes we use BT's usage factors, which identify the extent to which components are used by a particular service.

A9.9 As such, service-level costs are driven by a combination of their usage of particular components, the costs of these components, volume forecasts, and a number of other assumptions.

A9.10 The basket X is determined by:

- Total costs for each of the services included in the basket ;
- Service prices at the start of the charge control (re-calculated after the proposed one off adjustments to start prices discussed in Sections 4 and 5); and
- Revenues for each service in the basket, calculated as the product of service volumes and prices.

Data inputs

A9.11 The two most significant inputs are BT's regulatory 'base year' financial information (2006/07), and volume forecasts. The financial information is provided on a component basis. There are a number of adjustments made to this base year financial information, which are discussed in more detail in Annex 8. The trends in the volume information are discussed in Sections 4 and 5.

A9.12 The 2006/07 financial data is disaggregated into cost component levels for each of the leased lines services. We use this as our base year for the cost forecasts.

A9.13 Although the 2007/08 RFS is now available, we do not have the detailed component-level information. Nonetheless, we use the 2007/08 RFS as a high level check on our cost forecasts.

A9.14 We have used the 2007/08 RFS service volumes as our starting point.

A9.15 BT has provided detailed service volume forecasts. We have applied the growth rates implied by these forecasts to our base year volumes.

Assumptions

A9.16 There are a number of assumptions that influence the way in which costs are forecast. Here is an overview of the main ones.

Operating cost (opex) efficiency

A9.17 This is the year-on-year savings in real unit operating costs that BT is expected to achieve in the normal course of its operations, before taking volume and input price changes into account. Our calculations suggest a range of 0% to 5% for the year-on-year efficiency savings that BT could achieve. The paragraphs below explain how we arrived at this range.

A9.18 When calculating the efficiency factor to be included in the model we took into account two key factors:

- BT’s efficiency relative to that of appropriate comparator companies.
- BT’s underlying rate of real unit operating cost reduction over the period 2003//04 and 2006/07 in constant volume terms; and

A9.19 We discuss these factors further in the paragraphs below.

BT’s efficiency relative to that of appropriate comparator companies (“catch-up”)

A9.20 We commissioned economic consultants NERA to carry out studies to examine the efficiency of BT's network relative to appropriate comparator companies, principally the US Local Exchange Carriers (LECs). These studies expand upon the comparative efficiency analysis which has previously been undertaken by NERA for Oftel and Ofcom in relation to other charge controls in place on BT.

A9.21 The study uses data for the US LECs for the years 1999 to 2006 to model the determinants of total network costs. Based on this model, the study makes use of accounting and other data produced by BT to assess its comparative efficiency in 2006/07. The model tries to explain the level of a firm’s costs by reference to a number of cost drivers such as service volumes and other observable (exogenous) variables, e.g. geographic and demographic differences in the areas in which the firms operate. From the remaining unexplained costs, those due to relative efficiency are then identified.

A9.22 NERA's conclusion is that BT is roughly on the decile. For more details on NERA's study see their report on our website[90].

BT's underlying rate of real unit cost reduction ("frontier shift")

A9.23 We assumed that, in a technology-neutral sense, BT will be able to achieve the same underlying rate of real unit cost reduction over the period 2008/09 to 2012/13 as it had over the period 2003/04 to 2006/07. The method we used was to estimate the underlying rate of unit cost reduction for each network component and then aggregate this to a single figure as follows:

- First, we calculated the actual rate of *year-on-year change in total costs (a)* for each component over the period 2003/04 to 2006/07. We based this calculation on real operating costs excluding depreciation.

- We also calculated the *year-on-year change in total volumes (b)* for each component over the same period.

- We derive the *year-on-year constant volume change in unit costs (c)* by dividing the year-on-year change in total costs by the product of the year-on-year volume change and the cost volume elasticity (CVE) for each component ($c = (1+a)/(1+b*CVE)-1$). We then calculate the *average change in real unit costs (d)* for the period 2003/04 and 2006/07.

- At this stage we made three further adjustments to the average change in real unit costs calculated above:

    - We *excluded* BT's historic catch up over the period 2003/04 and 2006/07 (as calculated by NERA and discussed in paragraph A9.22)

    - We *excluded* changes in input prices that had occurred over the same period; and

    - We *added* BT's expected future catch up (as calculated by NERA) spread over the new control period (i.e. between 2006/07 and 2012/13).

- We then aggregated the average real unit cost reductions for each network component (calculated after the adjustments discussed above) to a single figure by using the respective operating cost weights for each of the years between 2003/04 and 2006/07.

A9.24 Our approach produces a range of 0% to 5% for the reduction in the real unit operating costs in the period 2003/04 and 2006/7. Our range is broadly consistent with NERA's results which suggest that the efficient level of costs was falling at 2.5% to 3.0% in real terms between 1999 and 2006.

A9.25 We note that, although the operating cost data between 2003/04 and 2006/07 as provided to us is stated mostly on a comparable basis, BT also confirmed to us that there is one significant methodology change (i.e. trunk and distribution rebalancing) that they have not adjusted for (due to difficulties with replicating the analysis). As this would affect the comparison of costs over time we excluded distance related components from our analysis.

[90] http://www.ofcom.org.uk/consult/condocs/llcc/efficiency.pdf

Return on capital

A9.26 We included in BT's cost base a return on capital that is equal to its weighted average cost of capital.

A9.27 The weighted average cost of capital is the minimum return required on BT's investments. Ofcom consulted on BT's cost of capital in 2005.[91] In this review we estimated the weighted average cost of capital (WACC) for the main Openreach business to be 10.0% (which was then referred to as BT's "copper access network business"), and 11.4% for the rest of BT (i.e. everything other than this).

A9.28 As discussed in Section 4 and Section 5 we apply a cost of capital in the range of 10.25% to 11.75% for both the TI and AI services. This assumes a long run inflation estimate of 2.5% and therefore a range of 10.25% to 11.75% WACC equates to a real cost of capital of 7.6% to 9.0%. We use this real value in the LLCC charge control model.

Asset and cost volume elasticities (AVEs/CVEs)

A9.29 These parameters control how costs change in response to a 1% change in volumes. An elasticity of 1 indicates that costs change proportionately (resulting in constant unit costs) whilst an elasticity of 0 indicates that total costs are fixed (and therefore unit costs will have an inversely proportional relationship with volumes). In our analysis we use AVEs and CVEs estimates produced for the 2004 PPC charge control statement.

Table A9.1 Asset and Cost Volume Elasticities

Assets	*Asset volume elasticity (2004)*	*Operating costs*	*Cost volume elasticity (2004)*
Cable	0.20	Opex – pay	0.24
Duct	0.05	Opex – non pay	0.24
Local Exchange	0.55		
Main Exchange	0.70		
Transmission	0.65		
Other Ntwk Eqpt	0.65		
Motor Transport	0.40		
Land & Bldgs	0.20		
Computers & OM	0.74		
Other	0.64		

A9.30 Based on these AVEs, we calculate an AVE specific to each cost component by using their gross replacement costs (GRC) in 2006/07. That is, for each cost component *i*,

$$AVE_i = \text{Sum (GRC by asset for component } i \text{ * asset AVE) / Total GRC for component } i$$

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

A9.31 BT also submitted to Ofcom their latest estimates of AVEs and CVEs for PPCs. There are no AVEs for the BES and WES cost components. A direct comparison of the information is difficult because BT provided AVEs and CVEs on a per component basis, rather than by asset.

A9.32 One way of comparing the two sources is to look at average AVEs using the 2006/07 gross replacement costs of each cost component. That is:

AVE = Sum (AVE for component *i* * GRC of component *i*) / Total GRC

A9.33 Based on these weighted average calculations, the 2004 average AVE is 0.39, compared with the average of the new BT estimates of 0.55. Looking at individual cost components, for example, the weighted average AVE for 2Mbit trunk is 0.44 using the 2004 values, but is 0.59 under the new BT values.

A9.34 Similarly, BT's provided CVE estimates on a cost component level that are significantly higher than the 2004 values. Average pay CVE increases from 0.24 to 0.53 and the average non-pay CVE increases from 0.24 to 0.48.

Asset price changes

A9.35 Real holding gains / losses are created where asset prices change at rates other than RPI. Forecasting asset price changes is clearly a difficult task. The approach we implemented in the model is to take an average of asset price changes over the past five years, as supplied by BT, given below.

Table A9.2 Asset price changes

Asset	***5 year average nominal price change***	***5 year average real price change assumed in LLCC model***
Cable	6.3%	0.0% (see A9.36)
Duct	2.0%	-1.1%
Local Exchange	0.7%	-2.4%
Main Exchange	0.7%	-2.4%
Transmission	-2.4%	-5.4%
Other Ntwk Eqpt	-0.4%	-3.4%
Motor Transport	0.0%	-3.1%
Land & Bldgs	2.1%	-1.1%
Computers & OM	-3.2%	-6.2%
Other	1.0%	-2.1%

A9.36 We note that cable assets include both copper and fibre. Observations tend to suggest that copper prices have increased over the last five years, but fibre prices have fallen. As BT's data does not identify these two assets separately, we have decided to apply a 0% real price change for cable assets instead of the 3.0% based on the data provided.

A9.37 We assume that these annual asset price changes apply over the period from 2008/09 to 2012/13.

A9.38 Asset price changes have offsetting effects on X:

- The first is a holding gain (or loss) as a result of the asset price increases (or fall). Such a gain (loss) reduces (increases) costs in the year that it occurs.
- The second effect is the impact on the real return. An asset price rise (fall) increases (decreases) the value of the asset base, and therefore increases (decreases) the required return. This is an increase (decrease) in the cost base.

A9.39 As a result, the impact of real price changes depends on which effect dominates and it is not known a priori whether it will increase or decrease the overall cost base.

Outputs

A9.40 From the information above the model produces cost forecasts for each service for each year. These are compared against the service revenues, and the X values are then calculated so that in the final year forecast revenues and costs are equal.

A9.41 We produce a number of X values based on different assumptions as described above.

Cost forecasts

A9.42 The cost forecasts are split into two parts. The 'steady state' element is the forecast of what would happen to costs if there was no change in volumes during the charge control period. The 'additional' element is the change in cost induced by changing volumes. If volumes increase this will be positive, if volumes fall this will be negative.

A9.43 The steady state and additional elements are summed together to generate a total cost forecast.

A9.44 It is important to recognise that we are proposing an RPI – X charge control, therefore we forecast costs in real terms so that the value of X is unaffected by the assumed rate of inflation. Some values are forecast in nominal terms, and then converted into real terms, to capture price changes that diverge from the RPI.

A9.45 We forecast financial year-end costs and revenues. For calculating charge control year costs and revenues that begin in October and end in the following September, we take the average of our financial year-end forecasts.

A9.46 Table A9.3 explains the various terminology used in this section.

Table A9.3 Explanation of accounting terms

Name	Description
Gross Replacement Cost (GRC)	The current cost accounting equivalent of Gross Book Value, i.e. the cost of BT replacing its assets now
Net Replacement Cost (NRC)	The current cost accounting equivalent of Net Book Value, i.e. depreciated replacement cost of BT's assets
Inflation	The general change in prices across the economy. We have used RPI data obtained from the Office of National Statistics ("ONS")
Deflation factor(t)	Used to convert nominal prices into 2006/07 prices. Since 2006/07 is our base year and therefore year 0, 2007/08 is year 1 and so on. Assuming that inflation is x% per annum, the deflation factor is: Deflation factor in year *t* = $1 / (1+x)^t$
Nominal Price Trend (npt)	The change in price of a cost component. To calculate this multiply each asset price inflation in (Table A9.2) by the GRC weights of each cost component, i.e. npt for cost component = Sum (GRC of asset *j* * asset price inflation of asset *j*) / GRC of cost component.
WACC	BT's weighted average cost of capital.
Asset lives	Asset lives for components are calculated by dividing the GRC by the depreciation charge in the base year assuming straight line depreciation.

A9.47 Table A9.4 sets out the abbreviations used in the cost forecasting calculations.

Table A9.4 Abbreviations used in cost forecasts

Abbreviation	Description
GRC(t)	The value of Gross Replacement Cost (GRC) in year *t* (taken as a year-end figure)
GRC(t-1)	The value of GRC *previous* year (taken as a year-end figure)
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*
HCA dep (t)	Historical Cost Accounting depreciation in year *t*
CCA dep (t)	Current Cost Accounting depreciation, or Supplementary depreciation in year *t*
NCA (t)	Net Current Assets in year *t*
eff	Efficiency factor, the percentage reduction in costs arising from efficiency gains

Forecasting of "steady state" capital costs

A9.48 The 'steady state' element is the forecast of what would happen to costs if there was no change in volumes during the charge control period. Table A9.5 below presents the steady state calculations used by Ofcom's forecasting model.

Table A9.5 Steady state capital and depreciation costs (in nominal terms)

Calculation	Description
Gross Replacement Cost (GRC)	Base year GRC is taken from BT's response to our information request. Subsequent years are calculated as: GRC(t) = GRC(t-1) * npt(t) + Capex(t) – Disp(t)
OCM depreciation (OCM dep)	Base year OCM depreciation is taken from BT's response to our information request and is the sum of HCA depreciation and CCA depreciation. Depreciation in subsequent years assume straight line depreciation, and are calculated as: OCM dep(t) = GRC(t) / asset life
Capital expenditure (Capex)	Base year capital expenditure is assumed to be equal to OCM dep. Subsequent years are calculated as: Capex(t) = Capex(t-1) * npt(t) * (1 – eff)
Disposals	Base year disposals are assumed to be equal to capex. Subsequent years are calculated as: Disposals(t) = Disposals(t-1) * npt(t)
Net replacement cost (NRC)	Base year NRC is taken from BT's response to our information request. Subsequent years are calculated as: NRC(t) = NRC(t-1) * npt(t) + Capex(t) – OCM dep(t)
Net current assets (NCA)	Base year NCA is taken from BT's response to our information request. Subsequent years are calculated as: NCA(t) = NCA(t-1) * (1 + inflation)

Forecasting of "additional" capital costs

A9.49 The 'additional' element is the change in cost induced by changing volumes of services relative to the steady state. If volumes increase this will be positive, if volumes fall this will be negative.

A9.50 Table A9.6 presents the additional calculations used by Ofcom's forecasting model. The base year in all these cases is zero by construction. In this table, terms preceded by SS are 'steady state' values, whilst terms without prefixes are the additional values. As with the steady state capital and depreciation costs, additional costs are also forecast as year-end values.

Table A9.6 Additional capital and depreciation costs

Calculation	Description
Additional capex	Capex(t) = Total GRC(t) * AVE * vol change %(t)
Additional GRC	GRC(t) = GRC(t-1) * npt(t) + capex(t)
Additional OCM dep	OCM dep(t) = GRC(t) / asset life
Additional cumulative OCM depreciation	Cumulative OCM dep(t) = Cumulative OCM dep(t-1) * npt(t) + OCM dep(t)
Additional NRC	NRC(t) = Additional GRC(t) – Additional cumulative OCM dep(t)

Forecasting of total capital costs

A9.51 Table A9.7 presents the final set of calculations used by Ofcom's forecasting model in the capital cost category. In this table steady state values will be prefixed by 'ss' and additional (volume driven) values will be prefixed by 'ad'.

Table A9.7 Total capital and depreciation costs

Calculation	Description
Total GRC	Total GRC(t) = ss GRC(t) +ad GRC(t)
Real return on capital	Real return on capital(t) = [ss NRC(t) + ad NRC(t) + NCA(t)] * pre tax real WACC / deflation factor(t)
Real deprecation	Real depreciation(t) = [ss OCM dep(t) + ad OCM dep(t)] / deflation factor(t)
Real total holding loss	Real total holding loss(t) = (npt(t) / inflation(t)) * [(ss NRC(t) + ad NRC(t)) / compound inflation(t) – ((ss capex + ad capex) – (ss OCM dep + ad OCM dep)) / deflation factor(t)
Real total capital and depreciation cost	Real total capital and dep cost(t) = Real return on capital(t) + Real depreciation(t) + Real total holding loss(t)
Real unit total capital and depreciation cost	Real unit total capital and dep cost(t) = Real total capital and dep cost(t) / Component volume (t)

Forecasting of total operating costs

A9.52 Table A9.8 presents the operating cost calculations used by Ofcom's forecasting model.

Table A9.8 Operating costs

Calculation	Description
Pay	Base year pay is taken from BT's response to our information request. Subsequent years are calculated as: Pay(t) = Pay(t-1) * npt(t) * (1 – eff) * CVE * (1 + volume change %)
Non-pay	Base year non-pay is taken from BT's response to our information request. Subsequent years are calculated as: Non-pay(t) = Non-pay(t-1) * npt(t) * (1 – eff) * CVE * (1 + volume change %)
Real total operating expenditure	Real total opex(t) = (Pay(t) + Non-pay(t)) / deflation factor
Real unit total operating expenditure	Real unit total opex(t) = Real total opex(t) / Component volume (t)

Forecasting of service costs and the value of X

A9.53 We calculate real total costs on a component basis as the sum of its operating and capital costs. For a service that uses a number of different components, the total costs of service *y* is given by:

Service *y* costs = Sum (Usage of component *k* * Unit cost of component *k*) * Volume of service *y*

A9.54 Having selected the appropriate services to include in a basket the model compares the total costs and revenues in the last year of the charge control. Charge control year costs and revenues for any one year are calculated as the average of current and previous financial year costs and revenues. We solve the value of X for this basket such that the two are equal in the final year.[92] X is then the weighted average real annual price change for the services in the basket.

A9.55 A key element in X is the assumed starting level of prices. We use those prices expected to be in effect on 31 March 2009. However where we are considering up front changes to prices we make these adjustments so that the X calculated takes into account the new adjusted price.

Key quantitative issues

A9.56 Here we discuss how the model approaches a number of modelling challenges regarding the:

a) Ofcom volume scenarios;

[92] For Xs that are applied equally for all services within a basket, the value of X can be calculated as $X = \left(\frac{C_T}{V_T P_0}\right)^{\frac{1}{T}} - 1$ where costs at the final year of the price control is C_T , final year revenues calculated as final year volumes V_T multiplied by final year price $P_T=P_0(1-X)^T$. If a different level of X is applied for each of the services, an iterative method is required to determine the level of X to be applied to the basket.

b) Services disclosed in the regulatory accounts compared to those included in the relevant carrier price lists ("CPLs")

c) Starting price adjustments and calculation of X;

d) Calculation of administrative costs;

e) Re-allocation of common costs; and

f) Price calculations.

Ofcom volume scenarios

A9.57 We use as our starting point the 2006/07 (restated) and 2007/08 RFS service volumes. For each of these services, BT has provided forecasts, split between internal versus external volumes.

A9.58 As BT volume data included forecast 2007/08 volumes, rather then actuals as per the 2007/08 RFSs, we have applied the growth rates implied in BT's forecasts to our starting point of 2007/08. We do this for both the PPC and Ethernet services.

A9.59 As part of our policy of technological neutrality we have mapped new Ethernet services to the existing set of Wholesale Extension Services (WES) and Backhaul Extension Services (BES) on a one-to-one basis:

Table A9.9 Mapping of Ethernet services

New Ethernet services	Existing Ethernet services
Ethernet Backhaul Direct (EBD) rentals and connections, split by bandwidth	BES rentals and connections, split by bandwidth
Bulk Transport Link rentals and connections	BES 1Gbit/s rental and connection
Ethernet Access Device (EAD) rentals and connections, split by bandwidth	WES Local Access rentals and connections, split by bandwidth

A9.60 These service volumes, multiplied by the usage factors, give the cost component volumes used to drive cost forecasts. Therefore, this approach does not distinguish between the new and existing Ethernet services in generating the total cost forecasts, consistent with our technological neutrality approach.

Services disclosed in the regulatory accounts and those on the BT price list

A9.61 The cost forecasting model contains the services as listed in BT's Regulatory Financial Statements ("RFSs"). In a number of places, particularly for the AISBO products, there are more services on the BT price list than there are in the RFSs. This has posed a number of problems.

A9.62 Firstly, there are more bandwidths available than are shown in the RFSs. The bandwidths that are not identified in the RFSs are aggregated into an 'other' category, e.g. the 10Mbit/s, 155Mbit/s and 622Mbit/s services. The price of this category is the average price of the constituent prices, weighted by their corresponding volumes. In addition our 'other' category of services only include those services that are within the scope of this charge control, i.e. the 2.5Gbit/s and 10Gbit/s have been excluded.

A9.63 Secondly, the provision of AISBO services contains three different charges: a one-off connection charge, an annual rental per end, and a distance related main link element.

A9.64 However, the RFSs bundle together the main link and annual rental elements into the same service. Consequently when calculating the appropriate price for the rental service as listed in the RFS we must include a backhaul charge. This is calculated as the average link length multiplied by the main link charge.

A9.65 The average lengths we assume in the model are given below. They are based on data provided by Openreach and are constructed so that the total main link (calculated using these averages multiplied by their respective RFS volumes) is consistent with the reported total. These average lengths are assumed to be constant across all bandwidths and constant throughout the charge control period.

Table A9.10 Average link lengths assumed in LLCC model (metres)

Service bandwidth	Wholesale Extension Services	Backhaul Extension Services
10Mbit/s	3,802	6,447
100Mbit/s	3,554	7,106
1Gbit/s	5,615	9,870
Other bandwidth	17,412	6,447

A9.66 Finally there are more variations in service types on the price list than are identified in the RFSs. For example the WES category includes WES, WEES and WESLA. We understand from BT that these variations are included within the costs and volumes given for the RFS services.

A9.67 BT informed us that WES and WEES are priced differently to WES LA in that WES LA services do not attract the backhaul charge. In BT's volume forecasts these services are separately identified so we have taken this into account in our revenue calculations.

A9.68 The revenues in the LLCC model is calculated as unit service price multiplied by the service volumes. In order for us to compare our model results with those in the published RFSs we have used the average prices as shown in the 2007/08 RFS both PPCs and Ethernet services.

A9.69 At the start of the charge control, we have used

- Average PPC prices from the 2007/08 RFS, plus the proposed one-off adjustments; and

- Openreach's latest prices[93] for the BES, WES and WES LA products.

Starting price adjustments and calculation of X

A9.70 In some scenarios we are proposing one-off changes to the starting price of services. As set out in A9.69 we start with service prices on a per unit basis. This allows us to make any adjustment to starting prices and re-calculate Xs to account for this altered start point.

A9.71 The adjustments that we propose are to the P_0 prices. These are the prices that for charge control compliance purposes are assumed to have been in effect for the 12 months prior to the charge control period under assessment.

A9.72 Where we are proposing P_0 adjustments we replace the 2007/08 prices with our adjusted price and calculate the basket X required to equate basket costs and basket revenues in the final year of the charge control.

Calculation of administrative costs

A9.73 BT has defined a number of administrative cost components that do not have associated volumes. Unlike other usage factors, the usage factors of these administrative costs provided represent the percentage of administrative cost that has been allocated to individual services.

A9.74 We considered two approaches to forecasting administrative costs

- *Constant real total administrative costs*. This approach maintains the total amount of administrative cost that is assigned to a group of services. This approach has the effect of emphasising the change in unit costs in response to volume fluctuations and is comparable to using a CVE of 0 on the administrative cost item. In particular, where a service is in significant decline this approach can result in exceptionally high unit costs.

- *Constant real unit administrative costs*. This approach maintains the amount of administrative cost that is assigned to each service unit. As such the total amount of administrative cost that is recovered will change in line with volumes. Consequently this is comparable to using a CVE of 1 on the administrative cost item.

A9.75 In reality, administrative costs would show both characteristics, i.e. a fixed element that does not vary with volume and a variable element that does. These two approaches provides with a range of likely Xs.

A9.76 As we do not have values for the CVEs applicable to administrative costs (BT's RFSs do not report these values), for the purposes of this consultation we assumed constant real unit administrative costs.

Re-allocation of common costs

A9.77 The LLCC model forecasts the costs of components which make up the TI and AI basket of services. However, BT's definitions of these cost components are narrow.

---

93 http://www.openreach.co.uk/orpg/pricing/loadProductPrices.do?data=2qYKQipGu8lEldEpdH2SyFnqs1m6OcKz301sgolk8P2FdiaKKPEfrCsJCb3sZkzJ

That is, AI services only use AI cost components and TI services only use TI cost components.

A9.78 There is likely to be customer migration between TI and AI services in the future, characterised in BT's volume forecasts where there is a strong decline in the former coupled with an increasing take up of AI services.

A9.79 With the cost components as currently defined, this will mean that declining services will see an increase in unit costs, since the fixed costs need to be recovered from a reducing volume of services. This then implies a need to increase unit prices. Similarly, growing services will see a decline in unit costs and a stronger need to reduce prices. We think this understates the potential for assets to be re-used as migration occurs, and therefore does not reflect what would happen under normal operating conditions.

A9.80 In Analysys-Mason's independent review of the LLCC model, they suggested an approach to circumvent the issue discussed above. Their approach is based on an analysis of the marginal costs of components and the attribution of non-marginal costs in proportion to these. This results in a greater proportion of non-marginal costs being recovered from AI services as the volume of these grows and avoids the rapid increases in TI unit costs which would result from a constant amount of fixed costs being recovered from an ever-smaller volume of TI services.

A9.81 In practice, in order to implement the Analysys proposal, we had to develop a method of re-allocating non-marginal costs at the aggregate TI and AI basket level. This approach is consistent with the spirit of the Analysys method and is reasonable given that we are calculating the value of X based on the total basket level costs, rather than at an individual service level.

A9.82 To do this we calculate the following

a) We calculate *total capital costs for each service* by multiplying the total capital and depreciation costs as set out in Table A9.7 with usage factors and service volumes

b) We also calculate unit *marginal capital costs for each cost component* by multiplying the unit capital and depreciation costs as set out in Table A9.7 for each cost component by their respective AVEs.

c) *Total marginal capital costs for each service* is calculated as (b) multiplied with the usage factors and service volumes;

d) *Total fixed costs for each service* is the difference between (a) and (c).

A9.83 We then sum the fixed costs for TI and AI baskets and allocate a proportion of the TI fixed costs to the AI basket.

A9.84 We carry out the same set of calculations for the operating costs.

A9.85 The sum of the post-allocation capital and operating costs are the service-level costs used in the basket X calculations.

A9.86 This approach resulted in around 75% of the fixed costs being re-allocated from the TI basket into the AI basket. Essentially, this is similar to using higher AVEs and

CVEs as service volumes so the increased reduction[94] in TI costs is assumed to be the fixed costs that are being recovered via the rise in AI costs.

Inclusion of accounting adjustments into the cost modelling

A9.87 Annex 8 discussed our analysis of charges at the start of the control. We made a number of adjustments to improve the accuracy of the regulatory financial information, and to provide a sound basis for forecasting costs. We also reflected these adjustments in the charge control modelling. This section explains how they have been incorporated.

A9.88 The adjustments made in Annex 8 are on a service-level basis, and we include them in the LLCC model in the following way:

- Our profitability analysis calculates the level of the adjustments on a service basis;
- We then translate this adjustment to be on a cost component basis;
- The unit cost adjustments on a component level are added to the overall cost component forecasts; and
- Total service-level costs are calculated as before, i.e. multiplied by usage factors and service volumes.

A9.89 To convert the service-level adjustment to a component-level adjustment, we need to

- Identify the cost components used by each of the services and their usage factors (from BT's RFS for 2006/07).
- Create an adjustment-specific set of usage factors that are used solely to convert the cost adjustments on a component level to service level. For cost adjustments that related to specific services, this avoids applying the cost adjustment to services that use an identified cost component but for which the cost adjustment should not apply. For example, the 64k local end cost component is used by both the 64k local end service and the sub 2Mbit/s radio backhaul service.

A9.90 Service-level costs are then made up of two parts:

- Overall cost forecasts based on cost component usage factors and the costs of these components; and
- Cost adjustments based on the starting charge analysis, and calculated using the adjustment-specific set of usage factors.

A9.91 The second part of the calculation will be zero for those services whose costs have not been adjusted in the starting charges analysis.

Exclusion of costs recovered via 3rd party infrastructure connection charges

A9.92 For each of the affected services we add up the P&L impact of the adjustment and split this amount proportionately between pay and non-pay opex. Then we look at

[94] Note that higher AVEs will mean that costs increase more rapidly when volumes are rising, but that costs also decrease faster as volumes fall.

the effect on Mean Capital Employed ("MCE") and make this adjustment through Net Replacement Cost ("NRC").

A9.93 This gives us three adjustments for each affected service (pay, non-pay, NRC). As described in A9.85 we translate these into adjustments to the costs of the components. As in the profitability analysis we put the adjustment through the cost of the local ends.

A9.94 We identify the cost components that are used by the service in question, and calculate the unit cost adjustment by component according to their respective usage factors. For most cases, there is a one-to-one mapping. However, for the 2Mbit/s service there are two local end components, copper and fibre. For this service we split the P&L and NRC adjustments between the components in proportion to their usage factors (which sum to one).

*Cost adjustment (by component) = Cost adjustment (by service) * Usage factor*

A9.95 We now have the same monetary amount of adjustment as described in the profitability analysis, but it is attributed to cost components rather than service elements.

A9.96 We note that the usage factors may suggest that particular cost components are used for more than one service. Therefore, we generate an alternative set of usage factors based solely on the relationships identified in A9.94. This is then used for converting the cost adjustments from a component level basis to the services. This is so that these unit cost adjustments do not feed into the costs of other services.

Smoothing of holding gains

A9.97 Table A9.7 shows the formula used for calculating real total holding gain/loss. There is an option in the model that allows the base year to be either this calculated value or BT's FCM depreciation values as submitted to Ofcom.

A9.98 Note that if nominal asset price changes (npt) are equal to the general level of inflation (i.e. asset values are constant in real terms) then calculated real holding gains will be zero.

Regulatory Asset Value adjustment

A9.99 BT maintains a model (the "RAV model") that calculates the RAV adjustment relating to the pre 97 copper access assets (copper and duct). This shows the difference in cost between valuing all assets on a CCA basis, and valuing pre 97 copper access assets on an HCA basis (with post 97 assets continuing to be on a CCA basis).

RAV adjustment = All assets (CCA basis) - [Post 97 assets (CCA basis) + Pre 97 assets (HCA basis)]

A9.100 The costs affected are depreciation, holding gain/loss and return on capital employed (as a result of the difference in NRC). The RAV model calculates these differences in each year of the forecast period.

A9.101 We only apply the RAV differences that relate to TI services.

A9.102 We use BT's RAV differences and attribute the differences in cost in terms of NRC, depreciation and holding gains/losses to the access-related cost components in scope of this charge control.

Payment terms adjustment

A9.103 This is the simplest of adjustments. The charge control model takes directly the value of NCA under two scenarios (with / without adjustment) from the profitability analysis and switches between the two as required.

Other adjustments

A9.104 As set out in Annex 8 we make a number of other adjustments, all using the same approach described in A9.95. These are:

- Exclusion of PoH costs recovered via the local end adjustment factor;
- Direct 21 CN costs consistent with our technology neutrality approach;
- Ancillary services;
- Site Connect costs;
- Resilient circuit costs; and
- Backhaul Network Direct costs.

EAD Aggregation prices adjustment

A9.105 The final adjustment is to recognise that we have included EAD aggregation services in our WES LA volumes and priced them accordingly. However, we recognise that EAD aggregation is priced at a flat rate per annum for both connection and rental, regardless of bandwidth. This differs significantly from the WES LA pricing structure, and therefore we have taken this into account in the X calculations.

Results and key sensitivities

A9.106 Below we present the results of our sensitivity analysis on the values of X for the TI and AI baskets. We note that the sensitivities are calculated assuming the X applies for three years from 2009/10 onwards.

Table A9.11 Range of Xs

Scenario	Description	TISBO basket	AISBO basket
Starting scenario	RFS 2007/08 volumes (and BTW/Openreach growth rates thereafter)	-2.9%	-7.9%
Volume sensitivities			
Ofcom volume forecasts + 10%	Higher volumes with AVEs and CVEs less than 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, and therefore there is a higher X (in absolute terms).	-7.0%	-11.4%
Ofcom volume forecasts – 10%	With lower volumes, unit revenues will fall faster than unit costs, and therefore leads to a lower X (in absolute terms).	0.0%	-3.3%
Efficiency sensitivities			
Opex efficiency = 1%	Compared to base case opex, lower opex efficiency means higher costs. Since revenues are the same as in base case, this result in a lower X (in absolute terms).	-2.2%	-5.9%
Opex efficiency = 4%	Higher efficiency means lower costs.	-4.7%	-8.9%
WACC sensitivities			
WACC = 10.25%	A lower WACC means a lower return on capital and therefore lower costs.	-3.1%	-8.4%
WACC = 11.75%		-2.8%	-7.8%
Other sensitivities			
BT's recalculated PPC AVEs and CVEs AISBO AVEs and CVEs assumed to be PPC average	Higher average AVEs and CVEs mean that costs are higher and therefore revenues do not need to fall as sharply so that they are aligned in the final year.	-2.9%	-5.2%
No real asset price change	Asset price deflation assumptions result in holding losses and add costs to each year of the charge control. With no asset price inflation, these costs are removed.	-5.7%	-0.6%
No adjustment to start year prices	If no adjustment to start year prices then revenues increase, and therefore a higher X (in absolute terms) is required to bring final year revenues in line with costs.	-4.7%	-7.9%
50% of total value of adjustments applied	Cost adjustments reduce start year costs and therefore final year costs are higher than in base case.	-0.1%	-6.1%
Recovery of common CCTV costs	Additional costs to be recovered via Ethernet services	-2.9%	-4.9%

Annex 10

Proposals for setting of SMP price control conditions

NOTIFICATION UNDER SECTION 48(2) OF THE COMMUNICATIONS ACT 2003

Draft decision with regards to the setting of SMP price control conditions in relation to BT under section 45 of the Communications Act 2003.

Whereas:

A10.1 On the same day as the publication of this consultation, the Office of Communications ("Ofcom") is publishing its statement entitled ""Business Connectivity Market Review – Review of the retail leased lines, wholesale symmetric broadband origination and wholesale trunk segments markets"·(the "BCMR Statement").

A10.2 Annex 8 of the BCMR Statement sets the Notification under section 48(1) of the Communications Act 2003 (the "Act") of Ofcom's decision, in accordance with sections 48(1) and 80 of the Communications Act 2003 (the "Act") to identify certain markets, to make market power determinations and to set SMP services conditions (the "Final BCMR Notification").

A10.3 In the Final BCMR Notification, Ofcom identifies, in accordance with section 79 of the Act, among others, the following markets for the purpose of making market power determinations:

a) the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabits per second within the United Kingdom but not including the Hull Area;

b) the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabits per second and up to and including forty five megabits per second within the United Kingdom but not including the Hull Area and the Central and East London Area;

c) the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the United Kingdom but not including the Hull Area;

d) the provision of wholesale trunk segments at all bandwidths within the United Kingdom;

e) the provision of traditional interface retail leased lines up to and including a bandwidth capacity of eight megabits per second within the United Kingdom but not including the Hull Area; and

f) the provision of traditional interface symmetric broadband origination with a bandwidth capacity above forty five megabits per second and up to and including one hundred and fifty five megabits per second within the United Kingdom but not including the Hull Area and the Central and East London Area.

A10.4 In the Final BCMR Notification, Ofcom, in accordance with section 79 of the Act, makes a market power determination for BT in relation to all markets set out in paragraph A10.3 above.

A10.5 In the Final BCMR Notification, Ofcom, in accordance with sections 45, 48, 87 and 88 of the Act set certain SMP conditions on BT in relation to such of those markets as are specified in Schedule 2 to the BCMR Notification. However, in the Final BCMR Notification Ofcom did not proceed with setting any price control conditions.

A10.6 In the Final BCMR Notification, Ofcom did not proceed with setting any price control conditions. Ofcom explained in the BCMR Statement that the decision on setting new charge control conditions and the details of those conditions and would be consulted on separately. Accordingly, in this Notification Ofcom sets out below such detailed proposals. These proposals are made by reference to the proposed market power determinations referred to in the BCMR Statement and, as such, are to be treated as supplementary to the Final BCMR Notification.

NOW, therefore:

A10.7 In this Notification, Ofcom is now proposing to set SMP price control conditions on BT, as set out in the Schedules to this Notification.

A10.8 The effect of, and Ofcom's reasons for making, the proposals to set the SMP price control conditions set out in the Schedules to this Notification are contained in the explanatory statement accompanying this Notification.

A10.9 The proposals set out in this Notification shall become effective with the publication of the final statement on the leased lines charge controls.

Ofcom's duties and legal tests

A10.10 In making the proposals set out in this Notification, Ofcom has considered and acted in accordance with its general duties set out in section 3 and the six Community requirements set out in section 4 of the Act.

A10.11 Moreover in making the proposals set out in this Notification, Ofcom has considered the exercise of its general duties and the setting of the charge control condition in the light of the tests under section 47(1), 87 and 88 of the Act.

Making representations

A10.12 Representations may be made to Ofcom about the proposals set out in this Notification and the accompanying explanatory statement by no later than 2 February 2009.

A10.13 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) of the Act.

Interpretation

A10.14 Except for references made to proposed identified services markets in paragraph A10.3 (and expect as otherwise defined in paragraph A10.15) of this Notification, words or expressions used in this Notification shall have the same meaning as they have been ascribed in the Act.

A10.15 In this Notification—

“**Act**” means the Communications Act 2003 (c.21);

“Final BCMR Notification” has the meaning given to it in paragraph A10.1 of this Notification;

“**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;

“**Central and East London Area**” means the area in London consisting of the postal sectors set out in Schedule 1 to the BCMR Notification;

“**Hull area**” means the area defined as the 'Licensed Area' in the licence granted on 30 November 1987 by the Secretary of State under section 7 of the Telecommunications Act 1984 to Kingston upon Hull City Council and Kingston Communications (Hull) plc; and

“**Ofcom**” means the Office of Communications.

A10.16 For the purpose of interpreting this Notification:

a) headings and titles shall be disregarded; and

b) the Interpretation Act 1978 (c. 30) shall apply as if this Notification were an Act of Parliament.

A10.17 The Schedule to this Notification shall form part of this Notification.

Gareth Davies

Competition Policy Director, Ofcom

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

8 December 2008

SCHEDULE

Amendments to SMP services condition G4

[Draft] Condition imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity up to and including eight megabit per second within the United Kingdom but not including the Hull Area

1. For SMP Condition G4 (Charge control) in Schedule 2 to the BCMR Notification, there shall be substituted the following new SMP Condition G4—

Condition G4 – Charge control

G4.1 Without prejudice to the generality of Condition G3, and subject to paragraph G4.2, 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 G4.3, G4.4 or G4.5 as appropriate) in:

(a) The aggregate of charges for all of the products and services listed in Annex A to this Condition;

(b) The aggregate of charges for all products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition;

(c) The aggregate of the charges for the products and services listed in Parts 1a and 1b of Annex A to this Condition;

(d) The aggregate of the charges for all products and services listed in Parts 2a and 2b on Annex A to this condition;

(e) The aggregate of the charges for the products and services listed in Annex B to this Condition;

(f) Each of the charges for the products and services listed in Annex B to this Condition;

(g) The aggregate of the charges for the products and services listed in Annex C to this Condition.

is not more than the Controlling Percentage (determined in accordance with paragraphs G4.6a and G4.6b).

G4.2 For the purpose of complying with paragraph G4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, the following formula is satisfied:

$$RC\left(1-D\right)\leq TRC$$

where:

RC is the revenue change associated with the single charge change made in the Relevant Year, 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 to achieve compliance with paragraph G4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph G4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect.

In the First Relevant Year this shall be expressed as a numeric entity on a scale ranging which is determined on the basis of the start date of the charge control as follows:

Start date	1 October 2008	1 April 2009	1 June 2009
Numeric scale	1st October = 0 to 30th September = 364, divided by 365.	1st April = 0 to 30th September = 182, divided by 183.	1st June = 0 to 30th September = 92, divided by 93.

For any other Relevant Year this is expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

G4.3 The Percentage Change for the purposes of each of the categories of products and services specified in paragraphs G4.1(a), G4.1 (b), G4.1 (c) and G4.1 (d) shall be calculated 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 products and services in the specified category at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service i and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ Save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the “Starting Charge Adjustment Value” as specified in Annex D to this condition. If a “Starting Charge Adjustment Value” for specific product or service i is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

G4.4 The Percentage Change for the purposes of the category of products and services specified in paragraph G4.1(e) and G4.1(g), shall be calculated 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 products and services in the specified category at a particular time t during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service i, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the “Starting Charge Adjustment Value” as specified in Annex D to this condition. If a “Starting Charge Adjustment Value” for specific product or service i is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the

Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

G4.5 The Percentage Change for the purposes of the category of products and services specified in paragraph G4.1(f) shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the products and services in the specified category at a particular time *t* during the Relevant Year;

p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

G4.6a Subject to paragraphs G4.7 and G4.8, the Controlling Percentage in relation to any Relevant Year means RPI changed by:

(a) for the category of products and services specified in paragraph G4.1(a), by *[X]*[95] percentage points;

(b) for the category of products and services specified in paragraph G4.1(b), by *zero* percentage points;

(c) for the category of products and services specified in paragraph G4.1(c), by *zero* percentage points;

(d) for the category of products and services specified in paragraph G4.1(d), by *zero* percentage points;

(e) for the category of products and services specified in paragraph G4.1(e), by *zero* percentage points;

(f) for the category of products and services specified in paragraph G4.1(g), by *zero* percentage points;

G4.6b Subject to paragraphs G4.7 and G4.8, for the category of products and services specified in paragraph G4.1(f), the Controlling Percentage in relation to any Relevant Year means *RPI minus RPI plus five* percentage points.

[95] Ofcom is seeking views of the appropriate value of X within a range of 0.00% and -7.00% as discussed in Section 4 of the explanatory statement attached to this Notification.

G4.7 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs G4.1(a) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraphs G4.6a and G4.6b, but increased by the amount of such deficiency.

G4.8 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs G4.1(a) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph G4.6a and G4.6b, but decreased by the amount of such excess.

G4.9 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs G4.1 to G4.8 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

G4.10 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

a) Pursuant to Condition G4.1, the calculated percentage change relating to each category of products and services listed in conditions H4.1 (a) through to (g).

b) Pursuant to Condition G4.2, calculation of the revenue accrued as a result of all relevant individual charge charges 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 G4.3 and G4.4, including for each specific product or service *i* :

- All relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service.
- Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.
- The relevant published charge at the start of the Relevant Year.

d) All relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions G4.5, for the category of products and services specified in paragraph G4.1(f):

- Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

- The relevant published charge at the start of the Relevant Year.

- Other data necessary for monitoring compliance with the charge control.

G4.11 Paragraphs G4.1 to G4.10 shall not apply to such extent as Ofcom may direct.

G4.12 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

G4.13 In this Condition:

(a) **"Relevant Financial Year"** means the period of 12 months ending on 31 March immediately preceding the Relevant Year;

(b) **"Controlling Percentage"** is to be determined in accordance with Condition G4.6a and G4.6b;

(c) **"Relevant Year"** means any four of the following periods including:

- The three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012; and/or

- the First Relevant Year.

(d) **"First Relevant Year"** means a period of 6 months beginning on 1st April 2009 and ending on 30 September 2009. For the avoidance of doubt, any reference to a Relevant Year shall include the First Relevant Year unless made clear by relevant drafting.

(e) **"Retail Prices Index"** means the index of retail prices complied by an agency or a public body on behalf of Her Majesty's Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items.

(f) **"RPI"** means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30th June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period; and

"(g) "Starting Charge Adjustment Value" means the relevant value for specific product or service *i* as specified in Annex D to this condition.

G4.14 In the Annexes to this Condition:

(a) "Partial Private Circuit" or "PPC" means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions G1, G3 or G7 under section 49 of the Act; and

(b) “PPC Contract” means the Dominant Provider's Standard PPC Handover Agreement as at 1st October 2008.

Annex A to Condition G4

Products and services subject to charge control pursuant to paragraphs G4.1(a), G4.1(b), G4.1(c) and G4.1(d)

Part 1a: Connection services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 1Mb
- 2Mb

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 128k
- 192k
- 256k
- 320k
- 384k
- 448k
- 512k
- 576k
- 640k
- 704k
- 768k
- 832k
- 896k

- 960k
- 1Mb
- 2Mb.

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segments at all bandwidths.

Annex B to Condition G4

Products and services subject to charge control pursuant to paragraphs G4.1(e) and G4.1(f)

Part 1: Each of the following point of connection equipment products used in the provision of a Partial Private Circuit:

(a) Customer Sited Handover (CSH) products:

(i) in respect of CSH Configuration SMA-16:

- SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (2 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (2 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (4 ports)

- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(ii) in respect of CSH Configuration SMA-4:

- SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 port)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 port), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (2 port)
- STM-1 electrical trib interface (2 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 electrical trib interface (4 ports)

- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(iii) in respect of CSH Configuration SMA-1:

- SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection

(iv) in respect of CSH Configuration MSH51:

- MSH51 ADM with no trib interfaces (single fibre working) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1550nm) - existing site

- MSH51 ADM with no trib interfaces (dual fibre working 1300+1550nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1550nm) - existing site
- Additional charge for new site
- Per km from serving exchange to MSH node - single fibre working
- Per km from serving exchange to MSH node - dual fibre working
- STM-1 electrical trib interface (4 ports)
- STM-1 optical (1300nm) trib interface (2 ports)
- STM-1 electrical trib card (4 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (2 ports), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection

(b) In Span Handover (ISH) products:

(i) in respect of ISH Configuration SMA-16:

- SMA –16 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(ii) in respect of ISH Configuration SMA-4:

- SMA-4 ADM with single STM-4 handover (1300nm)
- Optional STM-4 1550nm handover

(iii) in respect of ISH Configuration STM-1:

- SMA-4 ADM with single STM-1 handover (1300nm)
- Additional cost for STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iv) in respect of ISH Configuration SMA-1

- SMA-1 ADM with single STM-1 Handover (1300nm)

- SMA-1 ADM with single STM-1 handover (1550nm)

(v) in respect of ISH Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(c) Re-designation and Grandfathering Charges for Customer Sited Handover products:

- CSH Re-Designed SMA-16 ADM
- CSH Re-Designed SMA- 4 ADM
- CSH Re-Designed SMA– 1 ADM
- CSH Re-Designed MSH- 51 ADM
- Grandfathered SMA- 1 –legacy equipment
- Grandfathered 16x2 – legacy equipment
- Grandfathered 4x2 – legacy equipment

(d) In-span Handover Extension products:

(i) in respect of ISH Configuration STM-16:

- SMA – 16 ADM with single STM- 16 handover (1300nm)
- Optional STM- 16 1550nm handover

(ii) in respect of ISH Extension Configuration STM-4:

- SMA-4 ADM with single ATM-4 handover (1300nm)
- Optional STM-4 1550nm handover
- SMA-4 ADM with single STM-1 handover (1300nm)
- Optional STN-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iii) in respect of ISH Extension Configuration STM-1:

- SMA-1 ADM with single STM-1 handover (1300nm)

(iv) in respect of ISH Extension Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550 nm handover

(e) PPC Miscellaneous Generic Equipment

- Additional charge for new site
- 2Mbit/s bearer Access – required for access to DPCN
- Plus rental per km from PoH BT serving node to DPCN node

Part 2: Each of the following third party equipment products used in the provision of a Partial Private Circuit:

(a) Third party customer link infrastructure:

- KiloStream NTU 64k – 256k on existing copper
- KiloStream NTU 64k – 256k on new copper
- KiloStream NTU 320k – 640k on existing copper
- Kilostream NTU 320k – 640k on new copper
- Kilostream NTU 128k – 640k on 2Mb infrastructure
- Kilostream NTU 704k – 960k all delivery options
- 1Mb/s circuit on existing copper (from 23/10/2001)
- 1Mb/s circuit on new copper (from 23/10/2001)
- 2Mbit/s circuit on HDSL on existing copper
- 2Mbit/s circuit on HDSL on new copper
- First 2Mbit/s circuit on 4x2 at existing site
- First 2Mbit/s circuit on 16x2 at existing site
- Additional Charge for 4x2 and 16x2 new site
- Subsequent 2Mbit/s circuit on existing PPC 4x2 or 16x2
- Additional Charge to provide new fibre infrastructure at a new site
- 34/45 Mbit/s ASDH NTE existing fibre site
- 34/45 Mbit/s ASDH NTE Expansion Unit

(b) in respect of third party customer sited SMA-16 ADM:

- SMA-16 ADM with no trib interfaces (single fibre working) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) - existing site

- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34 Mbit/s trib cards (3 ports)
- 45 Mbit/s trib cards (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(c) in respect of third party customer sited SMA-4 ADM:

- SMA-4 ADM with no trib interfaces (single fibre working) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(d) in respect of third party customer sited SMA-1 ADM:

- SMA-1 ADM with no trib interfaces (single fibre working) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib card (32 ports)
- 2Mbit/s trib card (16 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

(e) In respect of 3rd part customer sited MSH-51C ADM

- MSH51 with no trib interfaces (single fibre working)-existing site
- MSH51 with no trib interfaces (dual fibre working 1300nm)-existing site
- MSH51 with no trib interfaces (dual fibre working 1550nm)-existing site
- Per km from serving exchange to MSH node-single fibre working
- Per km from serving exchange to MSH node-dual fibre working
- STM-1 electrical trib card (4 ports)
- STM-1 optical (1300nm) trib card (2 ports)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300nm) trib card (1 port)

(f) In respect of PPC Radio Access at 3rd part customer end:

- 4x2Mbit/s
- 16x2Mbit/s

- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) Existing site
- SMA-1 ADM with no trib interfaces (dual fibre 1300+1500nm)
- SMA-1 ADM with no trib interfaces (single fibre working + dual fibre working 1300nm) Existing site

(g) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- Radio Site Share

Annex C to Condition G4

Products and services subject to charge control pursuant to paragraphs G4.1(g)

Each of the following services (and all related charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)

- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)

- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days

- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure

- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges

- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges

- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Annex D to Condition G4

Starting Charge Adjustment Values pursuant to paragraphs G4.3 and G4.4

We also mandate BT to make the following adjustments to the starting charges of the products and services as listed below.

Services	Current Price (£)	Proposed Price (£)
64 kbit/s link	62.81	125.62
64 kbit/s local end (external)	289.67	579.34
64 kbit/s enhanced maintenance	40.31	80.62
2 Mbit/s local end (external)	691.92	833.76
2 Mbit/s trunk	102.24	46.83

Services	Current Price (£)			Proposed Price (£)		
Main Link		Enhanced Maintenance			Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	62.81	40.31	0.01	125.62	80.62	0.02
128k	113.43	41.25	0.02	226.86	82.50	0.04
192k	169.68	42.19	0.02	339.36	84.38	0.04
256k	226.86	43.12	0.03	453.72	86.24	0.06
320k	284.05	44.06	0.04	568.10	88.12	0.08
384k	381.53	46.87	0.06	763.06	93.74	0.12
448k	444.35	47.81	0.06	888.70	95.62	0.12
512k	508.09	49.68	0.07	1,016.18	99.36	0.14
576k	571.84	50.62	0.08	1,143.68	101.24	0.16
640k	636.64	51.56	0.09	1,273.28	103.12	0.18
704k	699.33	53.43	0.09	1,398.66	106.86	0.18
768k	762.14	54.36	0.10	1,524.28	108.72	0.20
832k	825.89	56.13	0.11	1,651.78	112.26	0.22
896k	889.63	57.17	0.12	1,779.26	114.34	0.24
960k	952.44	58.13	0.13	1,904.88	116.26	0.26
1024k	1,015.26	59.06	0.14	2,030.52	118.12	0.28

Amendments to SMP services condition GG4

[Draft] Condition imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above eight megabit per second and up to and including forty five megabit per second within the United Kingdom but not including the Hull Area

1. For SMP Condition GG4 (Charge control) in Schedule 2 to the BCMR Notification, there shall be substituted the following new SMP Condition GG4—

Condition GG4 – Charge control

GG4.1 Without prejudice to the generality of Condition GG3, and subject to paragraph GG4.2, 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 GG4.3, GG4.4 or GG4.5 as appropriate) in:

(a) The aggregate of charges for all of the products and services listed in Annex A to this Condition;

(b) The aggregate of charges for all products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition;

(c) The aggregate of the charges for the products and services listed in Parts 1a and 1b of Annex A to this Condition;

(d) The aggregate of the charges for all products and services listed in Parts 2a and 2b on Annex A to this condition;

(e) The aggregate of the charges for the products and services listed in Annex B to this Condition;

(f) Each of the charges for the products and services listed in Annex B to this Condition;

(g) The aggregate of the charges for the products and services listed in Annex C to this Condition.

is not more than the Controlling Percentage (determined in accordance with paragraphs GG4.6a and GG4.6b).

GG4.2 For the purpose of complying with paragraph GG4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, 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, 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 to achieve compliance with paragraph GG4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph GG4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect.

In the First Relevant Year this shall be expressed as a numeric entity on a scale ranging which is determined on the basis of the start date of the charge control as follows:

Start date	1 October 2008	1 April 2009	1 June 2009
Numeric scale	1st October = 0 to 30th September = 364, divided by 365.	1st April = 0 to 30th September = 182, divided by 183.	1st June = 0 to 30th September = 92, divided by 93.

For any other Relevant Year this is expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

GG4.3 The Percentage Change for the purposes of each of the categories of products and services specified in paragraphs GG4.1(a), GG4.1(b), GG4.1(c) and GG4.1(d) shall be calculated 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 products and services in the specified category at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i* and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ Save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service *i* shall be the “Starting Charge Adjustment Value” as specified in Annex D to this condition. If a “Starting Charge Adjustment Value” for specific product or service *i* is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

GG4.4 The Percentage Change for the purposes of the category of products and services specified in paragraph GG4.1(e) and GG4.1(f) shall be calculated 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 products and services in the specified category at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i*, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service *i* shall be the “Starting Charge Adjustment Value” as specified in Annex D to this condition. If a “Starting Charge Adjustment Value” for specific product or service *i* is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

GG4.5 The Percentage Change for the purposes of the category of products and services specified in paragraph GG4.1(g) shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the products and services in the specified category at a particular time *t* during the Relevant Year;

p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

GG4.6 Subject to paragraphs GG4.7 and GG4.8, the Controlling Percentage in relation to any Relevant Year means RPI changed:

(a) for the category of products and services specified in paragraph GG4.1(a), by *[X]*[96] percentage points;

(b) for the category of products and services specified in paragraph GG4.1(b), by *zero* percentage points;

(c) for the category of products and services specified in paragraph GG4.1(c), by *zero* percentage points;

(d) for the category of products and services specified in paragraph GG4.1(d), by *zero* percentage points;

(e) for the category of products and services specified in paragraph GG4.1(e), by *zero* percentage points;

(g) for the category of products and services specified in paragraph GG4.1(g), by *zero* percentage points;

GG4.6b Subject to paragraphs G4.7 and G4.8, for the category of products and services specified in paragraph GG4.1(f), the Controlling Percentage in relation to any Relevant Year means *RPI minus RPI plus five* percentage points.

GG4.7 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs GG4.1(a) the Controlling Percentage for the

[96] Ofcom is seeking views of the appropriate value of X within a range of 0.00% and -7.00% as discussed in Section 4 of the explanatory statement attached to this Notification.

following Relevant Year shall be determined in accordance with paragraph GG4.6, but increased by the amount of such deficiency.

GG4.8 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs GG4.1(a) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph GG4.6, but decreased by the amount of such excess.

GG4.9 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs GG4.1 to GG4.8 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

GG4.10 The Dominant Provider shall record, maintain and supply to Ofcom in electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

a) Pursuant to Condition GG4.1, the calculated percentage change relating to each category of products and services listed in conditions GG4.1 (a) through to (g).

b) Pursuant to Condition GG4.2, calculation of the revenue accrued as a result of all relevant individual charge charges 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 GG4.3 and GG4.4, including for each specific product or service *i* :

- All relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service.
- Published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.
- The relevant published charge at the start of the Relevant Year.

d) All relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions GG4.5, for the category of products and services specified in paragraph GG4.1(f):

- Published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.
- The relevant published charge at the start of the Relevant Year.

- Other data necessary for monitoring compliance with the charge control.

GG4.11 Paragraphs GG4.1 to GG4.10 shall not apply to such extent as Ofcom may direct.

GG4.12 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

GG4.13 In this Condition:

(a) **"Relevant Financial Year"** means the period of 12 months ending on 31 March immediately preceding the Relevant Year;

(b) **"Controlling Percentage"** is to be determined in accordance with Condition GG4.6a and GG4.6b;

(c) **"Relevant Year"** means any four of the following periods including:

- The three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012; and/or

- The First Relevant Year.

(d) **"First Relevant Year"** means a period of 6 months beginning on 1 April 2009 and ending on 30 September 2009. For the avoidance of doubt, any reference to a Relevant Year shall include the First Relevant Year unless made clear by relevant drafting.

(e) **"Retail Prices Index"** means the index of retail prices complied by an agency or a public body on behalf of Her Majesty's Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items.

(f) **"RPI"** means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30th June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period; and

(g) **"Starting Charge Adjustment Value"** means the relevant value for specific product or service *i* as specified in Annex D to this condition.

GG4.14 In the Annexes to this Condition:

(a) "Partial Private Circuit" or "PPC" means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions GG1, GG3 or GG7 under section 49 of the Act; and

(b) "PPC Contract" means the Dominant Provider's Standard PPC Handover Agreement as at 1st October 2008.

Annex A to Condition GG4

Products and services subject to charge control pursuant to paragraphs GG4.1(a), GG4.1(b), GG4.1(c) and GG4.1(d)

Part 1a: Connection services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 1Mb
- 2Mb

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 128k
- 192k
- 256k
- 320k
- 384k
- 448k
- 512k
- 576k
- 640k
- 704k
- 768k
- 832k
- 896k

- 960k
- 1Mb
- 2Mb.

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segments at all bandwidths.

Annex B to Condition GG4

Products and services subject to charge control pursuant to paragraphs GG4.1(e) and GG4.1(f)

Part 1: Each of the following point of connection equipment products used in the provision of a Partial Private Circuit:

(a) Customer Sited Handover (CSH) products:

(i) in respect of CSH Configuration SMA-16:

- SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (2 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (2 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (4 ports)

- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(ii) in respect of CSH Configuration SMA-4:

- SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 port)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 port), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (2 port)
- STM-1 electrical trib interface (2 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 electrical trib interface (4 ports)

- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(iii) in respect of CSH Configuration SMA-1:

- SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection

(iv) in respect of CSH Configuration MSH51:

- MSH51 ADM with no trib interfaces (single fibre working) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1550nm) - existing site

- MSH51 ADM with no trib interfaces (dual fibre working 1300+1550nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1550nm) - existing site
- Additional charge for new site
- Per km from serving exchange to MSH node - single fibre working
- Per km from serving exchange to MSH node - dual fibre working
- STM-1 electrical trib interface (4 ports)
- STM-1 optical (1300nm) trib interface (2 ports)
- STM-1 electrical trib card (4 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (2 ports), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection

(b) In Span Handover (ISH) products:

(i) in respect of ISH Configuration SMA-16:

- SMA –16 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(ii) in respect of ISH Configuration SMA-4:

- SMA-4 ADM with single STM-4 handover (1300nm)
- Optional STM-4 1550nm handover

(iii) in respect of ISH Configuration STM-1:

- SMA-4 ADM with single STM-1 handover (1300nm)
- Additional cost for STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iv) in respect of ISH Configuration SMA-1

- SMA-1 ADM with single STM-1 Handover (1300nm)

- SMA-1 ADM with single STM-1 handover (1550nm)

(v) in respect of ISH Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(c) Re-designation and Grandfathering Charges for Customer Sited Handover products:

- CSH Re-Designed SMA-16 ADM
- CSH Re-Designed SMA- 4 ADM
- CSH Re-Designed SMA– 1 ADM
- CSH Re-Designed MSH- 51 ADM
- Grandfathered SMA- 1 –legacy equipment
- Grandfathered 16x2 – legacy equipment
- Grandfathered 4x2 – legacy equipment

(d) In-span Handover Extension products:

(i) in respect of ISH Configuration STM-16:

- SMA – 16 ADM with single STM- 16 handover (1300nm)
- Optional STM- 16 1550nm handover

(ii) in respect of ISH Extension Configuration STM-4:

- SMA-4 ADM with single ATM-4 handover (1300nm)
- Optional STM-4 1550nm handover
- SMA-4 ADM with single STM-1 handover (1300nm)
- Optional STN-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iii) in respect of ISH Extension Configuration STM-1:

- SMA-1 ADM with single STM-1 handover (1300nm)

(iv) in respect of ISH Extension Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550 nm handover

(e) PPC Miscellaneous Generic Equipment

- Additional charge for new site
- 2Mbit/s bearer Access – required for access to DPCN
- Plus rental per km from PoH BT serving node to DPCN node

Part 2: Each of the following third party equipment products used in the provision of a Partial Private Circuit:

(a) Third party customer link infrastructure:

- KiloStream NTU 64k – 256k on existing copper
- KiloStream NTU 64k – 256k on new copper
- KiloStream NTU 320k – 640k on existing copper
- Kilostream NTU 320k – 640k on new copper
- Kilostream NTU 128k – 640k on 2Mb infrastructure
- Kilostream NTU 704k – 960k all delivery options
- 1Mb/s circuit on existing copper (from 23/10/2001)
- 1Mb/s circuit on new copper (from 23/10/2001)
- 2Mbit/s circuit on HDSL on existing copper
- 2Mbit/s circuit on HDSL on new copper
- First 2Mbit/s circuit on 4x2 at existing site
- First 2Mbit/s circuit on 16x2 at existing site
- Additional Charge for 4x2 and 16x2 new site
- Subsequent 2Mbit/s circuit on existing PPC 4x2 or 16x2
- Additional Charge to provide new fibre infrastructure at a new site
- 34/45 Mbit/s ASDH NTE existing fibre site
- 34/45 Mbit/s ASDH NTE Expansion Unit

(b) in respect of third party customer sited SMA-16 ADM:

- SMA-16 ADM with no trib interfaces (single fibre working) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) - existing site

- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34 Mbit/s trib cards (3 ports)
- 45 Mbit/s trib cards (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(c) in respect of third party customer sited SMA-4 ADM:

- SMA-4 ADM with no trib interfaces (single fibre working) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(d) in respect of third party customer sited SMA-1 ADM:

- SMA-1 ADM with no trib interfaces (single fibre working) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib card (32 ports)
- 2Mbit/s trib card (16 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

(g) In respect of 3rd part customer sited MSH-51C ADM

- MSH51 with no trib interfaces (single fibre working)-existing site
- MSH51 with no trib interfaces (dual fibre working 1300nm)-existing site
- MSH51 with no trib interfaces (dual fibre working 1550nm)-existing site
- Per km from serving exchange to MSH node-single fibre working
- Per km from serving exchange to MSH node-dual fibre working
- STM-1 electrical trib card (4 ports)
- STM-1 optical (1300nm) trib card (2 ports)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300nm) trib card (1 port)

(h) In respect of PPC Radio Access at 3rd part customer end:

- 4x2Mbit/s
- 16x2Mbit/s

- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) Existing site
- SMA-1 ADM with no trib interfaces (dual fibre 1300+1500nm)
- SMA-1 ADM with no trib interfaces (single fibre working + dual fibre working 1300nm) Existing site

(g) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- Radio Site Share

Annex C to Condition GG4

Products and services subject to a charge control pursuant to paragraphs GG4.1(g)

Each of the following services (and all related charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)

- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)

- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction Charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days

- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure

- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges

- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges

- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Annex D to Condition GG4

Starting Charge Adjustment Values pursuant to paragraphs GG4.3 and GG4.4

We also mandate BT to make the following adjustments to the starting charges of the following list of services.

Services	Current Price (£)	Proposed Price (£)
64 kbit/s link	62.81	125.62
64 kbit/s local end (external)	289.67	579.34
64 kbit/s enhanced maintenance	40.31	80.62
2 Mbit/s local end (external)	691.92	833.76
2 Mbit/s trunk	102.24	46.83

Services	Current Price (£)			Proposed Price (£)		
Main Link		Enhanced Maintenance			Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	62.81	40.31	0.01	125.62	80.62	0.02
128k	113.43	41.25	0.02	226.86	82.50	0.04
192k	169.68	42.19	0.02	339.36	84.38	0.04
256k	226.86	43.12	0.03	453.72	86.24	0.06
320k	284.05	44.06	0.04	568.10	88.12	0.08
384k	381.53	46.87	0.06	763.06	93.74	0.12
448k	444.35	47.81	0.06	888.70	95.62	0.12
512k	508.09	49.68	0.07	1,016.18	99.36	0.14
576k	571.84	50.62	0.08	1,143.68	101.24	0.16
640k	636.64	51.56	0.09	1,273.28	103.12	0.18
704k	699.33	53.43	0.09	1,398.66	106.86	0.18
768k	762.14	54.36	0.10	1,524.28	108.72	0.20
832k	825.89	56.13	0.11	1,651.78	112.26	0.22
896k	889.63	57.17	0.12	1,779.26	114.34	0.24
960k	952.44	58.13	0.13	1,904.88	116.26	0.26
1024k	1,015.26	59.06	0.14	2,030.52	118.12	0.28

Amendments to SMP services condition GH4

[Draft] Condition imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of traditional interface symmetric broadband origination with a bandwidth capacity above thirty four megabit per second and up to and including one hundred and fifty five megabit per second within the United Kingdom but not including the Hull Area

1. For SMP Condition GH4 (Charge control) in Schedule 2 to the BCMR Notification, there shall be substituted the following new SMP Condition GH4—

Condition GH4 – Charge control

GH4.1 Without prejudice to the generality of Condition GH3, and subject to paragraph GH4.2, 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 GH4.3, GH4.4 or GH4.5 as appropriate) in:

(a) The aggregate of charges for all of the products and services listed in Annex A to this Condition;

(b) The aggregate of charges for all products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition;

(c) The aggregate of the charges for the products and services listed in Parts 1a and 1b of Annex A to this Condition;

(d) The aggregate of the charges for all products and services listed in Parts 2a and 2b on Annex A to this condition;

(e) The aggregate of the charges for the products and services listed in Annex B to this Condition;

(f) Each of the charges for the products and services listed in Annex B to this Condition;

(g) The aggregate of the charges for the products and services listed in Annex C to this Condition.

is not more than the Controlling Percentage (determined in accordance with paragraphs GH4.6a and GH4.6b).

GH4.2 For the purpose of complying with paragraph GH4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, 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, 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 to achieve compliance with paragraph GH4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph GH4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect.

In the First Relevant Year this shall be expressed as a numeric entity on a scale ranging which is determined on the basis of the start date of the charge control as follows:

Start date	1 October 2008	1 April 2009	1 June 2009
Numeric scale	1st October = 0 to 30th September = 364, divided by 365.	1st April = 0 to 30th September = 182, divided by 183.	1st June = 0 to 30th September = 92, divided by 93.

For any other Relevant Year this is expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

GH4.3 The Percentage Change for the purposes of each of the categories of products and services specified in paragraphs GH4.1(a), GH4.1(b), GH4.1(c) and GH.1(d) shall be calculated 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 products and services in the specified category at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i* and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ Save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service *i* shall be the "Starting Charge Adjustment Value" as specified in Annex D to this condition. If a "Starting Charge Adjustment Value" for specific product or service *i* is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

GH4.4 The Percentage Change for the purposes of the category of products and services specified in paragraph GH4.1(b) shall be calculated 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 products and services in the specified category at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i*, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service *i* shall be the "Starting Charge Adjustment Value" as specified in Annex D to this condition. If a "Starting Charge Adjustment Value" for specific product or service *i* is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and $p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

GH4.5 The Percentage Change for the purposes of the category of products and services specified in paragraph GH4.1(c) shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the specific products and services in the specified category at a particular time *t* during the Relevant Year;

p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

GH4.6a Subject to paragraphs GH4.7 and GH4.8, the Controlling Percentage in relation to any Relevant Year means RPI changed:

(a) for the category of products and services specified in paragraph GH4.1(a), by *[X*[97]*]* percentage points;

(b) for the category of products and services specified in paragraph GH4.1(b), by *zero* percentage points;

(c) for the category of products and services specified in paragraph GH4.1(c), by *zero* percentage points;

(d) for the category of products and services specified in paragraph GH4.1(d), by *zero* percentage points;

(e) for the category of products and services specified in paragraph GH4.1(e), by *zero* percentage points;

(g) for the category of products and services specified in paragraph GH4.1(g), by *zero* percentage points;

GH4.6b Subject to paragraphs G4.7 and G4.8, for the category of products and services specified in paragraph GH4.1(f), the Controlling Percentage in relation to any Relevant Year means *RPI minus RPI plus five* percentage points.

GH4.7 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of the categories of products and

[97] Ofcom is seeking views on the appropriate value of X within a range of 0.00% and -7.00% as discussed in Section 4 of the explanatory statement attached to this Notification.

services identified in paragraphs GH4.1(a) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph GH4.6, but increased by the amount of such deficiency.

GH4.8 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs GH4.1(a) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph GH4.6, but decreased by the amount of such excess.

GH4.9 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs GH4.1 to GH4.8 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

GH4.10 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

a) Pursuant to Condition GH4.1, the calculated percentage change relating to each category of products and services listed in conditions GH4.1 (a) through to (g).

b) Pursuant to Condition GH4.2, calculation of the revenue accrued as a result of all relevant individual charge charges 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 GH4.3 and GH4.4, including for each specific product or service *i* :

- All relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service.
- Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.
- The relevant published charge at the start of the Relevant Year.

d) All relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions GH4.5, for the category of products and services specified in paragraph GH4.1(f):

- Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

- The relevant published charge at the start of the Relevant Year.

- Other data necessary for monitoring compliance with the charge control.

GH4.11 Paragraphs GH4.1 to GH4.10 shall not apply to such extent as Ofcom may direct.

GH4.12 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

GH4.13 In this Condition:

(a) **"Relevant Financial Year"** means the period of 12 months ending on 31 March immediately preceding the Relevant Year;

(b) **"Controlling Percentage"** is to be determined in accordance with Condition GH4.6;

(c) **"Relevant Year"** means any four of the following periods including:

- The three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012; and/or

- The First Relevant Year.

(d) **"First Relevant Year"** means a period of 6 months beginning on 1st April 2009 and ending on 30 September 2009. For the avoidance of doubt, any reference to a Relevant Year shall include the First Relevant Year unless made clear by relevant drafting.

(e) **"Retail Prices Index"** means the index of retail prices complied by an agency or a public body on behalf of Her Majesty's Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items.

(f) **"RPI"** means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30th June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period; and

(g) **"Starting Charge Adjustment Value"** means the relevant value for specific product or service i as specified in Annex D to this condition.

GH4.14 In the Annexes to this Condition:

(a) "Partial Private Circuit" or "PPC" means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions GH1, GH3 or GH7 under section 49 of the Act; and

(b) “PPC Contract” means the Dominant Provider's Standard PPC Handover Agreement as at 1st October 2008.

Annex A to Condition GH4

Products and services subject to charge control pursuant to paragraphs GH4.1(a), GH4.1(b), GH4.1(c) and GH4.1(d)

Part 1a: Connection services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 1Mb
- 2Mb

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 128k
- 192k
- 256k
- 320k
- 384k
- 448k
- 512k
- 576k
- 640k
- 704k
- 768k
- 832k
- 896k

- 960k
- 1Mb
- 2Mb.

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segments at all bandwidths.

Annex B to Condition GH4

Products and services subject to charge control pursuant to paragraphs GH4.1(e) and GH4.1(f)

Part 1: Each of the following point of connection equipment products used in the provision of a Partial Private Circuit:

(a) Customer Sited Handover (CSH) products:

(i) in respect of CSH Configuration SMA-16:

- SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (2 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (2 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (4 ports)

- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(ii) in respect of CSH Configuration SMA-4:

- SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fobre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 port)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 port), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (2 port)
- STM-1 electrical trib interface (2 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 electrical trib interface (4 ports)

- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(iii) in respect of CSH Configuration SMA-1:

- SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection

(iv) in respect of CSH Configuration MSH51:

- MSH51 ADM with no trib interfaces (single fibre working) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1550nm) - existing site

- MSH51 ADM with no trib interfaces (dual fibre working 1300+1550nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1550nm) - existing site
- Additional charge for new site
- Per km from serving exchange to MSH node - single fibre working
- Per km from serving exchange to MSH node - dual fibre working
- STM-1 electrical trib interface (4 ports)
- STM-1 optical (1300nm) trib interface (2 ports)
- STM-1 electrical trib card (4 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (2 ports), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection

(b) In Span Handover (ISH) products:

(i) in respect of ISH Configuration SMA-16:

- SMA –16 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(ii) in respect of ISH Configuration SMA-4:

- SMA-4 ADM with single STM-4 handover (1300nm)
- Optional STM-4 1550nm handover

(iii) in respect of ISH Configuration STM-1:

- SMA-4 ADM with single STM-1 handover (1300nm)
- Additional cost for STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iv) in respect of ISH Configuration SMA-1

- SMA-1 ADM with single STM-1 Handover (1300nm)

- SMA-1 ADM with single STM-1 handover (1550nm)

(v) in respect of ISH Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(c) Re-designation and Grandfathering Charges for Customer Sited Handover products:

- CSH Re-Designed SMA-16 ADM
- CSH Re-Designed SMA- 4 ADM
- CSH Re-Designed SMA– 1 ADM
- CSH Re-Designed MSH- 51 ADM
- Grandfathered SMA- 1 –legacy equipment
- Grandfathered 16x2 – legacy equipment
- Grandfathered 4x2 – legacy equipment

(d) In-span Handover Extension products:

(i) in respect of ISH Configuration STM-16:

- SMA – 16 ADM with single STM- 16 handover (1300nm)
- Optional STM- 16 1550nm handover

(ii) in respect of ISH Extension Configuration STM-4:

- SMA-4 ADM with single ATM-4 handover (1300nm)
- Optional STM-4 1550nm handover
- SMA-4 ADM with single STM-1 handover (1300nm)
- Optional STN-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iii) in respect of ISH Extension Configuration STM-1:

- SMA-1 ADM with single STM-1 handover (1300nm)

(iv) in respect of ISH Extension Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550 nm handover

(e) PPC Miscellaneous Generic Equipment

- Additional charge for new site
- 2Mbit/s bearer Access – required for access to DPCN
- Plus rental per km from PoH BT serving node to DPCN node

Part 2: Each of the following third party equipment products used in the provision of a Partial Private Circuit:

(a) Third party customer link infrastructure:

- KiloStream NTU 64k – 256k on existing copper
- KiloStream NTU 64k – 256k on new copper
- KiloStream NTU 320k – 640k on existing copper
- Kilostream NTU 320k – 640k on new copper
- Kilostream NTU 128k – 640k on 2Mb infrastructure
- Kilostream NTU 704k – 960k all delivery options
- 1Mb/s circuit on existing copper (from 23/10/2001)
- 1Mb/s circuit on new copper (from 23/10/2001)
- 2Mbit/s circuit on HDSL on existing copper
- 2Mbit/s circuit on HDSL on new copper
- First 2Mbit/s circuit on 4x2 at existing site
- First 2Mbit/s circuit on 16x2 at existing site
- Additional Charge for 4x2 and 16x2 new site
- Subsequent 2Mbit/s circuit on existing PPC 4x2 or 16x2
- Additional Charge to provide new fibre infrastructure at a new site
- 34/45 Mbit/s ASDH NTE existing fibre site
- 34/45 Mbit/s ASDH NTE Expansion Unit

(b) in respect of third party customer sited SMA-16 ADM:

- SMA-16 ADM with no trib interfaces (single fibre working) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) - existing site

- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34 Mbit/s trib cards (3 ports)
- 45 Mbit/s trib cards (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(c) in respect of third party customer sited SMA-4 ADM:

- SMA-4 ADM with no trib interfaces (single fibre working) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(d) in respect of third party customer sited SMA-1 ADM:

- SMA-1 ADM with no trib interfaces (single fibre working) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib card (32 ports)
- 2Mbit/s trib card (16 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

(i) In respect of 3rd part customer sited MSH-51C ADM

- MSH51 with no trib interfaces (single fibre working)-existing site
- MSH51 with no trib interfaces (dual fibre working 1300nm)-existing site
- MSH51 with no trib interfaces (dual fibre working 1550nm)-existing site
- Per km from serving exchange to MSH node-single fibre working
- Per km from serving exchange to MSH node-dual fibre working
- STM-1 electrical trib card (4 ports)
- STM-1 optical (1300nm) trib card (2 ports)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300nm) trib card (1 port)

(j) In respect of PPC Radio Access at 3rd part customer end:

- 4x2Mbit/s
- 16x2Mbit/s

- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) Existing site
- SMA-1 ADM with no trib interfaces (dual fibre 1300+1500nm)
- SMA-1 ADM with no trib interfaces (single fibre working + dual fibre working 1300nm) Existing site

(g) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- Radio Site Share

Annex C to Condition GH4

Products and services subject to charge control pursuant to paragraphs GH4.1(g)

Each of the following services (and all relevant charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)

- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)

- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days

- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure

- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges

- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges

- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Annex D to Condition GH4

Starting Charge Adjustment Values pursuant to paragraphs GH4.3 and GH4.4

We also mandate BT to make the following adjustments to the start charges of the following list of services

Services	Current Price (£)	Proposed Price (£)
64 kbit/s link	62.81	125.62
64 kbit/s local end (external)	289.67	579.34
64 kbit/s enhanced maintenance	40.31	80.62
2 Mbit/s local end (external)	691.92	833.76
2 Mbit/s trunk	102.24	46.83

Services	Current Price (£)			Proposed Price (£)		
Main Link		Enhanced Maintenance			Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	62.81	40.31	0.01	125.62	80.62	0.02
128k	113.43	41.25	0.02	226.86	82.50	0.04
192k	169.68	42.19	0.02	339.36	84.38	0.04
256k	226.86	43.12	0.03	453.72	86.24	0.06
320k	284.05	44.06	0.04	568.10	88.12	0.08
384k	381.53	46.87	0.06	763.06	93.74	0.12
448k	444.35	47.81	0.06	888.70	95.62	0.12
512k	508.09	49.68	0.07	1,016.18	99.36	0.14
576k	571.84	50.62	0.08	1,143.68	101.24	0.16
640k	636.64	51.56	0.09	1,273.28	103.12	0.18
704k	699.33	53.43	0.09	1,398.66	106.86	0.18
768k	762.14	54.36	0.10	1,524.28	108.72	0.20
832k	825.89	56.13	0.11	1,651.78	112.26	0.22
896k	889.63	57.17	0.12	1,779.26	114.34	0.24
960k	952.44	58.13	0.13	1,904.88	116.26	0.26
1024k	1,015.26	59.06	0.14	2,030.52	118.12	0.28

Amendments to SMP services condition H4

([Draft] Condition imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provisions of wholesale trunk segments at all bandwidths within the United Kingdom

1. For SMP Condition H4 (Charge control) in Schedule 2 to the BCMR Notification, there shall be substituted the following new SMP Condition H4—

Condition H4 – Charge control

H4.1 Without prejudice to the generality of Condition H3, and subject to paragraph H4.2, 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 H4.3, H4.4 or H4.5 as appropriate) in:

(a) The aggregate of charges for all of the products and services listed in Annex A to this Condition;

(b) The aggregate of charges for all products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition;

(c) The aggregate of the charges for the products and services listed in Parts 1a and 1b of Annex A to this Condition;

(d) The aggregate of the charges for all products and services listed in Parts 2a and 2b on Annex A to this condition;

(e) The aggregate of the charges for the products and services listed in Annex B to this Condition;

(f) Each of the charges for the products and services listed in Annex B to this Condition;

(g) The aggregate of the charges for the products and services listed in Annex C to this Condition.

is not more than the Controlling Percentage (determined in accordance with paragraphs H4.6a and H4.6b).

H4.2 For the purpose of complying with paragraph H4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, 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, 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 to achieve compliance with paragraph H4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph H4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect.

In the First Relevant Year this shall be expressed as a numeric entity on a scale ranging which is determined on the basis of the start date of the charge control as follows:

Start date	1 October 2008	1 April 2009	1 June 2009
Numeric scale	1st October = 0 to 30th September = 364, divided by 365.	1st April = 0 to 30th September = 182, divided by 183.	1st June = 0 to 30th September = 92, divided by 93.

For any other Relevant Year this is expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

H4.3 The Percentage Change for the purposes of each of the categories of products and services specified in paragraphs H4.1(a), H4.1(b), H4.1(c) and H4.1(d) shall be calculated 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 products and services in the specified category at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i* and the revenue accrued during the Relevant

Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ Save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service *i* shall be the "Starting Charge Adjustment Value" as specified in Annex D to this condition. If a "Starting Charge Adjustment Value" for specific product or service *i* is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

H4.4 The Percentage Change for the purposes of the category of products and services specified in paragraph H4.1(e) and H4.1(f) shall be calculated 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 products and services in the category specified in paragraph H4.1(b) at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i*, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service *i* shall be the "Starting Charge Adjustment Value" as specified in Annex D to this condition. If a "Starting Charge Adjustment Value" for specific product or service *i* is not listed in Annex D to this condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

H4.5 [not used]

H4.6a Subject to paragraphs H4.7 and H4.8, the Controlling Percentage in relation to any Relevant Year means RPI changed:

(a) for the category of products and services specified in paragraph H4.1(a), by *[X]*[98] percentage points;

(b) for the category of products and services specified in paragraph H4.1(b), by *zero* percentage points;

(c) for the category of products and services specified in paragraph H4.1(c), by *zero* percentage points;

(d) for the category of products and services specified in paragraph H4.1(d), by *zero* percentage points;

(e) for the category of products and services specified in paragraph H4.1(e), by *zero* percentage points;

(g) for the category of products and services specified in paragraph H4.1(g), by *zero* percentage points;

H4.6b Subject to paragraphs G4.7 and G4.8, for the category of products and services specified in paragraph H4.1(f), the Controlling Percentage in relation to any Relevant Year means *RPI minus RPI plus five* percentage points.

H4.7 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs H4.1(a) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph H4.6, but increased by the amount of such deficiency.

H4.8 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs H4.1(a) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph H4.6, but decreased by the amount of such excess.

H4.9 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs H4.1 to H4.8 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

[98] Ofcom is seeking views of the appropriate value of X within a range of 0.00% and -7.00% as discussed in Section 4 of the explanatory statement attached to this Notification.

H4.10 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

a) Pursuant to Condition H4.1, the calculated percentage change relating to each category of products and services listed in conditions H4.1 (a) through to (g).

b) Pursuant to Condition H4.2, calculation of the revenue accrued as a result of all relevant individual charge charges 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 H4.3 and H4.4, including for each specific product or service *i* :

- All relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service.
- Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.
- The relevant published charge at the start of the Relevant Year.

H4.11 Paragraphs H4.1 to H4.10 shall not apply to such extent as Ofcom may direct.

H4.12 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

H4.13 In this Condition:

(a) **"Relevant Financial Year"** means the period of 12 months ending on 31 March immediately preceding the Relevant Year;

(b) **"Controlling Percentage"** is to be determined in accordance with Condition H4.6;

(c) **"Relevant Year"** means any four of the following periods including:

- The three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012; and/or
- The First Relevant Year.

(d) **"First Relevant Year"** means a period of 6 months beginning on 1st April 2009 and ending on 30 September 2009. For the avoidance of doubt, any reference to a Relevant Year shall include the First Relevant Year unless made clear by relevant drafting.

(e) **"Retail Prices Index"** means the index of retail prices complied by an agency or a public body on behalf of Her Majesty's Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items.

(f) **"RPI"** means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30th June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period; and

(g) **"Starting Charge Adjustment Value"** means the relevant value for specific product or service i as specified in Annex D to this condition.

H4.14 In the Annexes to this Condition:

(a) "Partial Private Circuit" or "PPC" means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions H1, H3 or H7 under section 49 of the Act; and

(b) "PPC Contract" means the Dominant Provider's Standard PPC Handover Agreement as at 1st October 2008.

Annex A to Condition H4

Products and services subject to charge control pursuant to paragraphs H4.1(a), H4.1(b), H4.1(c) and H4.1(d)

Part 1a: Connection services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 1Mb
- 2Mb

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit Terminating Segments in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64k
- 128k
- 192k
- 256k
- 320k
- 384k
- 448k
- 512k
- 576k
- 640k
- 704k
- 768k
- 832k
- 896k

- 960k
- 1Mb
- 2Mb.

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segments in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segments at all bandwidths.

Annex B to Condition H4

[not used]

Annex C to Condition H4

Products and services subject to charge control pursuant to paragraphs H4.1(g)

Each of the following services (and all related charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)

- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)

- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days

- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure

- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges

- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges

- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Annex D to Condition H4

Starting Charge Adjustment Values pursuant to paragraphs H4.3 and H4.4

We also mandate BT to make the following adjustments to the start charges of the following list of services.

Services	Current Price (£)	Proposed Price (£)
64 kbit/s link	62.81	125.62
64 kbit/s local end (external)	289.67	579.34
64 kbit/s enhanced maintenance	40.31	80.62
2 Mbit/s local end (external)	691.92	833.76
2 Mbit/s trunk	102.24	46.83

Services	Current Price (£)			Proposed Price (£)		
Main Link		Enhanced Maintenance			Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	62.81	40.31	0.01	125.62	80.62	0.02
128k	113.43	41.25	0.02	226.86	82.50	0.04
192k	169.68	42.19	0.02	339.36	84.38	0.04
256k	226.86	43.12	0.03	453.72	86.24	0.06
320k	284.05	44.06	0.04	568.10	88.12	0.08
384k	381.53	46.87	0.06	763.06	93.74	0.12
448k	444.35	47.81	0.06	888.70	95.62	0.12
512k	508.09	49.68	0.07	1,016.18	99.36	0.14
576k	571.84	50.62	0.08	1,143.68	101.24	0.16
640k	636.64	51.56	0.09	1,273.28	103.12	0.18
704k	699.33	53.43	0.09	1,398.66	106.86	0.18
768k	762.14	54.36	0.10	1,524.28	108.72	0.20
832k	825.89	56.13	0.11	1,651.78	112.26	0.22
896k	889.63	57.17	0.12	1,779.26	114.34	0.24
960k	952.44	58.13	0.13	1,904.88	116.26	0.26
1024k	1,015.26	59.06	0.14	2,030.52	118.12	0.28

Amendments SMP services condition HH4

[Draft] Condition imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the United Kingdom but not including the Hull Area

3. For SMP Condition HH4 (Charge control) in Schedule 2 to the BCMR Notification, there shall be substituted the following new SMP Condition HH4—

Condition HH4 – Charge control

HH4.1 Without prejudice to the generality of Condition HH3, and subject to paragraph HH4.2, 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 HH4.3, HH4.4, HH4.5 or HH4.6 as appropriate) in:

(a) The aggregate of charges for all of the products and services listed in Annex A to this Condition;

(b) The aggregate of charges for the connection services listed in Part 1a through to Part 1g of Annex A to this Condition;

(c) The aggregate of charges for the rental and maintenance services listed in Part 2a through to Part 2g of Annex A to this Condition;

(d) The aggregate of charges for all products and services listed in Part 1a and Part 2a of Annex A to this Condition;

(e) The aggregate of charges for all products and services listed in Parts 2b, 2c and 2d and Parts 2b, 2c and 2d of Annex A to this Condition;

(f) The aggregate of charges for all products and services listed in Part 1 of Annex B to this Condition;

(g) Each of the charges for the products and services listed in Part 2 of Annex B to this Condition;

(h) The aggregate of charges for all products and services listed in Annex C to this condition.

is not more than the Controlling Percentage (determined in accordance with paragraph HH4.6).

HH4.2 For the purposes of complying with the requirements as set out in paragraphs HH4.1(a), HH4.1(b), HH4.1(c), HH4.1 (d) and HH4.1(e), an average price shall be calculated for each category of product by employing the following formula:

$$\bar{p}_i = \frac{R_i}{Q_i}$$

where:

$\overline{p}_i$ is the average price for the relevant product or service *i* as defined in Paragraph HH4.1 in the Relevant Year;

i is a relevant product or service as defined in Paragraph HH4.1;

R_i is the sum of the revenue accrued during the Relevant Year in respect of the relevant existing product or service *i* as defined in Table 1, calculated to exclude any discounts offered by the Dominant Provider, and the revenue accrued during the Relevant Year in respect of the relevant new products used in the delivery of existing product or service *i* as defined in Table 1, calculated to exclude any discounts offered by the Dominant Provider;

Q_i is the sum of the quantity sold in the Relevant Year in respect of the product or service *i* by the Dominant Provider and the quantity sold in the Relevant Year in respect of the relevant new products used in the delivery of existing product or service *i* by the Dominant Provider.

HH4.3 The Percentage Change for the purposes of each of the categories of products and services specified in paragraphs HH4.1(a), HH4.1(b), HH4.1(c), HH4.1 (d) and HH4.1(e) shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of average prices for the existing products or services at the end of each Relevant Year;

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the existing product or service *i*, calculated to exclude any discounts offered by the Dominant Provider, and the revenue accrued during the Relevant Financial Year in respect of the relevant new products used in the delivery of existing product or service *i*, calculated to exclude any discounts offered by the Dominant Provider;

$\overline{p}_{t-1,i}$ is the average price for the relevant product or service *i* in the year immediately preceding the Relevant Year excluding any discounts offered by the Dominant Provider; and

$\overline{p}_{t,i}$ is the average price for the relevant product or service *i* during the Relevant Year excluding any discounts offered by the Dominant Provider.

HH4.4 The Percentage Change for the purposes of the category of products and services specified in paragraph HH4.1(f) and HH4.1(h) shall be calculated 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 products and services in the category specified in paragraph HH4.1(f) and HH4.1(h) at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category;

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i*, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service *i* at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

HH4.5 The Percentage Change for the purposes of the category of products and services specified in paragraph HH4.1(g) shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the specific product or service in the category specified in paragraph HH4.1(g) at a particular time *t* during the Relevant Year;

p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.

HH4.6 Subject to paragraphs HH4.7 and HH4.8, the Controlling Percentage in relation to any Relevant Year means RPI changed:

(a) for the category of products and services specified in paragraph HH4.1(a), by *[X]*[99] percentage points;

(b) for the category of products and services specified in paragraph HH4.1(b), by *zero* percentage points;

(c) for the category of products and services specified in paragraph HH4.1(c), by *zero* percentage points;

(d) for the category of products and services specified in paragraph HH4.1(d), by *zero* percentage points;

(e) for the category of products and services specified in paragraph HH4.1(e), by *zero* percentage points;

(f) for the category of products and services specified in paragraph HH4.1(f), by *zero* percentage points;

(g) for the category of products and services specified in paragraph HH4.1(g), by *zero* percentage points;

(h) for the category of products and services specified in paragraph HH4.1(h), by *zero* percentage points;

HH4.7 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs HH4.1(a) through to HH4.1(h) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph HH4.6, but increased by the amount of such deficiency.

HH4.8 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of the categories of products and services identified in paragraphs HH4.1(a) through to HH4.1(h) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph HH4.6, but decreased by the amount of such excess.

HH4.9 Subject to paragraphs HH4.7 and HH4.8, to the extent the Percentage Change in any Relevant Year is different than the Controlling Percentage as a result of the quantities of products used in paragraph HH4.2, then for the purposes of the categories of products and services identified in paragraphs HH4.1(a) through to HH4.1(h) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph HH4.6a, but decreased by an amount *k*, as follows:

$$= (RPI - X\% - k_t)$$

$$k_t = (C_{t-1} - (RPI_{t-1} - X\%)) * (1 + I/100)$$

Where:

[99] Ofcom is seeking views on the appropriate value of X within a range of -3.25% and -11.50% as discussed in Section 5 of the explanatory statement attached to this Notification.

C_t is the required Percentage Change in the aggregate of average prices for the relevant existing products and services at the end of each Relevant Year adjusted for the value of k ;

RPI_{t-1}-$X\%$ is as defined in paragraph HH4.6(a);

k_t is to be calculated as defined in paragraph HH4.9. In the First Relevant Year k_t shall have the value zero;

C_{t-1} is the actual Percentage Change in the aggregate of average prices for the relevant existing products and services in the year immediately preceding the Relevant Year; and

I in the interest rate BT charges for under-payments or over-payments in the Relevant Year uplifted by a fixed amount.

t is the number of the Relevant Years within the charge control period, starting from t=2 and ending at t=4.

HH4.10 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs HH4.1 to HH4.9 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

HH4.11 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for OFCOM to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

a) Pursuant to Condition HH4.1, the calculated percentage change relating to each category of products and services listed in conditions G4.1 (a) through to (h);

b) Pursuant to Condition HH4.2, calculation of the average price in the Relevant Year for each relevant product or service:

- All revenue accrued during the Relevant Financial Year in respect of the relevant existing and new products or services.

- The quantities of relevant existing and new products and services sold by the Dominant Provider in the Relevant Year.

c) All data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions HH4.3, including for each relevant product or service i :

- Revenue accrued during the Relevant Financial Year in respect of the relevant product or service.

- Average prices in respect of the relevant product or service as required under HH4.10(ii).
- The relevant published charge at the start of the Relevant Year.

d) All relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions HH4.4, including for each specific product or service *i* :

- Revenue accrued during the Relevant Financial Year in respect of the relevant product or service.
- Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.
- The relevant published charge at the start of the Relevant Year.

e) All relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions G4.5, for the category of products and services specified in paragraphG4.1(f) calculated by employing the following formula:

- Published charges made by the Dominant Provider at time *t* during the Relevant Year excluding any discounts offered by the Dominant Provider.
- The relevant published charge at the start of the Relevant Year.

f) Other data necessary for monitoring compliance with the charge control.

HH4.12 Paragraphs HH4.1 to HH4.11 shall not apply to such extent as Ofcom may direct.

HH4.12 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

HH4.13 In this Condition:

(a) **"Relevant Financial Year"** means the period of 12 months ending on 31 March immediately preceding the Relevant Year;

(b) **"Controlling Percentage"** is to be determined in accordance with Condition HH4.6;

(c) **"Relevant Year"** means any four of the following periods including:

- The three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012; and/or
- The First Relevant Year.

(d) **"Retail Prices Index"** means the index of retail prices complied by an agency or a public body on behalf of Her Majesty's Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items; and

(e) **"RPI"** means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30th June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period.

(f) Subject to paragraph HH4.9, "**Relevant existing products**" and "**Relevant new products**" are as defined in the table below and which Ofcom may add to from time to time to reflect the introduction of products or services which qualify as new services pursuant to paragraph HH4.10.

	"Relevant existing product"	**"Relevant new product" used in the delivery of existing products** For the avoidance of doubt one unit of relevant existing product (i) is equivalent to the weighted sum of one unit of each of the relevant new products used in the delivery of existing products where the weights are shown in the table below in row (i).					
		EBD 100	EBD 1000	BTL 1000	EAD 10	EAD 100	EAD 1000
i = 1	BES 10	No equivalent product					
	BES 100	1		x			
	BES 1000		1	1			
	WES 10	No equivalent product					
	WES 100	1		x		1	
	WES 1000		1	1			1
	WESLA 10				1		
	WESLA 100					1	
	WESLA 1000						1
	ONBS 10	No equivalent product					
	ONBS 100	1		x			
	ONBS 1000		1	1			
i = n	BNS		1	1			

HH4.14 In the Annexes to this Condition:

(a) “Wholesale Extension Service” or “WES” means a circuit provided pursuant to the WES Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions HH1, HH3 or HH7 under section 49 of the Act

(b) “Backhaul Extension Service” or “BES” means a circuit provided pursuant to the BES Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions HH1, HH3 or HH7 under section 49 of the Act

(c) “Wholesale Extension Services Local Access” or “WESLA” means a circuit provided pursuant to the WESLA Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions HH1, HH3 or HH7 under section 49 of the Act

(d) “Ethernet Backhaul Direct” or “EBD” means a circuit provided pursuant to the EBD Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions HH1, HH3 or HH7 under section 49 of the Act

(e) “Bulk Transport Link” or “BTL” means a circuit provided pursuant to the BTL Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions HH1, HH3 or HH7 under section 49 of the Act

(f) “Openreach Network Backhaul Services” or “ONBS” means a circuit provided pursuant to the ONBS Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions HH1, HH3 or HH7 under section 49 of the Act

(g) “Ethernet Access Direct” or “EAD” means a circuit provided pursuant to the ONBS Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions HH1, HH3 or HH7 under section 49 of the Act

(h) “WES Contract” means the Dominant Provider's Standard WES Agreement as at 1st April 2009 or any other subsequent relevant agreement.

(i) “BES Contract” means the Dominant Provider's Standard BES Agreement as at 1st April 2009 or any other subsequent relevant agreement.

(j) “WESLA Contract” means the Dominant Provider's Standard WESLA Agreement as at 1st April 2009 or any other subsequent relevant agreement.

(k) “EBD Contract” means the Dominant Provider's Standard EBD Agreement as at 1st April 2009 or any other subsequent relevant agreement.

(l) “BTL Contract” means the Dominant Provider's Standard BTL Agreement as at 1st April 2009 or any other subsequent relevant agreement.

(m) “ONBS” means the Dominant Provider's Standard ONBS Agreement as at 1st April 2009 or any other subsequent relevant agreement.

(n) “EAD Contract” means the Dominant Provider's Standard EAD Agreement as at 1st April 2009 or any other subsequent relevant agreement.

Annex A to Condition HH4

Products and services subject to charge control pursuant to paragraphs HH4.1(a), HH4.1(b), HH4.1(c), HH4.1(d) and HH4.1(e)

Part 1a: Connection services in respect of the provision of Wholesale Extension Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- WES/WEES 10 Mbit/s
- WES/WEES 10 Mbit/s (Local Reach)
- WES/WEES 10 Mbit/s (Managed)
- WES/WEES 100 Mbit/s
- WES/WEES 155 Mbit/s
- WES/WEES 622 Mbit/s
- WES/WEES 1000 Mbit/s (LAN/SAN)
- WES/WEES 1000 Mbit/s (Extended Reach)
- WESLA 10 Mbit/s (Managed)
- WESLA 100 Mbit/s (Managed)
- WESLA 1000 Mbit/s (Managed)
- WES/WEES main link charge

Part 1b: Connection services in respect of the provision of Backhaul Extension Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BES/BES Daisy Chain 10 Mbit/s
- BES/BES Daisy Chain 100 Mbit/s
- BES/BES Daisy Chain 155 Mbit/s
- BES/BES Daisy Chain 622 Mbit/s
- BES/BES Daisy Chain 1000 Mbit/s (Extended Reach)
- BES/BES Daisy Chain main link charge

Part 1c: Connection services in respect of the provision of ONBS in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- ONBS 100 Mbit/s

- ONBS 1000 Mbit/s
- ONBE main link charge

Part 1d: Connection services in respect of the provision of Backhaul Network Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BNS 1000 Mbit/s

Part 1e: Connection services in respect of the provision of Ethernet Backhaul Direct in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EBD 100 Mbit/s
- EBD 1000 Mbit/s

Part 1f: Connection services in respect of the provision of Bulk Transport Link in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BTL 1 Gbit/s

Part 1g: Connection services in respect of the provision of EAD in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EAD 10 Mbit/s
- EAD 100 Mbit/s
- EAD 1000 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of Wholesale Extension Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- WES/WEES 10 Mbit/s
- WES/WEES 10 Mbit/s (Local Reach)
- WES/WEES 10 Mbit/s (Managed)
- WES/WEES 100 Mbit/s
- WES/WEES 155 Mbit/s
- WES/WEES 622 Mbit/s
- WES/WEES 1000 Mbit/s (LAN/SAN)
- WES/WEES 1000 Mbit/s (Extended Reach)
- WESLA 10 Mbit/s (Managed)

- WESLA 100 Mbit/s (Managed)
- WESLA 1000 Mbit/s (Managed)
- WES/WEES main link charge

Part 2b: Rental and maintenance services in respect of the provision of Backhaul Extension Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BES/BES Daisy Chain 10 Mbit/s
- BES/BES Daisy Chain 100 Mbit/s
- BES/BES Daisy Chain 155 Mbit/s
- BES/BES Daisy Chain 622 Mbit/s
- BES/BES Daisy Chain 1000 Mbit/s (Extended Reach)
- BES/BES Daisy Chain main link charge

Part 2c: Rental and maintenance services in respect of the provision of ONBS in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- ONBS 100 Mbit/s
- ONBS 1000 Mbit/s
- ONBE main link charge

Part 2d: Rental and maintenance services in respect of the provision of Backhaul Network Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BNS 1000 Mbit/s

Part 2e: Rental and maintenance services in respect of the provision of Ethernet Backhaul Direct in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EBD 100 Mbit/s
- EBD 1000 Mbit/s

Part 2f: Rental and maintenance services in respect of the provision of Bulk Transport Link in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BTL 1 Gbit/s

Part 2g: Rental and maintenance services in respect of the provision of EAD in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EAD 10 Mbit/s
- EAD 100 Mbit/s
- EAD 1000 Mbit/s

Annex B to Condition HH4

Accommodation services subject to charge control pursuant to paragraphs HH4.1(f) and HH4.1(g)

Part 1: All charges in respect of the provision of Accommodation Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

(a) Access Locate

- Access Locate Accommodation
- Access Locate Power

(b) Access Locate Plus

- Access Locate Plus

Part 2: Connection, rental and maintenance services in respect of the provision of Accommodation Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

(a) Access Locate

- Contract conversion From RANF to Access Locate. Administration charge

Annex C to Condition HH4

Ancillary charges subject to charge control pursuant to paragraph HH4.1(h)

Part 1: Each of the following services used in the provision of Wholesale Extension Services:

(a) Circuit Migration Charges:

- WES/WEES - Circuit Migration Charges (Successful Circuit Migration to WES)
- WES/WEES - Circuit Migration Charges (Failed Circuit Migration to WES)
- WES/WEES - Circuit Migration Charges (Successful Circuit Migration to WES/ WEES)
- WES/WEES - Circuit Migration Charges (Failed Circuit Migration to WES/WEES)

(b) Additional CP Equipment Connection & Rental Charges (Ancillary optical cabling, associated optical patch panels and kevlar armoured cable)

(c) Cancellation Charges

(d) Ethernet Transfer of Service

(e) WES/WEES Circuit Shift Changes

- Shift - Internal. Internal Shift of a WES/WEES local end within the existing building.
- Shift - External Resite. Resiting of a WES/WEES local end in another building served by the same local serving exchange
- Shift – External Rearrange. Rearranging a WES/WEES local end in another building served by a different local serving exchange

(f) Time Related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(g) Excess Construction Charges

Part 2: Each of the following services used in the provision of Backhaul Extension Services:

(a) Circuit Upgrade Charges:

- BES Circuit Upgrades (from BES 10 to BES 100)
- BES Circuit Upgrades (from BES 10 to BES 155)
- BES Circuit Upgrades (from BES 10 to BES 622)
- BES Circuit Upgrades (from BES 10 to BES 1000)
- BES Circuit Upgrades (from BES 100 to BES 155)

- BES Circuit Upgrades (from BES 100 to BES 622)
- BES Circuit Upgrades (from BES 100 to BES 1000)
- BES Circuit Upgrades (from BES 155 to BES 622)
- BES Circuit Upgrades (from BES 155 to BES 1000)
- BES Circuit Upgrades (from BES 622 to BES 1000)

(b) Circuit Migration Charges:

- Circuit Migration Charges – Successful Circuit Migration to BES
- Circuit Migration Charges – Failed Circuit Migration to BES
- Circuit Migration Charges – Successful Circuit Migration to BES
- Circuit Migration Charges – Failed Circuit Migration to BES

(c) BES Circuit Shift Charges

- Shift - Internal. Internal Shift of a BES local end within the existing building.
- Shift - External Resite. Resiting of a BES local end in another building served by the same local serving exchange
- Shift – External Rearrange.Rearranging a BES local end in another building served by a different local serving exchange

(d) Time Related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(e) Excess Construction Charges

(f) Cancellation Charges

Part 3: Each of the following services used in the provision of Openreach Network Backhaul Services

(a) Circuit Upgrades: Only offered as a cease and provide, and the customer will not be held to term against the original service.

(b) Circuit Migration Charges

(c) Resilient Option 1

- Openreach Network Backhaul Services 100M Bandwidths per end
- Openreach Network Backhaul Services Generic Resilience option 1 monitoring fee per path
- Main link per metre or part thereof
- Resilience link per metre or part thereof

(d) Resilient Option 2

- Openreach Network Backhaul Services - All Bandwidths per circuit
- Main link per metre or part thereof
- Resilience link per metre or part thereof

(e) Cancellation Charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

(f) Timescale Charges

Part 4: Each of the following services used in the provision of Backhaul Network Services

(a) Circuit upgrades:

- 1Gb to 2Gb

(b) Additional charges: Interfaces

- M mode
- S mode

(c) Cancellation charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

(c) Excess Construction Charges

(e) Timescale Charges

Part 5: Each of the following services used in the provision of Ethernet Backhaul Direct

(a) Migration charges from BES to EBD:

- BES to EBD migration charge

(b) EBD Resilience Option 2

- 1Gbps
- Generic Facility Fee

(c) Cancellation Charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

(d) Time related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(e) Excess Construction Charges

Part 6: Each of the following services used in the provision of Bulk Transport Link

(a) Time related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(b) Excess Construction Charges

(c) Additional charges: Interfaces

- M Mode: 1000 Base SX (850nm Multi Mode) 50mm presentation. Reach approx 300 Metres. Used on DLE sites
- S Mode: 1000 Base LX (1310nm Single Mode). Reach approx 10km.
- S Mode: Used on customer PoP sites

(d) Cancellation charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

Annex 11

Impact Assessment

Introduction

A11.1 The analysis presented in this Annex alongside the discussion and analysis in Sections 4 and 5 of this document represents an impact assessment, as defined in section 7 of the Communications Act 2003 (the Act).

A11.2 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.

A11.3 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

The citizen and/or consumer interest

A11.4 The leased lines markets that are the subject of this charge control represent a very significant amount of money. Based on BT's reported revenues in 2007/08, its turnover was over £1,200 million for the services subject to charge control. In addition to the revenues that BT makes from selling wholesale leased lines, there are a number of markets that rely on wholesale leased lines as key inputs. For example, the telecommunications companies utilise leased lines services as part of their telecommunications networks used to support much wider services in mobile, broadband and wider information technology businesses.

Preventing excess pricing

A11.5 The effect of the charge control is to limit (over the life of the control) the amount that BT can charge the users of its leased lines services. This control relates to the amounts it charges to its wholesale customers (such as OCPs and BT's own downstream retail businesses). This control should result in the charges paid by wholesale customers being lower than they otherwise would have been. Where effective retail competition exists, then this should result in BT's retail arm and its competitors passing any reductions in wholesale-leased line prices onto end-users.

A11.6 In this impact assessment, we have focussed on the most obvious direct impacts we expect the charge control to have on the wholesale prices that communication providers will face. We assess this in terms of the possible impact of the main charge control options we have identified (as proposed in Sections 4 and 5) relative to no control at all.

A11.7 It is important to note that the counterfactual against which the benefits of regulation are measured relates to a situation where BT's prices are not subject to charge control (which is one of the options identified in this impact assessment). However, it is difficult to determine the likely prices BT is likely to set under no charge control. Even with no charge controls, wider regulatory obligations exist and there is often the potential threat of regulation that might affect (to some degree) the prices that BT sets.

A11.8 This impact assessment therefore only provides an "order of magnitude" assessment of the likely costs and benefits of different options. It relies on the assumptions made regarding the prices set under no charge control scenario. And it follows that there will be a degree of uncertainty in any resulting estimates we make of the possible effects of the charge control relative to no charge control. Nevertheless, if under a range of modelling scenarios the results still suggest there are significant benefits of a charge control, then this lends further weight to this option.

Different leased lines users

A11.9 The main retail consumers of leased lines are large business customers but they are also employed for example by schools, universities and public authorities. As wholesale costs often represent a large component of an end user's final bill, the savings to end-users could be quite significant. Therefore, a wide range of customers will benefit directly from these changes. Mobile network operators and broadband providers also utilise leased lines to backhaul traffic from their radio base stations and unbundled local exchanges. Citizens may therefore benefit indirectly from the proposals via cheaper mobile calls or broadband packages.

A11.10 We are also proposing this charge control in parallel to a consultation we are undertaking on "A new pricing framework for Openreach". In those proposals, we discuss pricing of various access services, including the wholesale access inputs that broadband providers use for retail broadband (such as MPF). One outcome of that consultation is that the wholesale prices of MPF may have to increase. To assess the likely competition impact on broadband providers reliant on LLU, we have set out in this impact assessment how the costs of broadband provision might change if LLU backhaul prices were to fall (as proposed by the LLCC). However, we have not sought to prejudge the outcome of the wider Openreach consultation on other broadband inputs and for simplicity in our modelling, we have assumed that prices for these other broadband inputs are held constant in nominal terms.

A11.11 The leased lines charge controls will also impact on mobile network operators. Many of these providers utilise BT's Radio Base Station Backhaul products. Within this consultation, we propose to require BT to set its RBS backhaul prices in a manner consistent with the charge controlled PPC products. BT's external sales turnover for RBS circuits was £130 million in 2007/08.[100] If RBS prices followed the price path implied by the overall TI basket, the likely revenues recovered from external sales of RBS circuits in the last year of the control would be reduced in real terms by nearly £15 million (assuming no other changes such as changing volumes demanded)[101].

[100] This figure refers only to RBS backhaul connections and rentals reported in BT's regulatory financial statements.
[101] To derive this figure we have assumed that prices would decline by RPI-4%, which is the base-case used for the TI basket charge control used in the remainder of this Annex.

Investment and cost efficiency

A11.12 Over a longer timeframe, with the appropriate regulatory design, a charge control can help provide additional incentives to enhance cost efficiency. By definition a charge control entails a restriction on prices that BT can set for particular services, and a potential downside is that this could have the effect of deterring investment that otherwise would have occurred. But if set at the right levels, a charge control can maintain investment incentives by allowing a sufficient rate of return on those investments.

A11.13 Clearly any charge control proposal needs to ensure that BT can finance its activities and that it can earn a reasonable rate of return on its investments. Therefore, we cannot only think about customers getting the lowest possible wholesale price as soon as possible if this bears no relation to BT's costs of providing those services. Aggressive prices cuts might also unduly deter efficient market entry in wholesale markets; and could reduce the incentives for BT to make investments in new technologies that might provide lower overall costs in future.

A11.14 The type of charge control imposed can impact incentives to decrease costs. For example, if a charge control were set annually and sought to pass any cost reductions BT made each year back to customers immediately then this would not provide good incentives for BT to seek to make cost savings in the first place. Greater efficiency savings may entail an initial increase in expenditure, which may require a sufficient period to pay back (in terms of resulting efficiency improvements and reduced overall operating expenditure). A charge control that provided a period of price stability and certainty to the regulated company may enhance its incentives to undertake investment and/or to seek additional efficiency savings.

A11.15 Therefore, charge controls are designed to give BT incentives to increase its wholesale-level efficiency. This is achieved by allowing BT to keep any super-normal profits that it earns within a defined period by reducing its costs over and above the savings envisaged by the charge control. The benefits of any cost savings would potentially accrue to the regulated company in the short run and this would give BT incentives to make those efficiency savings. In the longer run, these cost savings could accrue to consumers. For example, if there were a subsequent charge control, in setting its terms, it should be expected that any additional efficiency gains realised by the regulated company in the prior period would feed into lower prices going forward. This may take the form of a glide path between current prices and the new lower costs and/or a one off reduction at the start of the next control.

Competition impacts

A11.16 Many of the wholesale leased lines services we propose to regulate are seen as bottleneck services that CPs cannot easily self-supply or purchase from providers other than BT. By imposing a charge control on those services, we can help ensure that operators have access to reasonably priced wholesale services. They can then combine these with their own networks to enter downstream markets and will be better able to compete in downstream retail markets.

A11.17 There are some wholesale leased lines services that BT does not utilise itself when it provides its own retail services (e.g. BES products are only used by third party providers to backhaul residential broadband traffic). There is therefore a possible risk that BT might discriminate against certain users by raising prices of services that it does not use.

A11.18 If there were no control at all, BT would have far greater freedom to price services differently (subject to wider SMP obligations such as non-discrimination). The introduction of a charge control does not fundamentally alter BT's underlying pricing incentives regarding relative prices. For example, if we apply wide charge control baskets containing a number of services, BT has the flexibility to maintain price differentials between services in the basket while also reducing the average price across services through time. But, as part of charge control design, we have the option of sub-caps on services within our proposed baskets. This has the effect of ensuring that BT does not target the price changes required by the overall basket only on the services it uses and discriminate against services it does not. The charge control can therefore constrain to some extent BT's scope to apply differential charges.

Ofcom's policy options

A11.19 The key regulatory aims of a charge control are to prevent BT setting excessive charges in wholesale markets where it has SMP, while providing incentives for BT to increase its efficiency. The value of X is set so that, by the end of a predetermined period, BT's forecast ('super-normal') profits for those services is reduced to zero, which is the level they would tend to in a competitive market.

A11.20 In considering whether a charge control is necessary, we need to know what the possible range of options looks like for that control (in terms of the restrictions on BT's prices). And in identifying possible charge control options, it generally the norm to start by considering the option of not changing the regulatory framework, either by not introducing regulation or by retaining existing regulation. This sets the baseline against which we can then judge our charge control options and the desirability of a charge control. Therefore, we have set out charge control options against the possibility of no charge control at all.

A11.21 In using a baseline of "no charge control" we need to make some assumptions about BT's likely pricing of leased lines products (i.e. in the absence of charge control regulation). To do this, we assume that BT is able to set monopoly prices reflecting its significant market power (which suggests it can price to an appreciable extent independently of its competitors). And in assuming that BT can charge at the monopoly level, we can determine the maximum likely prices in the absence of the charge control. However, in addition to considering charge controls versus the monopoly price scenarios, one alternative is to apply a safeguard cap (i.e. RPI-0%) on each of BT's SMP products. We have therefore also considered in this impact assessment the potential benefits and costs associated with this option.

A11.22 There also a range of other decisions that we are inviting views upon as part of our consultation document. For example, we are inviting views on the most appropriate view of BT's base year costs that we then use to forecast BT's costs going forward. But our choice over the particular cost assumptions is generally selected on the basis that they will be likely to yield the most accurate forward-looking view on BT's costs of providing leased lines services. As such, we do not think that these judgements over appropriate information to use are "policy questions" that would be informed by our impact assessment. We have therefore discussed these issues in the main body of this document rather than as part of this impact assessment.

A11.23 In this impact assessment, we have therefore focused on a comparison of the following policy options:

- **Option 1:** no charge control regulation

- **Option 2:** charge control with "glide path" used to determine X, no start charge adjustments.

- **Option 3:** a "safeguard" control (i.e. prices of each BT service kept constant in real terms).

A11.24 For Option 2, we are consulting in this document on possible ranges for our values of X of between (0.00 to -7.00%) for the TI basket and (-3.25 to -11.50%) for the AISBO basket. For simplicity, as our base case, we have selected values roughly at the "mid-point" of these ranges. Our assumed values of X for the TI and AISBO baskets are -4% and -8% percent respectively.

Comparison of charge control options

A11.25 As Ofcom's principal statutory duty is to promote the interests of citizens in relation to communications matters and consumers in relevant markets, we have sought to capture the benefits by focusing on the impact of the options based on wholesale prices (which implicitly assumes that any savings are passed onto retail leased lines customers). However, the benefits will also be experienced further downstream of these customers. For example, in retail mobile and broadband customers will potentially benefit from lower charges for wholesale inputs arising from the charge controls options. But we have sought to capture these benefits where possible through our assessment of relevant wholesale market impacts feeding directly through to retail customers.

A11.26 There is a small possibility that the proposed charge control may have an indirect impact on other parties, for example equipment and asset manufacturers (for example, due to increased demand for their products), but we think that the impact assessment should focus on looking at the costs and benefits for those that are affected most directly by the new arrangements.

Analysis of potential welfare effects of different charge control options

A11.27 In this section of the Annex, we seek to provide an indicative view of the potential welfare implications of our different charge control options. One common measure of welfare is the sum of consumer and producer surplus.

A11.28 Consumer surplus is defined as the difference between what consumers are willing to pay and what they are required to pay for the product in question. This can be calculated from the demand curve, which reflects the value that consumers are willing to pay for each additional quantity of the product.

A11.29 Producer surplus is defined as the difference between the revenues gained from the sale of the product and the cost of producing the product. Producer surplus is calculated from the supply curve, which reflects the marginal cost of producing the product.

A11.30 The welfare effects of a change in prices would be made up of the combined impact on consumer and producer surplus. If we were to apply a charge control, the prices that consumers would be required to pay would decline (in real terms). Relative to a no charge control situation, we would expect consumer the surplus to increase. This is because there would now be a larger difference between the price they are required to pay and what they are willing to pay. On the other hand, we would expect producer surplus to decline. This is because there would now be a smaller difference between the charges BT is able to levy for leased lines services and its costs of providing that service.

A11.31 Table A11.1 below presents the results of our modelling of the likely net welfare effects. We have based the results below on a set of key central assumptions. At the end of this Annex, we provide further technical detail on the methodology and assumptions that we have used to estimate the potential welfare impacts of the different charge control options. The estimated welfare effects below on a high-level view of the likely impacts of our three charge control options (i.e. glide path, safeguard caps and no charge control) for the TI and AISBO baskets.

Table A11.1 Present Value of four-year welfare impacts of different LLCC options

NPV	Charge control options	TI basket	AISBO basket
		(All Figures in £ m)	
Consumer surplus	Charge control	2,177	2,347
	Safeguard cap	2,129	2,066
	No charge control	939	1,254
Producer surplus	Charge control	344	875
	Safeguard cap	384	1,034
	No charge control	939	1,254
TOTAL WELFARE	Charge control	2,520	3,221
	Safeguard cap	2,513	3,100
	No charge control	1,877	2,508
Net welfare benefit	Charge control	643	713
	Safeguard cap	636	592

Source: Ofcom, 2008

A11.32 Before discussing the results of the above analysis, it is worth noting that this analysis does come with certain caveats. We have had to make a number of simplifying assumptions in order to provide this central view. Therefore, the above calculations can only provide an indicative hypothetical illustration of the effects of charge control regulation relative to our baseline (i.e. no regulation).

A11.33 The model is sensitive to the assumptions we make about pricing under the no charge control options. For example, we have assumed that BT is able to price at the profit maximising level. While we may have found SMP in the relevant markets, it is extremely difficult to determine how exactly BT would behave in the absence of its charge control obligations (as other SMP obligations would be in place and certain competitive pressures may exist which may restrict its pricing behaviour to a certain extent). We have also made estimates of elasticity of demand and marginal costs for TI and AISBO services (as set out at the end of this Annex), which may also impact on the possible net benefits.

A11.34 On the other side, there are factors that may lead us to under-estimate the potential benefits of regulation. This is because our top-down approach to modelling might not fully capture the ability of an SMP provider to extract additional rents from customers.

A11.35 Nevertheless, the outcome of this modelling exercise (under our central assumptions) suggests clear positive net welfare benefits of charge control regulation relative to no regulation at all. The above tables suggest a net welfare benefit of up to £645 million for directly charge controlled TI services over the duration of the charge control and around £715 million for AI services (as shown in the second to last row of the above table).

A11.36 In respect of the estimated welfare benefits of safeguard cap for TI services are around £635 million (relative to no charge control) reflecting the fact that we used a small negative X applied as our base case for the charge control. However, if we look only at consumer surplus (rather than consumer and producer surplus), there is a larger difference between the charge control and no charge control options (£50 million). For AI services, there is large difference between the sum of consumer and producer surplus under the charge control (at £715 million) and the safeguard cap (£590 million). This larger difference reflects the higher absolute size of the X values applied to these products and services.

A11.37 This estimated benefit relates to the net present value of the benefits accruing over the entire charge control period. The estimates equate to an average net welfare benefit in each year of the control of around £230 million for charge controlled TI services and £255 million for charge controlled AISBO services.

A11.38 The estimated net benefits are relatively high in part because of our assumptions over the counterfactual to the charge control options (which rely on our assumptions about BT's likely revenues if it were able to price at the monopoly level). But, even if we were to assume that BT's prices were lower (under the no charge control scenario) there could still be significant benefits. We could consider, for example, a price scenario under the "no charge control" where BT's prices were only 10 percent higher than its safeguard cap. In these circumstances, this would still equate to an estimated net welfare benefit for the TI charge control of £20 million and £220 million for AISBO services (NB: these figures relate to the NPV of benefits over the duration of the charge control relative to no charge control).

A11.39 To put this into context, the total size of BT's current annual revenues from wholesale leased lines was over £1,200 million last year. This revenue figure reflects past charge control regulation of BT's services (including, in particular, charge controls on PPC terminating segments). If we consider that BT might be able to sustain higher prices (in the absence of any charge control regulations) then this revenue figure could be even higher.

Sensitivity analysis

A11.40 We have carried out some further sensitivity analysis on the key assumptions used in our welfare model. Under our "low estimate" scenario, we applied higher demand price elasticity assumptions (0.75 for TI and 1 for AI services) and higher estimates of the proportion of costs accounted for by marginal costs. Under our "high estimate" scenario we applied lower demand elasticity assumptions (0.25 for TI and 0.5 for AI) and lower estimates of the proportion of total costs accounted for by marginal costs. We have presented the results of this sensitivity analysis in table A11.2 below.

Table A11.2 Sensitivity analysis to show impact of different assumptions

NPV	Charge control options	TI basket		AISBO basket	
		Low estimate	High estimate	Low estimate	High estimate
		(All Figures in £ m)			
Consumer surplus	Charge control	1,595	3,966	1,744	3,552
	Safeguard cap	1,542	3,922	1,472	3,262
	No charge control	713	1,603	957	1,760
Producer surplus	Charge control	308	372	695	1,057
	Safeguard cap	350	411	838	1,249
	No charge control	713	1,603	957	1,760
Net welfare impact of control versus no control	Charge control	477	1,132	525	1,089
	Safeguard cap	467	1,128	396	991

A11.41 Under our alternative scenarios, there is some variation in the potential welfare benefits depending on the assumptions used. But, in general, the welfare benefits of charge controls under a range of scenarios would still be significant. For our "low estimate" scenario there are considerable net benefits of charge controls relative to no charge control (around £475 million and £525million for TI and AISBO services respectively). For the "high estimate", the benefits of a charge control could be around £1,130 million and £1,090 million for TI and AISBO services respectively). In respect of safeguard cap, the estimated net benefits would be £465 million and £395 million for the TI and AISBO baskets respectively under our "low estimate".

A11.42 Therefore, under a range of scenarios, our welfare model suggests that there would be a strong dis-benefit associated with deregulating AI and TI services (i.e. applying no charge control). However, the above modelling has so far only considered the possible effects in terms of consumer and producer surplus. To determine the overall net benefits of our policy options we also need to compare to possible costs of charge controls (relative to no charge control), which we discuss in the following paragraphs.

Other costs of regulation – information and compliance costs

A11.43 Although the above welfare model generally shows a large benefit relative to no charge control, there are some costs in introducing regulation not explicitly included in the above modelling. For example, Ofcom will incur costs in monitoring BT's compliance with a charge control. BT will also have to collect and submit data to show its compliance in each year of the charge control. Although monitoring costs are difficult to quantify, in our view, these costs would be insignificant in relation to our estimates of potential welfare benefits.

A11.44 To get a better feel for possible compliance costs, we have looked at BT's costs of collating, analysing and reporting in other areas where it has to provide financial data. But, as we explain below, we think it is unlikely that the costs of complying with a leased lines charge control would be anywhere near as high. For example, in

Ofcom's Statement "Proposed changes to BT's regulatory financial reporting framework" (dated 31 August 2005)[102], we noted that BT had estimated a £7 million annual (incremental) cost incurred in preparing financial statements (including the external audit of the regulatory accounts). The reporting and compliance costs associated with the leased lines charge control are likely to be far below this figure (as its financial statements are likely to cover many more products and services and in greater detail). And, in any case, for the leased lines charge control, a lot of the financial information required will already be collected as part of these activities. Hence, the additional (incremental) costs of regulatory compliance with a leased lines charge control would be likely to be relatively minor.

A11.45 In any case, even if BT's compliance costs were closer to the above estimate, they would be insignificant in relation to the estimated welfare benefits of the charge control option discussed previously. This suggests that compliance costs would not appear to be a major barrier to introducing a charge control (i.e. Option 1 versus Option 2).

Compliance costs of Options 2 and 3

A11.46 In the case of the costs under Options 2 and 3, BT will still have to demonstrate its compliance irrespective of whether we applied a charge control or safeguard caps. In principle, Option 3 could entail a lower overall information requirement, as BT would only need to demonstrate that it kept its prices constant in real terms. However, this would depend to some extent on the price form of any safeguard control. For example, if we wanted to ensure that the charge control provided BT with some price flexibility (for example by applying the safeguard cap across a basket of services), this would add greater complexity to Option 3 and increase possible information and compliance requirements. We would not therefore expect any necessary material savings in compliance costs if a safeguard cap were used.

Risks and unintended consequences

A11.47 The main risks and possible unintended consequences of the different options relate to the potential impact on BT's finances. In addition, and related to this issue, there is a concern that we might deter efficient investment either by BT or OCPs.

A11.48 We have based our charge control proposals on our best forecasts of the likely possible path of BT's costs. We have taken a forward-looking view of likely changes to volumes, assets prices and likely efficiency savings that BT will be able to achieve over the duration of the control. And in setting out our proposals we have taken into account the possible variations in the inputs to our charge control model.

A11.49 In setting charge controls ex-ante for a defined period there will always be a degree of risk associated with alternative scenarios occurring to the one used to set our charge control. For this reason, we have generally erred on the side of adopting conservative assumptions for the charge control when selecting our proposed range of Xs. As part of our proposals, we are seeking views on our assumptions underpinning these forecasts. We will then base the final values used to set the charge control on our judgement of the most appropriate inputs to our model taking into account responses to our consultation.

[102] http://www.ofcom.org.uk/consult/condocs/regfinch/statement/statement.pdf

Risk of deterring efficient investment

A11.50 A key regulatory risk is that the charge control might deter investment. However, we consider that we have taken this into account in two key respects. First, in modelling BT's likely costs we have tended to adopt reasonably conservative assumptions. Second, we have purposely adopted an RPI-X form of charge control so that it can reward investment in new and more efficient technologies (as BT can keep any efficiency savings associated with new and more efficient ways of providing leased lines services).

A11.51 In respect of the first point, we discuss in Section 3 that, in determining appropriate ranges for BT's WACC, we have adopted a conservative approach. We have been mindful of striking the right balance. On the one hand, there is a danger that setting rewards (in respect of BT's allowed cost of capital) too low could lead to discretionary investment being discouraged. On the other hand, setting rewards too high could lead to consumers paying prices that are too high (or investments that are not fully justified by demand). But, as we are mindful of the potential negative welfare impacts of dis-incentivising investments relative to setting a WACC value too high, we have tended to adopt conservative assumptions. In particular, we tend to favour setting these values used to calculate WACC (such as the so-called equity-risk premium) towards the upper end of plausible ranges. We have therefore allowed for this risk asymmetry by selecting values for parameters towards the top end of relevant range

A11.52 A key investment risk relates to BT's proposed migration in its 21st Century Network. However, our proposed charge controls explicitly account for this by adopting a technology neutral approach. Our current charge control model is based on an assumption regarding a continuing hypothetical network (based primarily around existing technologies). With this cost model in mind, we have set our values of X so that by the end of control the revenues it earns from its leased lines services still allow it to achieve a reasonable rate of return.

A11.53 If BT is able to achieve cost savings over and above this by investing and introducing a new network with a lower cost base, then this will mean a higher level of profitability. Under a technology neutral approach, subject to any other regulatory and competition obligations, BT will still be able to set its prices for the new services up to the maximum implied by the charge control.

A11.54 As a general principle, we think that our proposed charge control options find the right balance between potential risk and rewards. BT can benefit under the control if it manages to increase market share by enjoying lower overall unit costs or if outturn costs are much lower than anticipated when the charge control was set. As the charge control is set for a fixed duration, we would not anticipate seeking any adjustments for such cost reductions for the duration of the charge control. Similarly, in accepting the potential upside benefits of the charge control package, this also means that BT will accept a degree of downside risk.

A11.55 In the case that material and exceptional circumstances emerged beyond BT's control that resulted in it being unable to finance its activities, Ofcom could have the option of adjusting the control. This would not be an option that could be taken lightly however as a key feature of the charge control is that it is fixed for a relatively long period to ensure price stability and certainty. Such action might therefore only be considered for extremely exceptional circumstances not anticipated when the charge control was first set (i.e. over and above known uncertainties around volumes and costs).

Impact on competition

A11.56 We have designed our charge control options to ensure that by the end of the charge control period, the charge BT levies for its leased lines services are broadly in line with what we would expect if BT were to operate in effectively competitive wholesale markets.

A11.57 The services that we propose to regulate largely relate to bottleneck services so that competitors will generally not be able to enter the market unless they could achieve greater scale economies than BT or are much more efficient that BT in the provision of wholesale services.

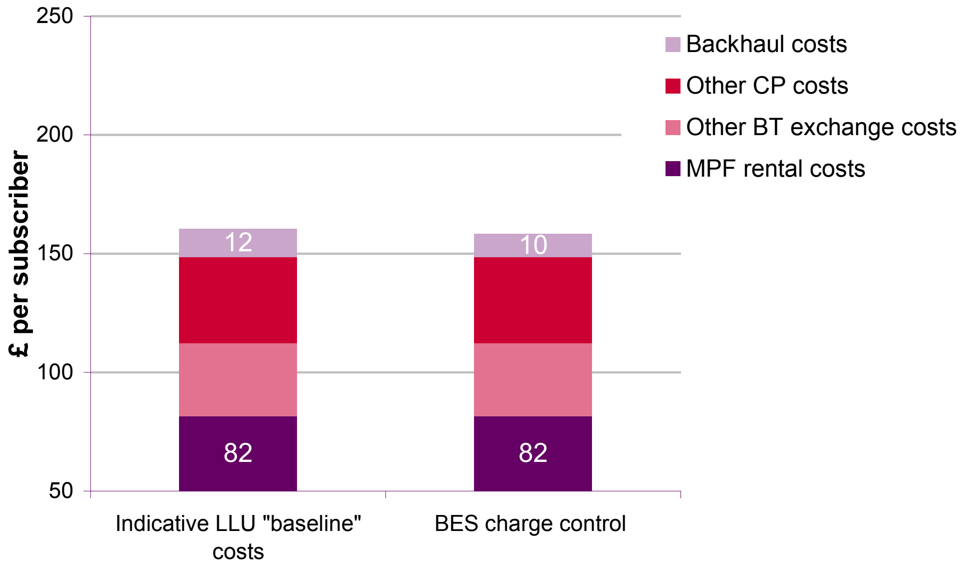
A11.58 However, we do not think that the average reductions in charges required by our charge control would unduly deter efficient competitors from entering the market (i.e. where OCPs can provide similar leased lines services at lower cost).

Impact on broadband markets

A11.59 The above discussion looked at the possible benefits of the charge control for the TI basket and the overall AISBO basket. One of the services in the AI basket is LLU backhaul (which represents around 25 percent of the total base year revenues for the basket). Using LLU backhaul products, CPs can combine this with their own network infrastructure and unbundled local loops to supply downstream broadband markets. Therefore, as part of this impact assessment we have looked at the possible impact of the proposed charge controls on retail broadband markets.

A11.60 Figure A11.1 below updates the analysis presented in the Impact Assessment to our May 2008 consultation on the new pricing framework for Openreach. The analysis in the consultation presented our broad understanding of the costs for an MPF operator. This was based on our own model for LLU costs and shows the main groups of cost inputs for providing MPF based services per subscriber (excluding the cost of calls). We have updated the analysis below to consider how the costs of LLU backhaul might have changed in the final year of the charge control (based on 100 Mbit/s backhaul links). Figure A11.1 presents this first for an average unbundled exchange, which tend to be larger exchanges (i.e. those exchanges with the potential to serve more end-users). Figure A11.1 presents this for a marginal exchange by which we mean an exchange for which the business case for unbundling is finely balanced, which tend to be smaller exchanges.

Figure A11.1 Impact of 100 Mbit/s backhaul price reductions on LLU cost stack at "average exchanges"



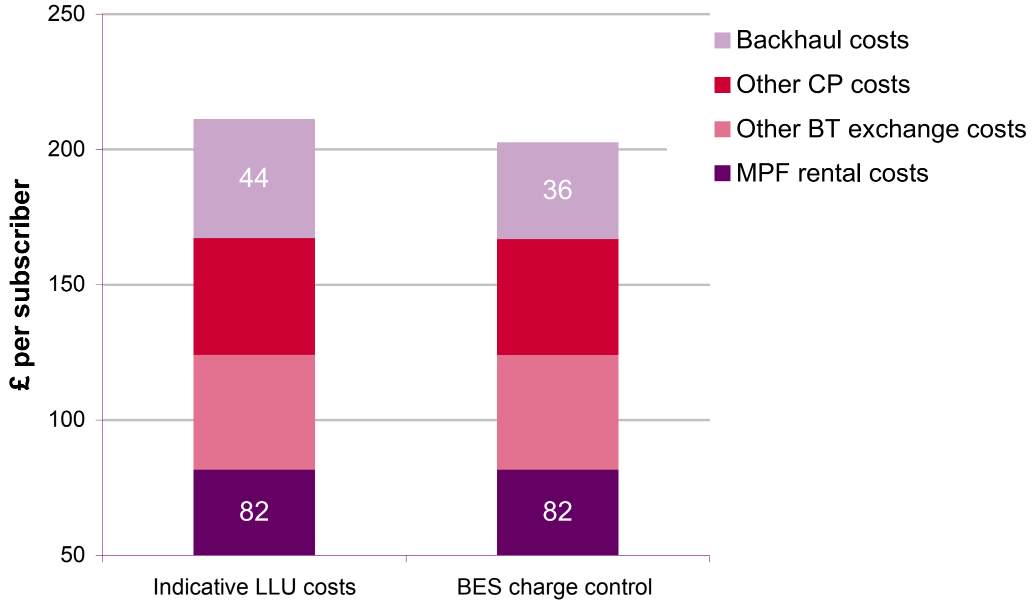
Source: Ofcom 2008

A11.61 The size of the different cost components in Figure A11.1 are only intended to be illustrative. The precise level and breakdown of costs are dependent on various assumptions (e.g. one of the most important assumptions is the market share of the operator).[103] The above analysis suggests that the charge control would have a relative small impact on the wholesale input price at the average exchange (around a 1.5 percent reduction).

A11.62 However, as shown in Figure A11.2 below the impact would be far higher at "marginal exchanges". This is because the backhaul element is far higher part of costs at these exchanges. This reflects the fact that (on a per customer basis) backhaul costs are higher due to fewer opportunities to aggregate together traffic (there are generally fewer potential customers served at these exchanges) and the more remote nature of some of these exchanges (resulting in longer backhaul distances).

[103] Figure A11.1 assumes a reasonably large market share for broadband subscribers. The components of cost other than the MPF rental charge would be greater had a smaller market share been assumed.

Figure A11.2 Impact of 100 Mbit/s backhaul price reduction on LLU cost stack at "marginal exchanges"



Source: Ofcom 2008

A11.63 Figure A11.2 shows that there would be larger absolute savings in total LLU costs at the marginal exchange. Indeed, the savings (in proportion to total backhaul costs at the marginal exchange) would be nearly three times the equivalent saving seen at the average exchange.

A11.64 The potential savings at marginal exchanges could have the impact of increasing the number of exchanges where competition is sustainable (assuming other LLU costs were left unchanged). And by reducing the input prices at the average exchange this could help raise profitability (which might help alternative providers deepen their investment in LLU or further lower broadband prices).

A11.65 For both the average and marginal exchange, the price changes implied by a baseline scenario do not create very large proportionate reductions in total costs. Going forwards, CPs have told us that they are likely to increasingly rely on higher capacity links (up to 1 Gbit/s) to serve the densely populated exchanges. This has the potential to result in larger savings. Note, however, that the control will also apply to circuits up to and including 1 Gbit/s and this will impact on the extent of the savings available going forwards.

Distributional impacts

A11.66 As business customers are the main consumers of leased lines services they would be by far the largest group of final end-users that would benefit from a charge control. In most cases, the users of leased lines can be identified due to the type of product used (i.e. BES for LLU backhaul; RBS backhaul for MNOs; and PPCs and WES services for dedicated leased lines for business customers). Therefore, the distribution of the benefits of the control will reflect the share of each product in total basket revenue as well as any changes in relative prices.

A11.67 There may be scope for different distributional impacts (of charge control relative to no charge control) if competition were to emerge in certain geographies for the TI or

AI services. In these circumstances, the benefits of the control would be greatest in uncompetitive areas. Clearly, in these areas competitive pressure to reduce prices are weakest and they would therefore benefit most from any charge controls.

A11.68 In responding to competition under the charge control, BT would not be prevented from offering geographic discounts. Therefore, relative to no charge control scenario, our proposed charge controls should not prevent it from setting different geographic prices for parts of the UK if competition emerged.

A11.69 There may be different outcomes in remaining non-competitive areas. In the case of no-charge control, BT would have greater scope to set monopoly prices in the non-competitive areas. This could also enable it to set lower prices elsewhere in order to respond to competitive threats. Under our charge control options, we ensure that if BT decides to offer geographic discounts (relative to the national price) these discounts would not contribute towards BT meeting its charge control obligations. As such, BT is required to use the undiscounted charges and report the revenues from such products and services on the basis that BT did not offer a discount. This helps ensure that consumers in all parts of the country can benefit from the reductions required by the charge control. It also means that BT cannot offset higher prices in uncompetitive areas with lower prices in more competitive areas within the charge control.

The preferred option

A11.70 In this impact assessment, we have set out an indicative view of the potential welfare effects of a charge control relative to our baseline option of "no charge control". We note that this analysis has certain limitations and we have therefore not relied exclusively on the results of potential welfare analysis. This impact assessment should therefore be read alongside the discussions of our proposed options in the main body of this document. Nevertheless, we think that both in terms of the direction of any benefit and the magnitudes involved the welfare analysis adds further support to our case for a charge control (as set out in Sections 3 to 5).

A11.71 Under either of the charge control options (Options 2 and 3) there are benefits relative to no charge control option. Our analysis also suggests that the size of the benefit of a charge control relative to safeguard cap is sufficiently significant to suggest that it would outweigh any identified additional costs (e.g. compliance costs of a charge control relative to a safeguard cap).

Technical Detail: Model used to estimate consumer welfare

A11.72 As part of our estimates of the potential retail customer welfare benefits, we have drawn upon on a simple model that we used in the Network Charge Control Review ("NCCR"). This welfare model was used to quantify potential benefits of the charge control in an Annex to that review.[104]

A11.73 In the NCCR, we highlighted that benefits of a particular policy can generally be measured in terms of its impact on the welfare to producers and consumers from the production and consumption of the regulated good or service. One common measure of welfare is the sum of consumer and producer surplus.

A11.74 Consumer surplus is defined as the difference between what consumers are willing to pay and what they are required to pay for the product in question. Consumer

[104] http://www.ofcom.org.uk/consult/condocs/charge/main/ncc.pdf

surplus is calculated from the demand curve, which reflects the value that consumers are willing to pay for each additional quantity of the product.

A11.75 Producer surplus is defined as the difference between the revenues gained from the sale of the product and the cost of producing the product. Producer surplus is calculated from the supply curve, which reflects the marginal cost of producing the product.

A11.76 For analytical convenience, Ofcom assumed a functional form for market demand as follows:

$Q = ae^{-\lambda(p)}$.............................[1]

where ***Q*** is the quantity of the particular service demanded, ***a*** and ***λ*** are parameters, and ***p*** is the price charged for the service. The point elasticity ***ε*** (this measures the responsiveness of demand to a unit change in price) is equivalent to the term: **– *λ p***. Through relevant algebra, consumer surplus ("CS") can be shown to be ***Q* / *λ* .**

A11.77 Producer surplus ("PS") is defined as ***(p-MC) * Q***, where MC is the marginal cost of the product.

Estimating consumer and producer surplus

<u>The charge controlled regime</u>

A11.78 Starting with given values of p, q, and elasticity, it is possible to calculate the parameters **a** and **λ**. Given this, we can then calculate consumer surplus at the assumed level of output as this is based on the value Q / λ. In addition, with values for marginal cost, we can also estimate producer surplus: (p-MC) * Q.

In the absence of charge controls

A11.79 In the NCCR, we modelled the benefits of a charge controlled regime against the absence of charges controls. We also need to undertake a similar comparison in the LLCC impact assessment (i.e. our charge control options against the no charge control option). To do this we have to calculate the price under the no charge control scenario (given our already estimated demand curve).

A11.80 The NCCR noted that if BT's charges were left unregulated, it would be expected that it would act as a monopolist that wished to maximise its profits. The charges that would result from a profit maximising exercise would then be in excess of a long run incremental cost. This would impact both on consumer and producer welfare.

A11.81 In the NCCR, we noted that a monopolist would seek to maximise its profits, which would occur at the point where marginal revenue is equal to marginal cost. Under these assumptions, the monopolist would therefore set the profit maximising price at a mark-up to its marginal cost. This mark-up is determined by **1/ *λ*** .

A11.82 Using the values of **a** and ***λ*** from the previous exercise, the new profit maximising price and quantity can be calculated. The new consumer surplus and producer surplus are then determined from the new prices and quantities.

Calculating the net benefit in each year

A11.83 The change in welfare is the sum of the changes in producer and consumer surplus (i.e. the charge controlled regime against the no charge control regime).

Assumptions

A11.84 Based on the above relationships it is possible to estimate the hypothetical welfare effects of different charge control options under the different proposals. However, in order to determine some of the above parameters we have had to make certain cost/elasticity assumptions.

Marginal Cost

A11.85 Marginal cost estimates are needed to determine the profit maximising price (which is expressed as a mark-up over marginal costs) and producer surplus.

A11.86 However, for the LLCC charge control, this would be a difficult exercise. We are modelling the costs of providing a number of services within a service basket; it is very difficult to bring together all the individual service elements to provide a single view of the "marginal cost" for the overall basket. In any case, BT does not estimate marginal costs for each of its services. But, it does compile cost information described as the Distributed Long Run Incremental Cost (DLRIC) that could in principle be used to derive marginal cost estimates. The DLRIC is the LRIC of the individual service with a share of costs, which are common to other services over BT's "core" network. Due to the significant economies of scale in the network, it is very likely that the marginal cost is lower than the DLRIC figure. We would therefore have to take a view on the DRLIC to marginal cost ratios for each service to use these data.

A11.87 For simplicity, we have instead used a more top-down approach. This takes BT's total costs and considers what proportion of costs are likely to be broadly representative of marginal costs within BT's total cost pot for that basket. To consider this we looked at BT's mix of capital and operating costs (including pay and non-pay items)). This suggested that marginal costs would represent roughly 55 percent of the total cost based on the most likely variable cost items. Given that this is only an approximation, we have run sensitivities on values 10 percentage points above and below this number.

Elasticity

A11.88 In the NCCR, we considered that since the market demand for each of the wholesale services considered was a derived demand, broadly speaking, this meant that we could refer to retail markets to help inform the elasticity of demand at the wholesale level. Given that available estimates suggested retail elasticity of demand was quite low, it was expected that the demand for many of the wholesale services in which BT has enduring SMP would be quite inelastic (by definition the market definition exercise would suggest limited switching). In addition, many services were already regulated so prices might have been quite close to cost. In areas where prices are still above cost, elasticities could be higher. Sensitivities with respect to elasticities we therefore conducted within a range of –0.25 to –0.75.

A11.89 In the LLCC, not all services have been subject to charge control before in the same way as the narrowband services considered in the NCCR. Nevertheless, it is still expected that the demand for many of the services in which BT has enduring

SMP would be quite inelastic. Therefore, for simplicity we have assumed the same elasticities. For Ethernet services, we have looked at a marginally higher range of -0.5 to -1 (primarily to reflect the fact that these services have not been charge control previously). In either case, we considered sensitivities within these ranges.[105]

Volumes/prices

A11.90 For the welfare model, we would ideally use relevant base year parameters for volumes and prices to help determine the demand curve for TISBO and AISBO services. However, our LLCC charge control model forecasts volumes for individual services. These services cover different bandwidths and are expressed in different units (per km, per local end), it is difficult to combine this into a top-down view of "basket volumes", which we could then use in this welfare modelling exercise. In a similar way, it is difficult to determine an "average" basket price in a meaningful manner.

A11.91 To model prices, we have instead used our total basket revenues. We have indexed BT's base year volumes to 1 and then calculated the relevant demand parameters (based on our above elasticity assumptions).

A11.92 We also needed to account for possible changes to volumes over the duration of the charge control. We separated this into those changes that we expected to occur due to exogenous demand factors (which we modelled as exogenous shifts in the demand curve) and those that would be in reaction to price changes (resulting from charge control or monopoly pricing).

A11.93 We used our charge control model to consider how demand might change even if current prices were held constant. As this would represent a shift in the demand curve (i.e. assuming that the quantity demanded would change for each given price) we altered our value of the constant term **a** to account for these shifts.

A11.94 Based on the re-specified demand equations (reflecting the new values of **a** and **λ** assumed to remain unchanged), and the predicted total revenues, it was then possible for each year to calculate a corresponding demand level. This gave us sufficient information to calculate consumer surplus and producer surplus for each year of the charge control and from there we can there compare this against the relevant "no charge control" counterfactual.

Expressing net charge control benefits in present terms

A11.95 Following each of the steps set out above, we were able to calculate producer and consumer surplus estimate for each year of the charge control under each of the Options. In order to express this in terms of a present value, we used a Net Present Value ("NPV") calculation.[106] We based this NPV calculation on a discount rate of 3.5 percent, which reflects HM Treasury's Greenbook recommended value for this discount rate when calculating future costs and benefits.[107]

[105] We note that elasticity may vary along a demand curve. For example, on a linear demand curve, the magnitude of the elasticity increases with price. A profit maximising monopolist will always produce on the elastic part of such a curve.
[106] NPV calculations discount costs and benefits that occur further into the future (relative to costs and benefits that occur sooner) reflecting the so-called Social Time Preference Rate.
[107] http://greenbook.treasury.gov.uk/annex06.htm#Intro

Annex 12

KCOM commitment letter

KCOM Group PLC

Gareth Davies
Competition Policy Director
Ofcom
Riverside House
2a Southwark Bridge Road
London
SE1 9HA

37 Carr Lane
Hull
HU1 3RE

Tel: 01482 602527

28th November 2008

Dear Gareth,

Further to my recent discussions with Serafino Abate with respect to the Business Connectivity Market Review, KCOM can make the following commitment with respect to the provision of services in the "Hull area":

> KCOM commits to providing wholesale low bandwidth AISBO services on reasonable demand from other communications providers. The pricing of the overall basket of such services will be subject to a "RPI-X%" cap, with retail prices as the entry point. The duration of the cap and the value of X are to be agreed, and an initial proposal of a 4 year cap with X=16 is attached. We would also propose that the application of the cap be subject to an audit against the underlying cost base, as documented in our DOCAS in the light of any material changes to our costs or WACC.

If you have any queries, please let me know.

Yours sincerely

Huw Saunders

Huw Saunders
Group Regulatory Affairs and Technology Development Director

Annex 13

Glossary

Accumulated (HCA) depreciation
Totality of deductions made to the original purchase price of a tangible fixed asset to reflect its cumulative consumption since acquisition

Accumulated (CCA) depreciation
Totality of deductions made to the gross replacement cost of a tangible fixed asset to reflect its cumulative consumption since acquisition

Alternative interface symmetric broadband origination (AISBO)
A form of symmetric broadband origination service providing symmetric capacity between two sites, generally using an Ethernet IEEE 802.3 interface

Bandwidth
The physical characteristic of a telecommunications system that indicates the speed at which information can be transferred. In analogue systems, it is measured in cycles per second (Hertz) and in digital systems in bits per second (Bit/s).

Base-station Controller (BSC)
An element of a Mobile Telephone Network that controls a number of radio base-stations

Capital expenditure
Spending on assets that have physical substance and are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes on a continuing basis in an entity's activities

Current Cost Accounting (CCA)
An accounting convention, where assets are valued and depreciated according to their current replacement cost whilst maintaining the operating or financial capital of the business entity.

Customer Sited Handover (CSH)
Interconnection occurs at a communications provider's premises.

Customer Premises Equipment (CPE)
Sometimes referred to as customer apparatus or consumer equipment, being equipment on consumers' premises which is not part of the public telecommunications network and which is directly or indirectly attached to it.

Digital Local Exchange (DLE)
The telephone exchange to which customers are connected, usually via a concentrator

Digital Subscriber Line (DSL)
A technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines

Electronic Communications Network (ECN)
A network that enables intercommunication between users of that network

Excess Construction Charge (ECC)
A charge levied where additional construction of duct and fibre or copper is required to provide service to a customer premise

Fibre Multi Service Access Node
A device typically installed in a telephone exchange (although sometimes in a roadside cabinet) which connects customers' telephone lines to the core network, to provide telephony, ISDN and broadband all from a single platform

Financial capability maintenance (FCM)
The maintenance of an entity's financial capability (i.e. the amount of the shareholders' equity interest) when determining the profitability of an entity

Fully allocated cost (FAC)
An accounting approach under which all the costs of the company are distributed between its various products and services. The fully allocated cost of a product or service may therefore include some common costs that are not directly attributable to the service

Gross replacement cost (GRC)
The cost of replacing an existing tangible fixed asset with an identical or substantially similar new asset having a similar production or service capacity

HCA (historical cost accounting) depreciation
The measure of the cost in terms of its original purchase price of the economic benefits of tangible fixed assets that have been consumed during a period. Consumption includes the wearing out, using up or other reduction in the useful economic life of a tangible fixed asset whether arising from use, effluxion of time or obsolescence through either changes in technology or demand for the goods and services produced by the asset.

In Span Handover (ISH)
Interconnection occurring at a point between BT's premises and a communications provider's premises

kbit/s
kilobits per second. A measure of speed of transfer of digital information

LAN Extension Service (LES)
A communications service that enables the connection of two Local Area Networks together

Leased line
A permanently connected communications link between two premises dedicated to the customers' exclusive use.

Local Loop Unbundling (LLU) backhaul circuit
A circuit provided by BT that enables the connection of a communications provider's DSLAM to a communications provider's point of connection with BT's SDH network.

Long Run Incremental Cost (LRIC)
The cost caused by the provision of a defined increment of output given that costs can, if necessary, be varied and that some level of output is already produced.

Mbit/s
Megabits per second. A measure of speed of transfer of digital information.

Net current assets (NCA)
Total current assets less current liabilities

Net replacement cost (NRC)
Gross replacement cost less accumulated depreciation based on gross replacement cost. An alternative is *Depreciated replacement cost (of tangible fixed assets other than property:-* The cost of replacing an existing tangible fixed asset with an identical or substantially similar new asset having a similar production or service capacity, from which appropriate deductions are made to reflect the value attributable to the remaining portion of the total useful economic life of the asset and the residual value at the end of the asset's useful economic life

Next Generation Network (NGN)
A Network utilising new technology such as Ethernet and IP to provide an array of services to end-users

OCM depreciation
This is the sum of CCA depreciation and HCA depreciation

Operating capability maintenance (OCM depreciation)
The maintenance of an entity's operational capability (i.e. the capacity to produce goods and services) when determining the profitability of an entity

Operating expenditure
Costs reflected in the profit and loss account excluding depreciation financing costs such as interest charges

Partial Private Circuit (PPC)
A generic term used to describe a category of private circuits that terminate at a point of connection between two communications providers' networks. It is therefore the provision of transparent transmission capacity between a customer's premises and a point of connection between the two communications providers' networks. It may also be termed a part leased line

Plesiochronous Digital Hierarchy (PDH)
An older method of digital transmission used before SDH which requires each stream to be multiplexed or demultiplexed at each network layer and does not allow for the addition or removal of individual streams from larger assemblies

Points of Connection (POC)
A point where one communications provider interconnects with another communications provider for the purposes of connecting their networks to 3rd party customers in order to provide services to those end customers

Radio Base Station (RBS) backhaul circuit
A circuit provided by BT that connects a mobile communications provider's base-station to the mobile communications provider's mobile switching centre

Stand Alone Cost (SAC)
An accounting approach under which the total cost incurred in providing a product is allocated to that product

Supplementary depreciation
The additional depreciation charge to convert an HCA depreciation charge into a CCA depreciation charge

Synchronous Digital Hierarchy (SDH)
A method of digital transmission where transmission streams are packed in such a way to allow simple multiplexing and de-multiplexing and the addition or removal of individual streams from larger assemblies

Symmetric broadband origination (SBO)
A symmetric broadband origination service provides symmetric capacity from a customer's premises to an appropriate point of aggregation, generally referred to as a node, in the network hierarchy. In this context, a "customer" refers to any public electronic communications network provider or end user

Symmetric Digital Subscriber Line (SDSL)
A technology that allows the use of a copper line to send an equal quantity of data (e.g. a television picture) in both directions

Tier 1
A tier in BT's SDH network that denotes a network of nodes covering areas of high population. These nodes are connected by very high capacity line systems and denote the BT trunk network.

Traditional interface symmetric broadband origination (TISBO)
A form of symmetric broadband origination service providing symmetric capacity from a customer's premises to an appropriate point of aggregation in the network hierarchy, using a CCITT G703 interface

Wave division multiplexing (WDM)
A technology which multiplexes multiple optical carrier signals on a single optical fiber by using different wavelengths (colours) of laser light to carry different signals. This allows for a multiplication in capacity, in addition to enabling bidirectional communications over one strand of fiber.

Wholesale Extension Service (WES)
A wholesale Ethernet product that can be used to link a customer premise to a node in a communications network

Wide Area Network (WAN)
A geographically dispersed telecommunications network