LLCC PPC Points of Handover pricing review

Proposal for modification of SMP Conditions

Consultation

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Section 1

Executive Summary

Introduction

1.1 In this consultation we reconsider a number of issues remitted back to Ofcom by the Competition Appeal Tribunal ('CAT') following the disposal of the Leased Lines Charge Control appeal ('the LLCC Appeal') on 20 September 2010.[1] The remitted issues relate specifically to the cost recovery approach for Points of Handover ('POHs') used to deliver Partial Private Circuits ('PPCs').

1.2 A POH is a high capacity link, which connects an Other Communication Provider's ('OCP') network with that of BT's and comprises the physical infrastructure (duct and fibre) as well as electronics at both or one end of the link. It is therefore an important component which enables infrastructure based competition.

1.3 BT recovers some of the PPC POH costs from OCPs through a combination of connection and rental charges. BT also levies an additional charge on all circuits delivered over a POH, aimed at recovering that element of costs not recovered via the previous two charges (the 'additional POH costs'). The recovery of these additional POH costs is the subject of this consultation document.

Background to this consultation

1.4 In the 2009 Leased Lines Charge Control Statement (the 'LLCC Statement')[2] we introduced four separate POH charges (the 'New POH Charges')[3] aimed at recovering the additional POH costs. In particular, in paragraph 4.165 of the LLCC Statement we stated that:

- 3rd party POH costs should be recovered via separate New POH Charges;[4]
- the New POH Charges should be included in the TI basket and each charge should be subject to a sub-cap of RPI – 0%; and
- BT was required to introduce these new charges from 1st October 2009.

1.5 On 2 September 2009, Cable & Wireless UK ('C&W') brought an appeal against the LLCC Statement ('the LLCC Appeal') to the CAT under s192 of the Communications Act 2003 ('the Act'). The LLCC Appeal was in relation to Traditional Interface Symmetric Broadband Origination ('TISBO') services. In particular, it appealed the level of BT's original additional POH cost estimates (i.e. £11.7m p.a.) and the cost recovery mechanism.

1.6 On 16 December 2009, the CAT referred to the Competition Commission ('CC') the specified price control matters arising in C&W's appeal.[5] On 30 June 2010 the CC

[1] http://www.catribunal.org.uk/files/1112_Cable_Wireless_Ruling_200910.pdf
[2] http://stakeholders.ofcom.org.uk/consultations/llcc/statement/
[3] See paragraphs 4.165 and 4.166 of the 2009 LLLC statement.
[4] The New POH Charges were set out in Table 4.4 of the LLCC Statement.
[5] http://www.catribunal.org.uk/files/1112_Cable_Wireless_Order_16.12.09.pdf

notified the CAT of its determination ('the Determination') of the price control matters.[6] In relation to POHs, the CC's Determination was that:

- *"...Ofcom erred in its use of BT's estimate of the costs to be recovered by the POH charges..."* (Reference Question 4(a)(i); paragraph 5.2 of the Determination);
- *"...Ofcom erred in concluding that its decision regarding the recovery of POH charges was appropriate for promoting sustainable competition"* ((Reference Question 4(a)(iii); paragraph 5.95 of the Determination); and
- *"...Ofcom did err in giving BT the discretion it did as to future charges for POH..."* ((Reference Question 4(b)(i); paragraph 5.288 of the Determination).

1.7 On 20 September the CAT disposed of the entire appeal[7] and remitted the above POH related issues back to us for further consideration. The CAT required us to do the following:

"...

4. In relation to the error found in Reference Question 4(a)(i), the Tribunal directs OFCOM to assess the reasonableness of the revised BT estimated costs and the determination of the appropriate figure for the new POH charges.

5. In relation to the error found in Reference Question 4(a)(iii), the Tribunal directs OFCOM to assess the various regulatory options for implementing new POH charges in the light of the matters set out in the Commission's assessment of Reference Questions 4(a)(ii), (iii) and (iv) and in a manner which puts OFCOM in a position to satisfy its relevant statutory obligations.

6. In relation to the error found in Reference Question 4(b)(i), the Tribunal directs OFCOM to decide how POH costs should be recovered in the light of the matters set out in the Commission's assessment of Reference Question 4(b)(i).

..."

1.8 In parallel with the appeal process, but separate from it, BT completed its consultation process with industry (including C&W) and notified a new set of charges aimed at recovering the additional POH costs on its revised cost estimate of £6.7m. BT's new charges became effective on 1st July 2010.

[6] http://www.competition-commission.org.uk/appeals/communications_act/final_determination_excised_version_for_publication.pdf

[7] http://www.catribunal.org.uk/files/1112_Cable_Wireless_Ruling_200910.pdf

Our proposals

We propose that additional POH charges should be brought into line with Long Run Incremental Cost (LRIC)

1.9 Following the CC's Determination, we have identified four options for the recovery of the additional POH costs and these are discussed in section 3. These options have been assessed in terms of their costs and benefits, and the extent to which they meet the requirements of the section 88 tests. We have in particular considered the current cost recovery approach based on fully allocated costs ('FAC') against one based on long run incremental costs ('LRIC').

1.10 Our preferred option is a cost recovery approach based on LRIC. This is because a LRIC approach:

- follows the cost causality principle more closely (by only including costs incurred directly to provide POHs); and
- is likely to promote more effective and sustainable competition by only taking into account the costs incurred as a result of OCPs' demand for POHs.

1.11 Although a LRIC approach raises some practical issues regarding implementation, due to the difficulty in obtaining reliable LRIC estimates, we have been able to use results from our bottom-up cost model to generate reasonable estimates.

We propose that Type I POH charges should be reduced immediately to LRIC and that increases in Type II charges should be phased

1.12 We have considered a number of options for the phasing of the adjustments required to bring additional POH charges into line with LRIC.

1.13 In general, charges for Type I POH services are currently well above our estimates of LRIC. We consider that they should be reduced to LRIC with immediate effect, following the publication of the statement setting out our conclusions on these issues, which we expect to be in the summer of 2011.

1.14 The charges for Type II POH services, on the other hand, are well below our LRIC estimates. We propose that these charges should be brought into line with LRIC in two stages, with half the required adjustment taking place with immediate effect, following the publication of our statement on these issues, and the remaining adjustment occurring on 1st April 2012.

1.15 We recognise that this approach will mean that, for a period of several months (from publication of the statement until 1st April 2012), the charges for additional POH services will not, in aggregate, be sufficient to cover the LRIC of providing these services. However, we consider that phasing the price increases for Type II services is desirable because it will give OCPs time to respond to the planned changes (e.g. by moving to Type I POH services), and that BT will be able to recover the shortfall by adjusting its charges for other services within the TI[8] basket.

[8] Traditional Interface.

We propose to set the charges based on LRIC estimates derived from our own bottom-up model

1.16 Following from the CC's Determination we have developed our own bottom-up model ('the Ofcom model') which we have published alongside this consultation.[9] We propose to use the Ofcom model to set the additional POH charges. We consider the estimates derived using our bottom-up model to be more robust than the top-down estimates provided by BT, particularly because the latter have been obtained using very broadly defined increments, and tend to be volatile over time.

1.17 Based on our bottom-up model, we estimate that the costs of providing additional POH costs are between £3.5m and £4.1m on a LRIC basis, with a central estimate of £3.8m.[10]

1.18 In accordance with the above, we propose that BT's charges for additional POH services should be as shown in Table 1 below. The price ranges shown are broadly consistent with the range of cost estimates referred to in paragraph 1.17.

Table 1 Ofcom's proposed new additional POH charges.

Type I POHs (£ per POH)	**SMA-1**	**SMA-4**	**SMA-16**	**Bearer**
BT current charges	£3,435.27	£5,108.81	£8,151.42	£338.07
Proposed charges (Summer 2011)				
- Lower estimate	£616	£716	£2,028	£381
- Central estimate	£648	£753	£2,135	£401
- Upper estimate	£680	£791	£2,242	£421
Type II POHs (£ per circuit)	**Sub 2M**	**2M**	**34M**	**155M**
BT current charges	£103.31	£175.63	£888.47	£1,652.96
Proposed charges (Phase I-Summer 2011)				
- Lower estimate	£119	£202	£1,020	£1,898
- Central estimate	£125	£212	£1,074	£1,998
- Upper estimate	£131	£223	£1,128	£2,098
Proposed charges (Phase II-April 2012)				
- Lower estimate	£139	£236	£1,196	£2,226
- Central estimate	£146	£249	£1,259	£2,343
- Upper estimate	£154	£261	£1,322	£2,460

1.19 We consider that our proposals would meet the section 88 and 47 tests. We set out our reasons in more detail in section 5.

Consultation

1.20 We are seeking comments on the issues set out in this consultation by 23 March 2011. We would be particularly interested in views on the assumptions and analysis set out in sections 3 and 4. Subject to respondents' views, we would then aim to publish a statement in the summer of 2011 with a view of implementing the new prices shortly thereafter.

[9] http://stakeholders.ofcom.org.uk/binaries/consultations/points-handover-pricing/annexes/model.xls
[10] Based on latest POH volumes as of September 2010.

Section 2

Scope and policy objectives

Introduction

2.1 In this consultation we reconsider a number of issues remitted back to Ofcom by the Competition Appeal Tribunal ('CAT') following the disposal of the appeal ('the LLCC Appeal') made by Cable and Wireless UK ('C&W') on 20 September 2010. The remitted issues relate specifically to the cost recovery approach for Points of Handover ('POHs') used to deliver Partial Private Circuits ('PPCs').

2.2 The purpose of this section is to:

- outline the background to the consultation in more detail;
- provide a technical summary of a POH and its key characteristics; and
- discuss the legal framework which supports our proposals in relation to additional POH costs.

Background

The LLCC Statement introduced separate POH charges

2.3 In July 2009, Ofcom published the statement "*Leased Lines Charge Control – a new charge control framework for wholesale traditional interface and alternative interface products and services*" ('the LLCC Statement')[11] which set out our conclusions on the charge controls for wholesale traditional and alternative interface leased lines services supplied by BT in markets which it was found to have Significant Market Power ('SMP').[12] The LLCC Statement concluded on the detailed design and methodology of the charge controls.

2.4 With regard to POHs specifically, the LLCC Statement amended the way in which charges paid by Other Communications Providers ('OCPs') to BT were structured. The previous regulatory regime, set by Oftel in 2002,[13] required BT to recover additional POH costs through an adjustment to OCPs' local end rental charges. This adjustment was known as the "local end adjustment".

2.5 The LLCC Statement replaced the local end adjustment with four separate POH charges ('the New POH Charges').[14] The aim was to increase the transparency of this additional charge to OCPs and allow better monitoring of cost recovery via BT's regulatory financial statements ('RFSs').

[11] http://stakeholders.ofcom.org.uk/consultations/llcc/statement/
[12] See the Business Connectivity Market Review ('BCMR') statement at: http://stakeholders.ofcom.org.uk/consultations/bcmr08/
[13] *Partial Private Circuits, Phase Two - a Direction to resolve a dispute concerning the provision of partial private circuits* - 23 December 2002. http://www.ofcom.org.uk/static/archive/oftel/publications/broadband/leased_lines/ppc1202/direction.htm
[14] The New POH Charges were set out in Table 4.4 of the LLCC Statement.

2.6 In the LLCC Statement we also required BT to introduce, within three months of the publication of the LLCC Statement and following consultation with industry, a new and improved charging mechanism that would incentivise migration to new, aggregated POHs.[15] While BT was developing this alternative charging mechanism, OCPs would continue to be protected by the safeguard cap of RPI-0% imposed by the LLCC Statement on each New POH Charge.

C&W appealed the LLCC Statement

2.7 On 2 September 2009, Cable and Wireless ('C&W') brought an appeal against the LLCC Statement ('the LLCC Appeal')[16] to the CAT. The appeal was specifically in relation to TISBO services.[17] On 16 December 2009, the CAT referred to the Competition Commission ('CC')[18] the specified price control matters arising in the LLCC Appeal.

2.8 The six issues in relation to POHs ('the POH issues') referred to the CC for determination were:

- *"whether Ofcom erred in its use of BT's estimate of the costs to be recovered by the POH charges…"* (Reference Question 4(a)(i));
- *"whether Ofcom erred in not treating promotion of competition as its primary objective and/or erred in its assessment of what the promotion of competition would require…"* (Reference Question 4(a)(ii));
- *"whether Ofcom erred in setting POH charges that are discriminatory, inefficient and/or distort competition…"* (Reference Question 4(a)(iii));
- *"whether Ofcom erred in its assessment of its 'six principles of cost recovery…"* (Reference Question 4(a)(iv));
- *"whether Ofcom erred in giving BT the discretion it did as to future charges for POH…"*(Reference Question 4(b)(i));and
- *"whether Ofcom erred in deciding to set the same charges on SDH and PDH POH and, in particular, in setting charges that are inefficient and discriminatory…"* (Reference Question 4(b)(ii)).

The CC found that Ofcom erred on some POH issues

2.9 On 30 June 2010, the CC notified the CAT of its determination ('the Determination') on the price control matters.[19] In relation to POHs the CC's Determination was that:

- *"...Ofcom erred in its use of BT's estimate of the costs to be recovered by the POH charges..."* (Reference Question 4(a)(i); paragraph 5.3 of the Determination);

[15] See paragraph 4.161 of the LLCC Statement.
[16] http://www.catribunal.org.uk/files/Summary_1112_CableWireless_07.09.09.pdf
[17] 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.
[18] http://www.catribunal.org.uk/files/1112_Cable_Wireless_Order_16.12.09.pdf
[19] http://www.competition-commission.org.uk/appeals/communications_act/final_determination_excised_version_for_publication.pdf

- *"...Ofcom erred in concluding that its decision regarding the recovery of POH charges was appropriate for promoting sustainable competition"* ((Reference Question 4(a)(iii); paragraph 5.95 of the Determination); and

- *"...Ofcom did err in giving BT the discretion it did as to future charges for POH..."* ((Reference Question 4(b)(i); paragraph 5.288 of the Determination).

2.10 The other three grounds for appeal related to POH charges were not upheld.

The CAT issued an order remitting some POH issues back to Ofcom

2.11 On 20 September 2010 the CAT disposed of the entire appeal ('the Ruling')[20] and remitted the decision under appeal to Ofcom with the below directions in relation to POHs ('the CAT Order'). These are as follows:

"...

4. In relation to the error found in Reference Question 4(a)(i), the Tribunal directs OFCOM to assess the reasonableness of the revised BT estimated costs and the determination of the appropriate figure for the new POH charges.

5. In relation to the error found in Reference Question 4(a)(iii), the Tribunal directs OFCOM to assess the various regulatory options for implementing new POH charges in the light of the matters set out in the Commission's assessment of Reference Questions 4(a)(ii), (iii) and (iv) and in a manner which puts OFCOM in a position to satisfy its relevant statutory obligations.

6. In relation to the error found in Reference Question 4(b)(i), the Tribunal directs OFCOM to decide how POH costs should be recovered in the light of the matters set out in the Commission's assessment of Reference Question 4(b)(i).

..."

Following disposal of the appeal we revised BT's SMP Conditions and set up a new policy project

2.12 In response to the Ruling, Ofcom published an amendment to BT's SMP Services Conditions[21] which took effect from 1 October 2010. The two amendments covered in the publication were to reduce the controlling percentage for the TI basket to 1.75% and to reduce the price for 2Mbit/s local end rentals by £116.76.

2.13 We also established a new policy project to look at the specific POH issues remitted to us by the CAT. The objectives of the project are to:

- assess the reasonableness of BT's estimate for additional POH costs;

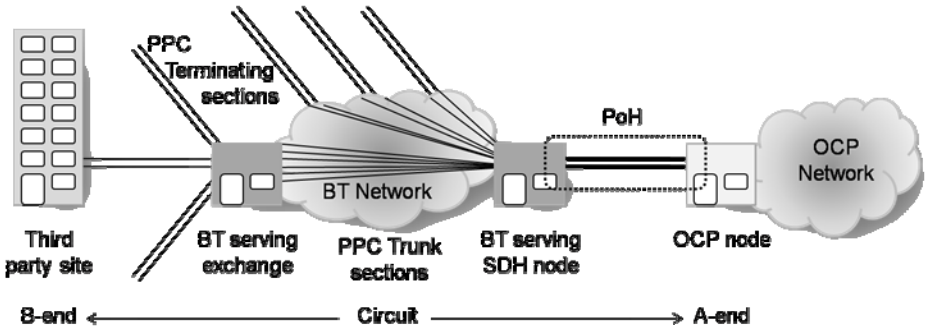
[20] http://www.catribunal.org.uk/files/1112_Cable_Wireless_Ruling_200910.pdf
[21] http://stakeholders.ofcom.org.uk/binaries/consultations/llcc/statement/LLCC_decision_final.pdf

- assess various regulatory options for the recovery of these costs;
- assess the appropriateness of BT's current charging structure; and
- decide how these costs should be recovered going forward and set the level of the additional POH charges.

What are Points of Handover (POH)?

2.14 A POH is one element of a PPC. A PPC provides connectivity between OCPs (other than BT) and an end user, across BTs network. The POH provides a single high speed connection between BT and an OCP for an aggregated group of PPCs.

Figure 1 PPC and POH diagram



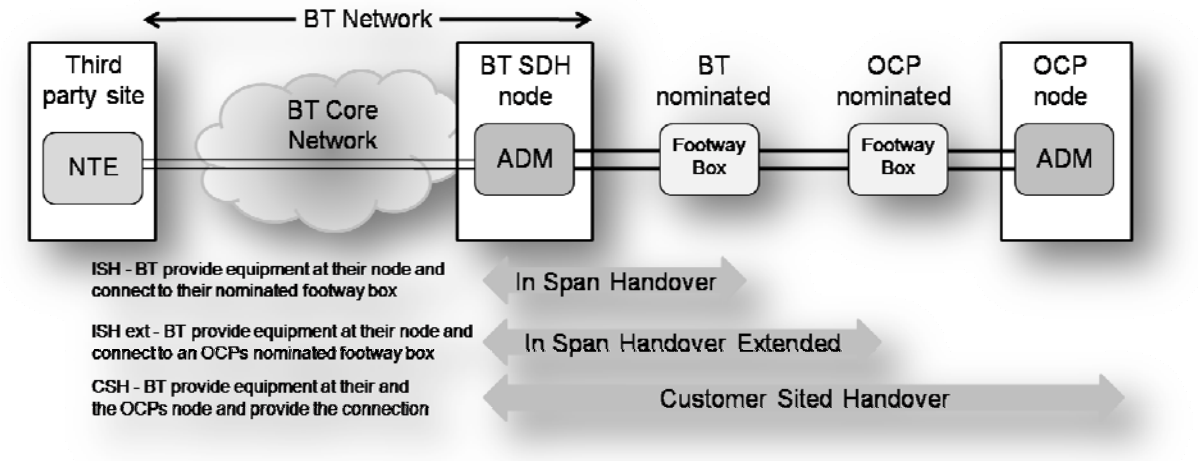
Characteristics of POHs

2.15 POHs have a number of characteristics which could be reflected in the charges and these are summarised in the table below.

Table 2 POH Characteristics

Characteristic	Description
Type	In the LLCC Statement Ofcom categorised POHs as being Type I or Type II. • Type I POHs are those purchased by OCPs on wholesale terms. • Type II POHs are those initially purchased on retail terms and subsequently re-designated as wholesale.
Technology	POHs can be provided using the following technologies: • Synchronous Digital Hierarchy ('SDH'). • Plesiochronous Digital Hierarchy ('PDH').
Bandwidth	POHs can be provided at different bandwidths: • SDH POHs exchange traffic at 155Mbit/s (STM-1)[22], 622Mbit/s (STM-4) and 2.5Gbit/s (STM-16). • PDH POHs exchange traffic at either 4x2Mbit/s or 16x2Mbit/s.
Distance	At present POHs have three physical implementations which are: • In Span Handover (ISH): BT provides equipment at its node and connects to its nominated footway box. • In Span Handover Extended (ISH ext): BT provides equipment at its node and connects to an OCP's nominated footway box. • Customer Sited Handover (CSH): BT provides equipment at its node and the OCP's node and provides the connection.

Figure 2 Types of POHs by distance



[22] Synchronous Transport Mode ('STM'). An ITU-T defined standard (G.783) for a multiplexing hierarchy supported by the BT SMA multiplexers.

2.16 Type II POHs continue to carry retail services as well as PPCs. They can be based on SDH or PDH technology. Furthermore BT noted the following:

- Before PPCs were introduced (in August 2001), BT had sole discretion with respect to the equipment provided at each end of the circuit.
- As the price of the retail private circuit was not dependent on the equipment installed by BT, BT's main objective was to install the POH with the appropriate capacity. If BT expected high volumes, it would have installed high-capacity POH equipment such as SDH. If these volumes did not materialise, BT would bear the costs of the spare capacity.
- When PPCs were introduced, new POH equipment became the responsibility of OCPs and BT had no say in OCPs' choice of technology. From that time onwards, OCPs could choose the SDH configuration which best suited their needs: for example they could choose whether the POH was ISH or CSH, the capacity of the SDH box installed and whether the POH was single or dual fibre working. OCPs needed to forecast their capacity usage at the POH site and plan accordingly, bearing the cost of extra capacity if their forecasts were incorrect.
- An OCP cannot 'migrate' from a Type II PDH POH to a Type II SDH POH. It can however re-designate a Type II SDH POH to be a Type I SDH POH, pay the required maintenance charge and then add new PPCs to it as normal. This will, in turn, give rise to some Type I POHs which carry retail circuits.

Our review is focused on the 'additional' POH costs

2.17 BT recovers some of the PPC POH costs from OCPs through a combination of connection and rental charges. BT also levies additional POH charges, aimed at recovering that element of costs (circa £6.7m in 2009/10 as per BT's original estimates) not recovered via the previous two charges (the 'additional POH costs'). It is these additional POH costs which Ofcom was directed by the CAT to re-consider and which are the focus of this consultation.

We have had regard to a range of policy objectives when reviewing regulatory options

2.18 Our specific policy objectives in reviewing the PPC POH charges are:

- to ensure that BT's cost estimates for additional POH charges are reasonable and do not inhibit OCPs ability to compete with BT in the retail leased lines market;
- to promote efficient and sustainable competition in the delivery of PPC to ensure the market works well for end users;
- to provide regulatory certainty for BT and its customers and to avoid undue disruption;
- to encourage investment and innovation in the relevant markets; and
- to ensure that the delivery of the regulated services is sustainable, in that the prevailing prices provide BT with the opportunity to recover all of its relevant costs (where efficiently incurred), including the cost of capital.

2.19 These objectives have been central to our assessment of the regulatory options and the selection of the proposed approach. Paragraphs 2.20 to 2.35 below discuss how the policy objectives are consistent with our duties and obligations under sections 3 and 4 of the Communications Act 2003 ('the Act'), and other relevant guidance.

We have also had regard to the relevant legal framework

2.20 Since 2003, the regulatory framework[23] has required Ofcom to carry out periodic reviews of competition in communications markets to ensure that regulation remains appropriate and proportionate in the light of changing market conditions. In accordance with Article 16 of the Framework Directive[24], the European Commission ('the Commission') has issued (and subsequently revised and re-issued) a Recommendation on relevant markets which identifies a set of product and service markets within the electronic communication sector, in which *ex ante* regulation may be warranted. The Recommendation of 11 February 2003[25] listed, amongst others, wholesale terminating segments of leased lines and wholesale trunk segments of leased lines as the relevant markets. Subsequently, the Commission adopted the second edition of the Recommendation[26], which removed the market for trunk segments of leased lines from the list of recommended markets.

Section 3 – Ofcom's general duties

2.21 In considering the regulatory options available for the assessment of additional POH costs, we have had regard to our general duties as set out in section 3 of the Act. Section 3(1) states that Ofcom's principle duty is to further the interests of citizens in relation to communications matters and consumers in relevant markets, where appropriate, by promoting competition. Moreover:

- section 3(2)(b) of the Act states that Ofcom must secure the availability throughout the UK of a wide range of electronic communications services;
- section 3(4) of the Act states that we must have regard to the desirability of promoting competition in relevant markets; and

[23] The regulatory framework for electronic communications networks and services entered into force on 25 July 2003. The framework is designed to create harmonised regulation across Europe and is aimed at reducing entry barriers and fostering prospects for effective competition to the benefit of consumers. The basis for the regulatory framework is five EU Communications Directives (together 'the Directives') namely 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'). The Directives have recently been reviewed and amendments were adopted on 19 December 2009 by Directives 2009/136/EC and 2009/140/EC. The amendments will need to be transposed into the national legislation by 25 May 2011, and then apply with effect from 26 May 2011.

[24] Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services (the 'Framework Directive').

[25] See Official Journal of the European Union, 8.5.2003, L114, pages 45-49 at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:114:0045:0045:EN:PDF

[26] 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).

- section 3(5) of the Act states that, in furthering the interests of consumers, we must have regard to choice, price, quality of service and value for money.

2.22 We have taken the above into consideration when assessing the regulatory options and recommending our proposed approach. We have in particular taken into account the need to promote further competition by proposing the most appropriate charging option and the need to further the interests of consumers by ensuring that prices for POHs are cost reflective.

Section 4 – European Community requirements for regulation

2.23 As noted above, our proposals involve Ofcom exercising functions falling under the EU regulatory framework. As such, section 4 of the Act requires us to act in accordance with the six European Community requirements for regulation.

2.24 In summary, these six requirements are:

- 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 associated 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.

2.25 We have taken the above into consideration when recommending our proposed approach regarding the treatment of additional POH charges. In particular, we have focused on the promotion of competition and encouraging network access and service interoperability, which is particularly relevant when considering POH costs and charges.

Section 87 and 88

2.26 Section 87(1) of the Act 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. One of the SMP conditions which Ofcom is authorised to impose on a dominant provider is a price control (section 87(9) of the Act). The price control for TISBO services was imposed by the LLCC Statement, following the completion of the Business Connectivity Market Review ('BCMR') statement.[27]

2.27 Further, section 87(9)(b) also authorises Ofcom to put in place rules in relation to the recovery of costs.

2.28 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

[27] http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr08/summary/bcmr08.pdf

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.

2.29 In addition, in setting the price control, Ofcom must take account of the extent of the investment in the matters to which the condition relates of the person to whom it is to apply (section 88(2)).

Section 47

2.30 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 person;
- proportionate to what the condition is intended to achieve; and
- in relation to what is intended to achieve, transparent.

2.31 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.

2.32 We are satisfied that our proposals fulfil our policy aims and objectives as well as the relevant requirements specified in the Act and relevant Directives. We explain this further in Sections 3 and 4 of this consultation where we discuss our proposed approach to establishing the underlying cost base for additional POH charges.

We have taken into account other relevant guidance

2.33 In addition to our duties listed above, we have also taken into account the following:

- The European Regulators' Group's ('ERG') common position[28] on best practice in remedies imposed as a consequence of a position of SMP in the relevant wholesale leased lines markets (the 'ERG Paper'); and
- The revised ERG[29] common position on the approach to appropriate remedies in the regulatory framework for electronic communications networks and services (the 'ERG Remedies Position').

[28] http://www.erg.eu.int/doc/publications/erg_07_54_wll_cp_final_080331.pdf
[29] http://www.erg.eu.int/doc/meeting/erg_06_33_remedies_common_position_june_06.pdf

2.34 The ERG agreed a Common Position Paper on 1 April 2004 relating to appropriate remedies in the new regulatory framework for electronic communications. 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.

2.35 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, the remedies should assist in the transition to a sustainable competitive market; and
- Remedies should, where possible, be incentive compatible.

Impact assessment and equality impact assessment

2.36 The analysis presented in the rest of the sections and annexes of this consultation document represents an impact assessment, as defined in section 7 of the Act.

2.37 Impact assessments provide a valuable way of assessing different options for regulation and showing why the preferred option was proposed. They form part of best practice policy-making. This is reflected in section 7 of the Act, in accordance with which Ofcom generally has to carry out impact assessments where its proposals would be likely to have a significant effect on businesses or the general public, or when there is a major change in Ofcom's activities. However, as a matter of policy Ofcom is committed to carrying out and publishing impact assessments in relation to the great majority of its policy decisions. For further information about Ofcom's approach to impact assessments, see the guidelines, "*Better policy-making: Ofcom's approach to impact assessment*", which are on the Ofcom website: http://stakeholders.intra.ofcom.local/binaries/consultations/better-policy-making/Better_Policy_Making.pdf

2.38 Specifically, pursuant to section 7 of the Act, an impact assessment must set out how, in our opinion, the performance of our general duties (within the meaning of section 3 of the Act) is secured or furthered by or in relation to what we propose.

2.39 Ofcom is also required by statute to assess the functions, policies, projects and practices on race, disability and gender equality. Equality Impact Assessments ('EIAs') also assist us in making sure that we are meeting our principal duty of furthering the interests of citizens and consumers.

2.40 We have therefore also considered what (if any) impact the issues under consideration may have on equality. We do not consider the impact of the proposals in this consultation to be to the detriment of any group within society. In particular, we do not consider that they will have a differential impact on consumers in different parts of the UK or on consumers with low incomes. PPCs are provided by OCPs using a POH. The ultimate end-users of PPCs are business customers. PPCs which use a POH are supplied via an OCP and charges are published by BT and applied

without prejudice to all OCPs. Therefore, OCPs and end users are subject to the same terms, conditions and pricing for the service.

2.41 We have therefore not carried out separate equality impact assessments in relation to race or gender equality, or equality schemes under the Northern Ireland and Disability Equality Schemes. This is because we do not believe that the proposed policies presented here, which primarily affect wholesale markets, would have a different impact in relation to people of different gender or ethnicity, or consumers in Northern Ireland or on disabled consumers compared to consumers in general.

We have applied our model disclosure principles to this project

2.42 As per Ofcom's model disclosure principles,[30] we start from the presumption that models will be disclosed to stakeholders as part of the consultation process, as far as it is appropriate and proportionate to do so, including taking account of stakeholders' legitimate concerns about confidentiality.

2.43 The model we are including with this consultation was developed by Ofcom to assist with our review of BT's own estimates for additional POH costs. Much of the data used in our model is publicly available. However, we have conducted a thorough examination of all inputs with a view to ensuring that the model does not identify costs or information which might be commercially sensitive.

We have taken into account other Ofcom projects

Wholesale Broadband Access charge controls

2.44 We have also published a consultation document on the Wholesale Broadband Access ('WBA') charge controls which summarises our proposals in relation to the charge control framework for BT's WBA products.[31] In the WBA consultation we have also set out our latest estimates of BT's weighted average cost of capital ('WACC'). We have estimated two rates, one to apply to the copper access services provided by Openreach and one to apply to the "rest of BT". We have used the proposed amended cost of capital for the "rest of BT" to estimate some elements of the additional POH costs. Use of the "rest of BT" rate in setting charges for PPCs was upheld by the CC on appeal.

Replicability review

2.45 In June 2009, Ofcom consulted on a proposal to find that BT's retail low bandwidth digital leased lines can now be replicated by its competitors.[32] Ofcom proposed that, as a result, BT should be given additional pricing freedom in the market for retail low bandwidth leased lines. Because C&W regarded BT's POH charges as a bar to replicability and because these were a central issue in the LLCC Appeal, Ofcom put on hold its review of the replicability and regulation of BT's retail low bandwidth digital leased lines. With the disposal of the LLCC Appeal, Ofcom has been able to restart work on its review of replicability and now proposes to publish its proposals for the replicability and regulation of BT's retail low bandwidth digital leased lines at about the same time as it concludes its review of LLCC PPC POHs.

Outline of the rest of this document

[30] http://stakeholders.ofcom.org.uk/binaries/consultations/784024/Charge_control.pdf
[31] http://stakeholders.ofcom.org.uk/binaries/consultations/823069/summary/condoc.pdf
[32] http://stakeholders.ofcom.org.uk/consultations/low_bandwidth/?a=0

2.46 The rest of the main part of this document is structured as follows:

- Section 3 – considers the various regulatory options for the recovery of the additional POH costs;
- Section 4 –sets out our estimate for the additional POH costs to be recovered and the level of the new additional POH charges;
- Section 5 – applies the relevant section 88 and 47 tests to the proposals set out in sections 3 and 4; and
- Section 6 – sets out the proposed implementation process for the new additional POH charges.

2.47 In Annex 5 we have summarised our review of BT's top-down models. Annex 6 provides a guide to our own bottom-up model, which is published alongside this consultation.[33] Annex 7 contains the proposed Notification of the modification to the relevant SMP conditions.

[33] http://stakeholders.ofcom.org.uk/binaries/consultations/points-handover-pricing/annexes/model.xls

Section 3

Assessment of regulatory options

Introduction

3.1 BT currently recovers the additional POH costs calculated on a Fully Allocated Cost ('FAC') basis from OCPs. One option for future POH charges would be to continue with this arrangement. But there are alternative ways of setting POH charges, some of which may better meet Ofcom's objectives. The purpose of this section is to assess the available regulatory options for the recovery of the additional POH costs and propose a preferred option.

3.2 We have determined four key options which we have assessed against Ofcom's six principles of pricing and cost recovery. We explain in section 5 of this document how our preferred pricing option meets the legal tests of sections 88 and 47 of the Act.

Summary of our proposals

3.3 Following the analysis presented in this section, we propose to set POH charges based on Long Run Incremental Costs ('LRIC'), i.e. Option 4, moving away from BT's current pricing based on FAC, i.e. Option 1. The advantages of the proposed approach are as follows:

- LRIC pricing follows the cost causality principle closely (by including all costs incurred directly to provide POH, but only those);
- LRIC charging would also promote effective competition by only taking into account the costs incurred as a result of OCPs' demand for POH. Our analysis indicates that any advantage gained by OCPs compared to FAC-based charging is likely to be small but could be considered material given the overall additional POH costs; and
- Whilst the proposed approach raises some issues regarding implementation because of the difficulties of obtaining accurate LRIC estimates, we have used our bottom-up model to generate usable approximations.

3.4 In forming and assessing our proposals, we have taken into account the points raised by the CC in its Determination.[34] In this consultation, we are therefore considering and evaluating a number of regulatory options, including a "marginal cost pricing" option. The CC concluded that Ofcom should consider the option of marginal cost pricing for the additional POH charges, amongst others.[35]

[34] http://www.competition-commission.org.uk/appeals/communications_act/final_determination_excised_version_for_publication.pdf

[35] Whilst we have taken into account the Determination in its entirety in relation to POH charges, we consider that paragraphs 5.159, 5.163, 5.183 to 5.184 and 5.206 to 5.208 are particularly relevant.

We have considered various regulatory options for the recovery of additional POH costs

3.5 In this section we consider four regulatory options ('the Options'), including a 'marginal cost pricing' option. These are set out below:

- Option 1: BT recovers costs on a Fully Allocated Cost ('FAC')[36] basis only from OCPs. This is the option implemented by the LLCC Statement;
- Option 2: BT recovers costs on a FAC basis from both itself and OCPs. This would be achieved by spreading the costs of providing POH to OCPs across all leased lines, including those supplied by BT retail;
- Option 3: BT recovers costs on a Short Run Marginal Cost ('SRMC')[37] basis only from OCPs; and
- Option 4: BT recovers costs on a Long Run Incremental Cost ('LRIC')[38] basis only from OCPs.

3.6 The CC in its Determination,[39] commented favourably on the use of marginal costs, but left it to Ofcom to decide how this should be interpreted in practice.[40] In order to keep the number of Options to a reasonable level, whilst limiting the range of possibilities, we have developed two options reflecting different interpretations of the principle that charges should only reflect costs directly incurred in the provision of POHs. In our Option 3, as defined for the purposes of this consultation, we have considered this to mean SRMC, which is our most literal interpretation of the CC's Option 3. In our Option 4, we have taken this to mean LRIC. SRMC and LRIC are two widely used cost concepts[41] and LRIC has particular significance in telecoms regulation. We acknowledge the existence of other possibilities, and we also refer to the concept of "long run marginal cost" in our assessment. But when we refer to Option 3 below we mean SRMC except where otherwise stated.

3.7 Each of the options can therefore be seen as reflecting a key question about how the additional POH costs should be calculated and recovered. In considering Option 1, the key question is whether OCPs should make a contribution to recovery of BT's overheads through the new POH charges. In Option 2, it is whether the additional

[36] Fully allocated cost ('FAC') is an accounting concept whereby all the firm's costs are distributed among the services it provides. The FAC of providing a particular service therefore includes a contribution towards common costs. Here common costs are those which arise from the provision of a group of services, but which are not incremental to the provision of any individual service.
[37] Short run marginal cost ('SRMC') is the cost of producing an additional unit of output in the short run. Marginal cost is a special case of incremental cost where the increment is equal to one unit of output. In the short run some costs are fixed i.e. they do not vary with output over the specified period.
[38] Long run incremental cost ('LRIC') is the cost of producing a specified additional increment of output in the long run, i.e. where all costs are considered variable. The relevant increment may be the entire output of a particular service or group of services. Thus the incremental cost of a service is the difference between the total costs in a situation where the service is provided and the costs in another situation where the service is not provided.
[39] See paragraphs 5.147 to 5.153 of the Determination.
[40] See paragraph 5.159 of the Determination.
[41] SRMC will be familiar to economists as the "marginal cost" which prices should equal in order to maximise welfare. Of course this is only true in the absence of fixed costs or if it is not necessary to recover fixed costs through prices. Hence it is rarely practical to set prices equal to SRMC, particularly in telecoms where most costs are fixed. See also the discussion in paragraphs 3.25 to 3.27 below.

costs should be shared between OCPs and BT, even though BT does not use POHs to supply retail leased lines. There are two key differences between Options 3 and 4, one relating to the time horizon and the other to the size of the increment of output. In Option 3, the increment is a single POH and those costs which are fixed in the short run are excluded. In Option 4, the increment is all POH taken together and the costs comprise the totality of costs incurred in order to provide POHs, including both fixed and variable costs.[42] The questions are therefore whether a short-run or a long-run time horizon is appropriate to the assessment of BT's additional POH costs and whether the appropriate increment of output is a single POH or all POH together.

3.8 All these options are based on the direct cost of POH provision rather than, for example, BT's retail leased line prices minus its retail and other costs not relevant to POH (a 'retail minus' basis). Setting POH charges on a retail-minus basis would be inconsistent with our approach to PPC charges generally. As explained in the LLCC Statement, PPC charges are based on BT's cost of provision (on an FAC basis). We prefer cost-based charges because retail-minus charges would include BT's retail profit margin as well as the costs of providing a PPC. We believe that retail-minus prices would be inappropriate given the level of BT's SMP in leased lines markets and the objective of promoting the sort of competition which would put downward pressure on retail prices. We believe that competition using PPCs will enhance dynamic efficiency, that is, we believe that competitive pressure will lead to service innovation and reductions in costs, even if at first there is some loss of static efficiency (for example because competitors duplicate some of BT's equipment).

3.9 In the analysis set out below, we assess these four regulatory options against the six principles of pricing and cost recovery. We then arrive at a preferred option for the recovery of the additional POH costs.

We have applied the six principles of pricing and cost recovery to POH costs

3.10 The six principles of pricing and cost recovery[43] which are used to structure our analysis are set out below:

- Cost causation – costs should be recovered from those whose actions cause the costs to be incurred at the margin;
- Cost minimisation – the mechanism for cost recovery should ensure that there are strong incentives to minimise costs;
- Distribution of benefits – costs should be recovered from the beneficiaries especially where there are externalities;
- Effective competition – the mechanism for cost recovery should not undermine or weaken the pressures for effective competition;
- Practicability – the mechanism for cost recovery needs to be practicable and relatively easy to implement; and

[42] Or, to put it another way, in the long run all costs are treated as variable.
[43] See "Telephone Number Portability", MMC November 1995. This was the first application of the six principles of pricing and cost recovery.
http://www.competition-commission.org.uk/rep_pub/reports/1995/fulltext/374c1.pdf

- Reciprocity – where services are provided reciprocally, charges should also be reciprocal.

3.11 We think it is important that the six principles of pricing and cost recovery should be read together. On their own, it is possible that some of the principles may imply that a particular set of costs should be recovered in one way and other principles may imply that costs should be recovered in a different way. There are six principles so that, when different considerations point to different methods of cost recovery, there is a framework for reaching a judgement about where an appropriate balance is to be struck.

3.12 We have applied these six principles of pricing and cost recovery in assessing the four options. Use of the six principles is consistent with the CC's Determination. The CC stated that it *'regard[s] the six principles of cost recovery as a useful tool to assist Ofcom in conducting its assessment of whether the setting of any given SMP condition is appropriate for the fulfilment of the objectives set down under section 88(1)(b).'*[44]

3.13 Table 3 below shows a summary of the implications of the six principles of cost recovery for each of the options. For example the table below shows that Option 2, where the charges are based on FAC and paid for by OCPs and BT, performs least well against the 'cost causation' criterion. The principle of reciprocity is not relevant for POHs (because OCPs do not supply PPCs to BT) and therefore is not included in the table.

[44] See paragraphs 5.265 to 5.266 of the Determination.

Table 3 - Summary of pros and cons for each regulatory option.

	Option 1 – FAC OCPs only	Option 2 – FAC BT and OCPs	Option 3 – SRMC OCPs	Option 4 – LRIC OCPs
Cost causation	Consistent with this principle as the costs would be borne by those who cause the activity to take place.	Does not follow this principle as it allocates costs to BT which OCPs have caused to be incurred.	We think that a short run approach to costs is not appropriate in this case as fixed costs would be recovered from users of other services. This is not consistent with cost causation given the long-term nature of POH demand.	Closely correlated to this principle and includes all costs incurred in the provision of POHs in aggregate.
Cost minimisation	BT may have less incentive to keep costs to a minimum. However, this risk is reduced by the RPI-X charge control and safeguard cap of RPI-0% imposed on each POH charge and can be mitigated by using our own cost estimates derived from a bottom-up model.	Encourages BT to minimise costs, but OCPs may have less incentive to consider more efficient POHs if the level of charge is low.	The incentive for BT to minimise POH costs would be comparatively strong under this option as fixed (most) costs would be recovered through charges for other services in the TI basket, including those used by BT.	The incentive for BT to minimise costs may be slightly stronger than under Option 1.
Distribution of benefits	It is consistent with this principle, on a narrow basis, as those who benefit from leased lines will pay for the appropriate POH costs.	Does not follow principle, on a narrow basis as BT/its end users, do not directly benefit from the additional POH but would contribute to the recovery of its costs. Only justified if wider benefits are particularly significant.	Fixed and common costs are recovered from PPC users via the TI basket which is only likely to be justified when wider benefits are significant.	It is consistent with this principle, with common costs being recovered from PPC users via the TI basket.
Effective competition	OCPs are at a competitive disadvantage.	This option removes the competitive disadvantage under Option 1 but BT's own leased line charges may be higher in the long term as they will need to cover some POH costs.	Substantially reduces the competitive disadvantage but BT's own leased line charges may be higher in the long term as they will need to cover some POH costs.	Reduces the competitive disadvantage whilst not requiring BT to recover POH costs though its own leased line charges.
Practicability	Few implementation issues as this is the current cost recovery method.	Possible to implement but would require some costs to be incurred in administering the process.	More difficult to implement, and a number of issues arise including the absence of data on SRMC.	Possible to implement. However there are a number of practical issues which must be addressed in order to create usable LRIC estimate.

Cost causation

We have given significant weight to cost causation

3.14 When regulators set prices they want to ensure that these prices send the 'correct' signals to market participants - in other words, that the prices set will incentivise efficient behaviour. Efficient behaviour across all markets would result in the economy getting the greatest value from the resources at its disposal and so will benefit consumers. Hence one of the legal tests under section 88 is to promote efficiency.

3.15 Efficiency is not just about producing things as cheaply as possible, though that is one aspect of it (and is reflected in the cost minimisation principle). It is also about ensuring that the right combinations of goods and services are produced given the tastes and preferences of consumers and citizens. This type of efficiency is termed 'allocative efficiency'.

3.16 Allocative efficiency is achieved when resources are allocated to producing the goods and services which consumers value most. In market economies, consumers will only purchase a good or service if the value they would obtain from consuming that good or service is at least as great as the price paid. But if prices were less than costs, some services could be purchased when consumers value them at less than it cost to produce them. Allocative efficiency thus requires that the price of a service should reflect the resources used to provide it or, in other words, the costs caused by meeting the demand for that service. That is why we generally attach significant weight to cost causation.

3.17 The costs of POHs are to a large extent determined by the number, capacity, type and location of POHs demanded by OCPs. Following the principle of cost causation will encourage OCPs to minimise these costs, to the extent that they can, and only to demand POHs where the value to them exceeds the cost of provision. Charging at less than this could lead to wasteful use of POHs and hence inefficiency.

Inclusion of overheads is consistent with cost causation

3.18 Above we noted that our four options were connected to four key questions. The question encapsulated by Option 1 is whether BT should be allowed to recover overheads in the additional POH charges.

3.19 The cost causation principle implies that the costs of an activity should be borne by those causing the activity to take place, at the margin. It therefore establishes marginal or incremental cost as the floor or minimum level for a charge to be consistent with the principle. It does not however imply that cost recovery must be limited to marginal or incremental costs. It should be remembered that these are principles of cost recovery and the underlying point therefore is that costs are to be recovered. Common costs are by definition costs which are caused by a group of services, rather than by any single service. If there are costs which are common to a group (or "combination") of services, and these have to be recovered through charges, then the cost causation principle implies that these should be recovered from the services within that group. Hence, even if one service were priced at incremental cost, the "combinatorial" test would still have to be passed for charges to be consistent with the principle of cost causation. We think this is obvious since, if the "incremental cost only" interpretation were applied generally and common costs were not recovered, the business would not be sustainable.

3.20 It will nearly always be reasonable to recover some common costs from each of the services within the group.[45] But this may not be the case where there are significant externalities or wider benefits associated with one or more of the services within the group or where to do so would create a competitive imbalance. Some form of externality, or strong argument that it is necessary to promote competition, will normally be required to justify not recovering any common costs from a service, although in some cases a reduction below incremental cost may be justified if externalities are particularly important. We consider the possible existence of such externalities in our discussion of the distribution of benefits and effective competition principles below.

3.21 The cost causation principle might then be seen as consistent with the use of marginal or incremental cost as a starting point before considering whether, as will usually be the case, more than just marginal or incremental cost should be recovered from a service. Recovering overheads from POH charges is consistent with the cost causation principle because these costs are common to the group of services of which POHs are part and are not recovered in other charges.

3.22 However, other patterns of recovery of overheads, including some in which none are recovered in the new POHs charges, will also be consistent with the cost causation principle, provided they can be recovered from other services within the relevant group. In the case of POH, such alternative allocations are feasible, since overheads could be recovered from other services within the TI basket. In conclusion, setting the additional POH charges on an FAC basis (Option 1) is consistent with cost causation but is not required by it. The other principles may therefore assume greater importance in determining the required option.

Sharing of additional POH costs is inconsistent with cost causation

3.23 POH costs are driven by OCPs wishing to purchase PPCs, which require them to interconnect with BT's network, thus incurring POH costs. As noted above, it is largely the OCPs' choice of the number, capacity, type and location of POHs which determines these costs, and they are incurred each time a new POH is required. By contrast, BT does not require POHs in order to supply a retail leased lined as it will use a single end-to-end circuit. The demand for leased lines from BT's retail customers does not cause POH costs to be incurred.

3.24 We therefore consider that it would be contrary to the principle of cost causation if the additional POH costs were allocated to internal local ends (Option 2). This is unlikely to be justified in the absence of particularly compelling arguments that it is necessary for effective competition. We consider the options against the effective competition principle below.

Long-run definition of costs is appropriate for setting POH charges

3.25 When an OCP purchases a POH, BT incurs some costs in order to provide it. These are the costs which are caused by the demand for POHs. In the short-run however, BT may be able to supply some of the items needed for a POH without incurring any extra costs. For example, it may have spare rack space, or spare space in its exchange buildings which it can use for POHs. Accommodation in particular is likely to be a fixed cost in the short-run. In the long run however, all costs are (by definition)

[45] This is likely to be the case whether one considers economic approaches to recovery of common costs such as Ramsey pricing or conventional "accounting" approaches such as FAC or LRIC+EPMU.

variable and space or equipment which is used to provide POHs could be used for other things, or disposed of.

3.26 In section 4 of this document we identify three major cost categories associated with the provision of a POH. Even without conducting a very detailed examination, it is clear that there are likely to be significant elements of all three categories which are fixed in the short run. Indeed, perhaps only power, in category 2, might be fully variable in the short run.

3.27 We believe that SRMC is not an appropriate basis for setting POH charges. This is because many of the costs of POHs are fixed and would therefore be excluded from POH charges which were set on an SRMC basis. Yet, at the same time, POHs are frequently used over a long period of time. Charging on an SRMC basis for long-term use would mean that POH users would not face the true costs of their usage of POHs. Under Option 3, the fixed costs of POHs, which could be the majority, would be borne by users of other PPC services. We therefore believe that the short-run is an inappropriate time horizon for assessing POH costs.[46]

The relevant increment is all POHs in aggregate

3.28 To recap, incremental cost is the cost of producing a specified additional increment of output. The relevant increment may be the entire output of a particular service or group of services. Marginal cost is the cost of producing an additional unit of output. It is a special case of incremental cost where the increment is equal to one unit of output.

3.29 We consider that the principle of cost causation implies that the relevant increment is all POHs in aggregate. Setting charges on this basis would mean that all the costs directly incurred in the provision of POHs will be borne by POH users, rather than the users of other services. Any costs which are common to a number of POHs will then be recovered through POH charges, but costs which are common to POHs and other services will be recovered entirely from users of those other services. Thus setting charges on the basis of incremental costs means that all those additional costs which are incurred to provide POHs, but no more, are recovered from POH users. Anything less than incremental cost, with the increment defined as all POH, would mean that POH costs would be recovered from customers for services which had not caused these costs to be incurred. This might in some circumstances be justified, but it would require a strong case to be made on the basis of the other principles.

3.30 We stated earlier that we have focused on SRMC (Option 3) and LRIC (Option 4) in our assessment. We also noted that, in theory, it is possible to identify a "long run marginal cost" ('LRMC') which might represent the cost of a single additional POH in the long run. This would differ from LRIC by the amount of any "intra-increment" common costs, that is, costs needed in order to supply POHs in aggregate but which do not vary with the number and capacity of POHs even in the long run.

[46] This is consistent with the Competition Act guidelines "*the application in the telecoms sector*" OFT 417 paragraphs 7.5 to 7.12. Paragraph 7.9 states *"...Setting prices in relation to short run marginal cost would therefore tend to underestimate the costs of supplying telecommunications services, whereas prices that are derived from incremental costs reflect the actual costs of supply".* And paragraph 7.11 states *"...when examining pricing issues in the telecommunications sector, LRIC is generally therefore a more satisfactory cost base than marginal or average variable cost."* http://www.oft.gov.uk/shared_oft/business_leaflets/ca98_guidelines/oft417.pdf

3.31 If we were to consider the price signalling role of POH charges in isolation, we might conclude that a (long-run) marginal cost approach would give POH users better incentives for allocative efficiency. But the assumption of isolation is not realistic. If POH costs are not recovered from POH users, they will have to be borne by non-users. It is more consistent with the principle of cost causation for any intra-increment common costs to be recovered from POH users rather than from non-users. In addition, in practice we think that all the cost items identified in Section 4 will to a significant extent vary with the number and capacity of POHs in the long run. If so, there will be little practical difference between LRMC and LRIC. We do however return to the question of LRMC later, in our discussion of the distribution of benefits principle.[47]

3.32 We are also aware that BT uses POHs when providing the platform interface between its core network and other platforms such as its Virtual Private Networks ('VPNs').[48] Clearly, the costs of these POHs are not caused by OCPs' demand. However, BT has stated that these costs are not part of the PPC POH costs in the RFSs and therefore are not included in the analysis of the charges to be set for external POHs. Furthermore, as we are using our own bottom-up model to assess costs, the costs of POHs used by BT would be excluded in any event.

Conclusions on cost causation

3.33 Options 1 and 4 are consistent with a long run view of cost causation whilst Option 3 takes a short-run view. We consider that a long run basis is more appropriate for defining POH costs. We consider that it would be contrary to the principle of cost causation if the additional POH costs were allocated to internal local ends (Option 2). Accordingly we consider Options 1 and 4 to be preferable to Options 2 and 3 on cost causation grounds. The choice between Options 1 and 4 requires more detailed consideration on the basis of the remaining principles, which is the task of the rest of this Section.

Question 1 Do respondents agree that Options 1 and 4 are consistent with cost causation whilst Options 2 and 3 are not?

Cost minimisation

3.34 This principle requires that the mechanism in place for cost recovery of POHs should ensure that there are strong incentives to minimise these costs. The principle of cost minimisation suggests that costs should be borne by the party in the best position to control them. Usually this is the party which incurs them, which may not be the same as the party which causes them. Where the identity of these parties differs, as here, the implications of the cost causation and cost minimisation principles may also differ. We noted above that the costs – or at least the incremental costs – of POHs were to a large extent determined by the demands of OCPs, which cause the costs to be incurred. BT however actually incurs the costs (pays for the necessary labour and equipment) and is best placed to minimise them given the demands of OCPs. BT's overheads however are largely outside OCPs' control.

[47] Note also that we propose to reflect differences in the long run (marginal) costs of different types of POH in charges. This will increase the efficiency of the charging structure relative to one in which all POH were treated as identical units within a larger increment.

[48] A VPN is a computer network that uses a public telecommunication infrastructure such as the Internet to provide remote offices or individual users with secure access to their organisation's network.

3.35 It is possible to distinguish between BT's incentives relating to costs and its incentives relating to charges. BT has a clear incentive to raise POH charges. This will not only tend to increase its profits, but will also raise its rivals' costs, which is why we control POH charges. Incentives to minimise POH costs are provided by the RPI-X formula, since POH charges are included in the TI basket and in addition are subject to a sub-cap. The standard price cap incentive mechanism then applies and this is true for all the options for POH costs that we consider. However, the incentives provided by the price cap will be attenuated to the extent that BT is able to pass on higher costs in higher charges. Incentives to reduce costs will further be weakened if BT expects future controls on POH charges to be set on the basis of its own costs, and the more so the greater the amount of costs it expects to be allowed to recover in this way.

3.36 In general, the more costs which BT is able to pass through to OCPs in charges, the weaker the incentives on BT to minimise costs and vice versa. If prices are set at SRMC, BT bears all the fixed and common costs associated with providing POHs; with LRIC prices, fixed costs may be passed through but BT still bears common costs, whilst with FAC pricing a share of common costs will also be borne by OCPs.

3.37 As we noted above, SRMC is likely to be low and so Option 3 would tend to lead to more costs being borne by BT and hence subject to stronger incentives to minimise costs. Allowing fixed costs to be passed through to OCPs may to some extent weaken BT's incentive to minimise them, but may give better signals for OCPs to use POH efficiently in the long-run consistent with promoting efficiency as set out in the section 88 tests. Allowing BT also to pass on a share of overheads, as with FAC, would tend to weaken the incentive on it to reduce costs.

3.38 However, we can further reduce BT's ability to inflate costs, even within an FAC framework, through the use of our own bottom-up model (discussed in section 4) rather than relying on BT's FAC estimates. In addition, as BT incurs these costs when interfacing its core networks with VPN platforms there is a further incentive for BT to minimise these costs. This is because they are included in the cost stack of the relevant BT downstream operations, which supply VPNs in a competitive market. Thus, if BT does not keep costs to a minimum then it would dampen its own competitiveness in the VPN market where it competes with OCPs.

3.39 Under Option 2, BT would also bear the cost of POHs and this would provide it with an incentive to keep costs to a minimum. However, as part of the cost would be recovered from BT, this could reduce the incentive for OCPs to minimise costs. This in turn could lead to static inefficiency which, unless it was outweighed by dynamic efficiency benefits, would not meet the section 88 test to promote efficiency.

3.40 Thus from the point of view of the incentive on BT to minimise costs, the differences among these options are likely to be small. Option 4 may provide marginally stronger incentives on BT to minimise costs than Option 1 whilst Options 2 and 3 do relatively well against this principle as they result in a greater share of the costs being borne by BT.

Conclusions on cost minimisation

3.41 As we can use the price cap to give BT an incentive to minimise costs whichever option for the recovery of additional POH costs is adopted, we think the way the options affect the incentives on OCPs to use POH efficiently is likely to be more important to our assessment. We therefore attach a higher weight to the cost causation principle than to the cost minimisation principle in this case. We noted

above that Options 1 and 4 were consistent with the principle of cost causation but Options 2 and 3 were not. Option 4 is, to the extent that there is any material difference, preferable to Option 1 on cost minimisation grounds. Taking the two principles together, we think they suggest that charges should be based on LRIC (Option 4). OCPs will then face the costs which they cause and can effectively minimise, but not BT's overheads which they largely cannot influence.

Question 2 Do respondents agree with our analysis of cost minimisation and with our view that we should give more weight to cost causation?

Distribution of benefits

3.42 Under this principle, POH costs should be recovered from the beneficiaries of the provision of POHs. Here there could be two main types of beneficiaries, those who benefit directly from the connectivity between defined business sites, and those who benefit indirectly from the wider interconnectivity associated with BT's Public Switched Telephony Network ('PSTN') and OCPs' equivalent telephony networks. A further potential source of benefit is enhanced competition, which may benefit users of PPCs and leased lines generally. Where competition and other wider benefits are very significant, there may be a case for prices to be below LRIC or even marginal cost.

3.43 We consider that because PPCs are, by definition, private - used to convey voice and data traffic between sites belonging to a single customer - there are unlikely to be any significant indirect connectivity benefits to users other than the PPC customer.

3.44 We have also considered whether there could be some benefit to other users from additional competition under some options. When considering the extent of competition benefits and their implications for cost recovery, it is helpful to distinguish between the costs of enabling a service to be offered (systems set-up costs) and costs incurred to provide that service to an individual user. In a number of instances we have required that BT recover system set-up costs from all customers including its own. For example, in its 1995 report on number portability, the Merger and Monopolies Commission ('MMC')[49] concluded that the costs of the systems needed to enable number portability were to be recovered from all customers, on the grounds that all customers would benefit from an increase in competition resulting from the introduction of number portability. However, per line costs were to be recovered from the recipient operator because the benefits were felt to accrue to the porting customer without a material effect on competition.

3.45 If we were to consider only the additional competition benefit arising from the provision of a single additional POH, and not any aggregate effect on competition from POH charges, then we might well conclude that this, similarly, was unlikely to be material. Viewed in this way, there would then be a good case for POH users to bear at least those POH costs which are incurred on a per operator/per circuit basis.

3.46 This would then suggest that OCPs should bear at least the costs caused by the demand for an individual POH (which they might then pass to their PPC customers). The concept which most closely corresponds to this view of the cost which, at a minimum, OCPs should bear is LRMC. Earlier, we distinguished between LRMC and LRIC on the basis that the latter includes intra-increment common costs which are excluded from the former. In some circumstances, such intra-increment common

[49] http://www.competition-commission.org.uk/rep_pub/reports/1995/fulltext/374c1.pdf

costs might be viewed as akin to system set-up costs and, if competition benefits were sufficient to justify it, recovered from all PPC and leased line users on distribution of benefit grounds. A strong competition-based case would be needed however, because non-POH users do not cause and get no direct benefit from POH costs. In any case, in practice we do not think this distinction is material as few of the additional POH costs appear to be invariant to the number and capacity of POHs used in the long run. We therefore think that Option 4 (LRIC) will be consistent with the distribution of benefits of principle and in any case is more so than Options 2 and 3.

3.47 Under Option 4, (inter-increment[50]) common costs would not be recovered through POH charges and so a greater share would then have to be recovered from all PPC users through increases to other charges within the TI basket, when compared with Option 1. In itself, this is consistent with the distribution of benefits principle as OCPs will bear the costs which directly benefit them (the incremental POH costs) whilst the common costs incurred in providing POHs, PPCs and other services are borne by all the users of these services. Whether Option 4 is more consistent with the distribution of benefits principle than Option 1 depends on the weight given to the wider benefits of enhanced competition. We discuss the competition benefits of the four options under the heading of "effective competition" below; for now we note that, as POH charges are only paid by OCPs, lower charges will tend to be pro-competitive. Thus, compared to Option 1, Option 4 gives some additional weight to competition benefits since POH users will make no additional contribution to common cost recovery through POH charges.

3.48 It should be noted that the effect of putting some common costs back into the basket would mean that OCPs are likely to contribute at different levels to the recovery of these common costs. However, OCPs in aggregate will benefit, as BT will now pick up some these common costs.

Conclusions on the distribution of benefits

3.49 The main beneficiaries of POHs are the POH users themselves. Option 4, under which POH users would bear the LRIC of POHs, is therefore consistent with the distribution of benefits principle. Inclusion of common costs in charges, as under Option 1, is not necessarily inconsistent with the distribution of benefits principle. However, in the case of the additional POH costs, we believe that some weight should be given to possible benefits to competition from lower POH charges. For this reason Option 4 may be somewhat more clearly consistent with the distribution of benefits principle than Option 1. In the absence of strong externalities, there is unlikely to be a good case for pricing below LRIC on distribution of benefits grounds and hence Option 3 is unlikely to be preferable to Option 4. Similarly, absent strong externalities, Option 2 would not be consistent with the distribution of benefits principle.

Question 3 Do respondents agree that Option 4 is most consistent with the distribution of benefits principle?

[50] By *inter*-increment common costs we mean costs which are common to POHs and other BT services, including other PPC services. The term is used here to emphasise the distinction between such costs and *intra*-increment common costs as defined in paragraphs 3.30 and 3.46.

Effective competition

What we mean by effective competition and the role of PPCs in promoting it

3.50 Any cost recovery mechanism must not undermine or weaken the pressures for effective competition. By effective competition, we mean competition which will benefit consumers by bringing down costs and prices and which will be sustainable in the long-run where competition takes place on the merits. In a market which is effectively competitive, no operator will have SMP (by definition) and so supply in an effectively competitive market will not be subject to *ex-ante* regulation.[51]

3.51 Underlying our approach to POH and other PPC charges is our view that the consumer interest is served if we promote competition at the deepest level at which it is economic. Consistent with this objective, the PPC regime was designed with the aim of encouraging OCPs to invest in their own infrastructure. We emphasise that PPCs are not intended to support only downstream competition, in markets for retail leased lines, with OCPs simply reselling wholesale inputs purchased from BT. PPCs exist to support infrastructure-based competition at both upstream and downstream levels. Partial private circuits are available to enable OCPs to offer end to end circuits using parts of their networks and parts of BT's network in areas where they have not yet built out. Over time, however, the PPC regime is intended to encourage OCPs to expand their own networks and reduce their reliance on services bought from BT. Indeed this has happened and some wholesale leased lines markets have been found to be effectively competitive.

3.52 PPC charges therefore tend to reward those operators which invest more in competing infrastructure. Some operators are more dependent on BT's infrastructure than others, particularly outside the trunk market. Other OCPs have invested more in their own local infrastructure and it is important, we think, to encourage that sort of infrastructure competition as well. Therefore, in setting POH charges we consider the objective of promoting effective competition at both upstream and downstream levels.

Assessing the Options for additional POH charges against the effective competition principle

3.53 If POH charges are only paid by OCPs, this will put them at a competitive disadvantage to BT's downstream operation which does not need to use POH in order to provide retail leased lines. If our only concern was to be to create a level playing field for OCPs, then this could suggest that there should be a zero charge for POHs. In general, OCPs will be at a greater disadvantage, the greater the amount of costs which BT is allowed to recover through POH charges. Setting charges on a FAC basis will therefore place OCPs at a greater disadvantage than if charges were set on a LRIC or SRMC basis.

3.54 If our objective was to give the maximum help to BT's competitors, we might therefore rank our Options 2 and 3 ahead of Option 4, with Option 1 last. But helping competitors is not the same as promoting effective competition, in the sense in which we define it above. We must assess the Options on the basis of their impact on effective competition rather than simply the benefit they offer to OCPs.

3.55 In the short run, the extent to which the OCPs' cost disadvantage translates into an effect on competition and on the ability of BT's competitors to enter retail leased line markets depends, not just on the wholesale cost of PPCs (still less on the POH

[51] Except for General Conditions where these apply.

charge in isolation), but on the margin between BT's retail leased line prices and entrants' costs, including the costs of any PPCs which they purchase from BT. If BT's retail prices are above entrants' costs, and are expected to remain so, entry will occur. Indeed it is possible that some of this entry may be inefficient in the short-term because entry by OCPs whose incremental costs are higher than BT's may be profitable. However we believe that competition using PPCs will enhance dynamic efficiency, that is, we believe that competitive pressure will lead to service innovation and reductions in costs, even if at first there is some loss of static efficiency (for example because competitors need to install POH or duplicate some of BT's equipment).

3.56 In the long-term we expect and want competition to drive prices to the level of an efficient operator's costs. We expect BT to be forced to become efficient. However, it is intrinsically more efficient to deliver an end-to-end service, as BT does, than to interconnect using PPCs and POHs. Raising BT's end-to-end costs by including POH costs could therefore tend to increase prices to consumers and this could be inconsistent with the goal of effective competition.

3.57 A good starting point in assessing our Options against the effective competition principle is therefore to ask which is most consistent with minimising the upward pressure on BT's prices. For this to be the case, OCPs will have to bear the costs of any static inefficiency they impose and, in particular, the additional costs of POHs which they need in order to use PPCs. Option 4, in which OCPs bear the LRIC of POH, is most consistent with this. Under Options 2 and 3, BT and its customers would also bear some of the costs of static inefficiency caused by OCPs. Under Option 3, BT would bear the fixed costs of POH, which could be the majority, whilst under Option 2, BT would bear a share of the FAC. On the other hand, under Option 1, OCPs would bear the LRIC and in addition make a contribution to BT's overheads, tending to reduce the share of overheads borne by BT itself.

3.58 A further reason for regarding Option 4 as, as a starting point, most consistent with the effective competition principle is that it appears more likely to give correct "build or buy" incentives than the others. In order to supply a leased line, an OCP may have a choice between using a PPC plus POH and extending its own network. Were access to BT's network to be granted at less than incremental cost, the incentive on operators to extend and invest in their own network infrastructure would be reduced. OCPs might choose to use a PPC plus POH even when this was in fact the higher cost solution. Moreover, operators who rely more on BT could be given some advantage relative to those whose entry is based on their own plant and equipment.

3.59 We have however considered whether the wider benefits of competition could justify a stronger stimulus, such as would be provided under Options 2 and 3. This would only be the case if there were sufficient prospect of offsetting dynamic gains from increased competition to ensure that consumers overall would benefit.

3.60 It is not possible to quantify the possible dynamic impacts of implementing Options 2 and 3. What we do instead is assess them qualitatively in the light of the existing and expected future state of competition, as we explain below.

3.61 Currently, the only retail leased lines market where BT still has SMP is that for low bandwidth traditional interface leased lines.[52] Effective competition exists in the other markets and this has developed while charges for POH have been set on a FAC

[52] http://stakeholders.ofcom.org.uk/consultations/bcmr08/

basis. Of course, this does not necessarily mean that sustainable (i.e. efficient) competition could not be further enhanced even in markets for high bandwidth leased lines. But it does weaken the case for further promotion of competition as in Options 2 and 3, where to do so would be at variance with the other principles of pricing, especially that of cost causation.

3.62 Some wholesale markets are competitive but most are not. In principle, therefore, enhancing competition at the wholesale level could yield significant benefits. However, the effect on wholesale competition of setting POH charges below LRIC is somewhat ambiguous. Whilst lower charges would benefit OCPs, they could encourage them to rely to a greater extent on BT's network, rather than investing in their own infrastructure. Moreover, TI markets are in long-term decline, so the prospects for further investment in competing TI infrastructure are perhaps limited and unlikely to be significantly affected by reducing POH charges below LRIC. PPCs are currently being replaced by Alternative Interface Symmetric Broadband Origination ('AISBO')[53] services, which are already provided on an equivalence of inputs ('EOI') basis, which means that BT is required to use the same wholesale inputs as OCPs.

3.63 On balance, we believe that moving from a FAC to a LRIC basis for calculating additional POH costs will promote effective competition. We think there is a good case for setting charges which will tend to promote competition where this is also consistent with Ofcom's other principles of pricing and cost recovery. However, when seen in the light of the existing and expected level of development of competition, there is no strong case to widen the available margin by setting POH charges at less than incremental cost, particularly where to do so would be at variance with the other principles. Indeed, to the extent that it would make any material difference at all, such a step could tend to support inefficient entry by firms whose costs are higher than BT's and which would not be sufficiently offset by increased pressure from competition to reduce costs over time.

Materiality

3.64 Finally in this section we briefly consider the materiality of the reduction in POH charges expected to result from setting new POH charges on a LRIC basis.

3.65 As discussed above the competitive disadvantage to OCPs will be greater under FAC than LRIC. We have used the Ofcom model, as discussed in detail in section 4, to estimate the cost saving for OCPs that would apply if LRIC rather than FAC was used as the basis for setting charges.

3.66 According to the Ofcom model, the additional POH costs on an FAC basis amount to approximately £4.9m. As described below, this figure is partly based on BT's wholesale charges and so we have estimated the LRIC of POHs by applying an appropriate LRIC/Price ratio. We have applied a LRIC/Price ratio of 70% to the BT charges we have used in our bottom-up model (see section 4 for a more detailed discussion).

3.67 Based on this LRIC ratio, the common cost element within the Ofcom model is approximately £1.1m.

[53] Alternative Interface Symmetric Broadband Origination ('AISBO'). A form of symmetric broadband origination service providing symmetric capacity between two sites, generally using the Ethernet IEEE 802.3 interface.

3.68 However, as the common costs will be recovered from the TI basket not all of the cost savings will be realised by the OCPs. We have estimated the proportion of the POH charge reductions which would be passed back to OCPs through increased charges for other services, based on BT's total population of 2 Mbit/s local ends, which we use as a proxy for PPC circuit numbers. The total volume of 2 Mbit/s local ends was 179k as per BT's RFSs in 2009/10, of which 55k was external. When this is taken into account the total cost saving for OCPs is approximately £760k.[54]

3.69 Thus, based on our model, it appears that a move to LRIC pricing could have a material, if small impact, which is likely to be to the benefit of POH users and their customers.

Conclusion on effective competition

3.70 We believe that calculating additional POH costs on a LRIC basis is most consistent with the principle that "the mechanism of cost recovery should not undermine or weaken the pressures for effective competition." We believe that, as a result, the competition which will develop is more likely to be "effective" competition, by which we mean competition that in the long term minimises the costs incurred in delivering services and therefore the prices to consumers.

Question 4 Do respondents agree that Option 4 is most consistent with the effective competition principle?

Practicability

3.71 The mechanism for POH cost recovery needs to be practicable and easy to implement. Option 1 is the current approach and experience suggests it is practicable. BT is able to provide FAC data and these can readily be used to set charges: there is no practical difficulty provided the data are fit for purpose. Whilst there have been problems with the accuracy of BT's FAC data, work has been done to try and address these issues (as discussed further in section 4) by creating our own bottom-up cost estimates. It is practicable to use this to generate estimates of the additional POH costs on an FAC basis. As such neither Options 1 nor 2 create any particular practicability problems.

3.72 During the appeal, we identified some practical difficulties which would arise if we did not use FAC to set POH charges. Firstly, if some services are to be charged at marginal or incremental cost then, for this to be practicable and consistent with overall cost recovery (and hence sustainable), this category of services needs to be both strictly limited in scope and clearly defined. This definition needs to be based on objective criteria.

3.73 We stated that any attempt to "isolate" POH charges which is not objective, that is, which is not based on objectively observable differences between POH and other services, would inevitably result in disputes and claims that other services should be treated in a similar manner. One possibility, in theory, would be to establish a principle that services which are only purchased by OCPs, and only these services, should not bear any allocation of common costs. We noted that POH circuits are not

[54] This takes the £1.1m common costs set out in paragraph 3.67 and the proportion of external local ends as a factor of all local ends and applies this factor to the common cost element. This gives the total cost savings for OCPs.

the only services which might be placed in this category. There is potentially quite a broad set of services which are only purchased by OCPs.

3.74 However, such a rule may be impracticable for a number of reasons. We argued that it is likely to be difficult to define the category of services to which it should apply in a way which avoids unintended consequences for charges for other services.

3.75 The second main difficulty we identified is the risk of gaming. Suppose we were to require that any service which was purchased only by BT's competitors should be priced at incremental cost. If the implication was that, if BT bought one unit of the service, the charging basis would switch to fully allocated cost, BT would have a clear incentive to make sure it bought at least that one unit. This would defeat the object of the rule and introduce inefficiency into the way BT supplies its own customers.

3.76 Having considered these practical difficulties further, we now believe that, while they are genuine concerns, they are not insuperable obstacles to setting POH charges on a basis other than FAC. However, we do not propose to adopt a new principle of charging and apply it generally now, partly for the reasons set out above. But we note that, if we reject Option 1, such a change to our pricing principles may need to be extended to all POH services and we will consider this matter further in our next review of the leased lines charge controls.

3.77 It is also possible that we would decide to apply such a regulation to products and services outside the leased lines market, after a review of the relevant market. We would consider the merits of this approach on a case by case basis.

3.78 We have identified a number of other issues regarding practicability which arise under Option 4. The available LRIC estimates are only approximate.

- BT has estimated the LRIC of the additional POH costs by applying LRIC/FAC ratios to its FAC estimates for the additional POH costs. We have some concerns about this approach. Firstly, BT's FAC estimates for these costs show a degree of fluctuation. Secondly, BT's LRIC model derives data from the same financial costing base as used in its FAC model and therefore may inherit some of the volatility seen in the FAC model outputs. Thirdly, the main increments defined in BT's LRIC model, from which BT's proxy calculations are derived, are much broader than just the provision of POH services. We discuss BT's LRIC estimates in more detail in section 4 and Annex 5.

- Although a bottom-up approach, such as the Ofcom model, can be well suited to producing estimates of incremental costs, as explained in section 4, we have had to rely, in part, on charges from BT's Carrier Price List ('CPL') for some key inputs and these may include some overheads. We have therefore had to estimate an appropriate LRIC/Price ratio for these services, which we have estimated to be around 70%. We have applied this factor to the inputs which come from the CPL. In using the LRIC/Price ratio of 70% we accept that this is a practical and reasonable compromise made in order to expedite the setting of new charges on a LRIC basis.

3.79 At this stage we have not carried out a detailed assessment of the practicability of Option 3, but note that we do not currently have an estimate of additional POH costs on a SRMC basis. Nor, at present, would it be possible to devise a "practical compromise" along the lines of the method used to generate LRIC estimates from our bottom-up model.

3.80 We also note that Option 3 would be subject to the gaming and consistency issues described above and that the incentives for gaming would be stronger under an SRMC regime than under a LRIC regime.

Question 5 Do respondents agree with our analysis of practicability?

Conclusions

3.81 The charges under Option 1 are based on FAC and paid for by OCPs. It is the current methodology used. It is consistent with the principle of cost causation. It follows the distribution of benefits principle, although less closely than Option 4 and it is practicable. Although BT has less incentive to minimise costs than under the other options, BT's ability to load common costs onto POH services is subject to the restraints of the caps imposed by the current leased lines charge control and by the conventions of reasonable cost accounting. In addition, our use of a bottom-up model in preference to BT's own FAC data reduces BT's ability to inflate costs. However this option leaves OCPs at a greater competitive disadvantage, relative to BT, than the other options.

3.82 BT would have a relative strong incentive to minimise costs under Option 2. However, this option is inconsistent with the principles of cost causation and distribution of benefits, in the absence of strong externalities. Whilst it provides more help to competitors than Option 1, this is also true of Options 3 and 4, and we think Option 4 may be more consistent with the promotion of *effective* competition as we define it. In current circumstances we do not believe that there is a good case for adopting Option 2 in order to promote competition, given that this would be inconsistent with the other principles, particularly that of cost causation.

3.83 We reject Option 3 as we believe that a long-run rather than short-run measure of cost is appropriate. Setting charges on a short-run basis or spreading costs over all lines would mean that OCPs did not bear all the costs caused by their individual demands and that could encourage inefficient use. At the same time, the competition benefits of an individual additional POH are likely to be negligible, and even considering POH in aggregate we do not think there is sufficient justification for a departure from the principle of cost causation on competition grounds. We believe that OCPs should therefore bear all the costs caused by their demand for POH in the long run, and that the options most consistent with this are Option 4 and Option 1.

3.84 In Option 4, the charges are based on LRIC and paid for by OCPs. Compared to Option 1, there are a number of benefits to this option. It is marginally superior to Option 1 in relation to cost minimisation, in that it would not allow overheads to be passed on in POH charges, and so would increase BT's incentive to minimise them. More importantly, it would also promote effective competition by decreasing the cost disadvantage faced by OCPs compared with Option 1 and, moreover, would do so without sacrificing consistency with the cost causation principle, unlike Options 2 and 3.

3.85 However, Option 4 has some practical disadvantages compared to Option 1. The most important one of these is the lack of reliable LRIC data. In order to implement Option 4 in the current timeframe, we would have to rely on broad estimates of LRIC, rather than on detailed calculations. But provided we can find a usable approximation to LRIC we believe we should adopt Option 4.

Question 6 Do respondents agree with our analysis of the four options?

Section 4

Additional POH cost estimates and proposed new charges

Introduction

4.1 In this section, we set out our approach to estimating the level of the additional POH costs which BT should recover via the additional POH charges. Specifically, we set out the following:

- BT's estimates of the additional POH costs and our review of the main assumptions and variables used in the BT models;
- Our own estimates of the additional POH costs to be recovered;
- Our views on BT's current charging structure; and
- Our new proposed additional POH charges.

Summary of proposals

4.2 We propose the following:

- The new charges for recovering additional POH costs should be based on LRIC estimates derived from our own bottom-up model,[55] which we consider to be more robust than the LRIC estimates provided by BT;
- Based on our bottom-up model, we estimate that the costs of providing additional POH costs are between £3.5m and £4.1m on a LRIC basis, with a central estimate of £3.8m[56]; and
- Type I POH charges should be reduced immediately to LRIC, while Type II charges should be aligned with LRIC in two stages, with half the adjustment occurring upon publication of our statement (or very shortly thereafter), and the other half occurring on 1st April 2012.

4.3 In accordance with the above, we propose that BT's charges for additional POH services should be as shown in the Table below. The price ranges shown are broadly consistent with the range of cost estimates referred to in paragraph 4.2.

[55] http://stakeholders.ofcom.org.uk/binaries/consultations/points-handover-pricing/annexes/model.xls
[56] Based on latest POH volumes as of September 2010.

Table 4 Ofcom's proposed new additional POH charges (Option C1).

Type I POHs (£ per POH)	SMA-1	SMA-4	SMA-16	Bearer
BT current charges	£3,435.27	£5,108.81	£8,151.42	£338.07
Proposed charges (Summer 2011)				
- Lower estimate	£616	£716	£2,028	£381
- Central estimate	£648	£753	£2,135	£401
- Upper estimate	£680	£791	£2,242	£421
Type II POHs (£ per circuit)	**Sub 2M**	**2M**	**34M**	**155M**
BT current charges	£103.31	£175.63	£888.47	£1,652.96
Proposed charges (Phase I-Summer 2011)				
- Lower estimate	£119	£202	£1,020	£1,898
- Central estimate	£125	£212	£1,074	£1,998
- Upper estimate	£131	£223	£1,128	£2,098
Proposed charges (Phase II-April 2012)				
- Lower estimate	£139	£236	£1,196	£2,226
- Central estimate	£146	£249	£1,259	£2,343
- Upper estimate	£154	£261	£1,322	£2,460

4.4 We consider that our proposals would meet the section 88 and 47 tests. We set out our reasons in more detail in section 5.

Our approach to determining the level of the additional POH costs

4.5 We have now reviewed BT's cost estimates in detail, and our findings are summarised below.[57] Specifically we have:

- obtained BT's original model as submitted to the CC (and further versions of the model BT developed subsequently to the appeal) with full explanations of data sources and methods used;
- discussed the models with BT's experts, to ensure that we fully understood the key inputs/ assumptions and to highlight our concerns;
- reviewed BT's calculations; and
- examined BT's model outputs to assess their reasonableness.

4.6 We have also developed our own bottom-up model ('the Ofcom model') which we have used to inform our view of the additional POHs costs. We describe the approach used to develop the bottom-up model below, and in more detail in Annex 6.

4.7 We have also obtained, where possible, data in relation to the additional POH costs from OCPs which we have used to check the reasonableness of both our and BT's estimates.

[57] This approach is consistent with the CC's view in paragraph 5.48 of the Determination that Ofcom could assess the accuracy of the original BT estimated costs for example by consulting with OCPs or with industry experts.

BT's estimates for the additional POH costs

BT's original POH FAC cost estimates show a degree of volatility

4.8 BT submitted the original version of its model ('the BT original model') to Ofcom as part of the LLCC project and estimated the total level of costs to be in the region of £11.7m (on a FAC basis). During the LLCC Appeal, BT provided an updated version of its original model to the CC where the total level of costs to be recovered was reduced to around £6.7m. The main reason for the reduction in the estimate of the costs was that BT replaced many of the assumptions it used in its original model with more reliable data. These specific revisions are listed in paragraph 5.37 of the Determination.

4.9 As part of the current project, BT provided updated versions of its original model across the years 2006/07 to 2009/10. BT kept the volumes of POHs constant at the March 2010 level across this time period. This is because BT's engineering systems can only provide data on volumes in real time and it is not possible to extract a historical time series of volume data. However, BT subsequently provided us with volume data updated to September 2010 which represents its latest estimate. We have provided a detailed description of the BT model assumptions and inputs in Annex 5.

4.10 BT's estimates of additional POH costs between 2006/07 and 2009/10 are shown below. These results indicate that additional POH costs increased from £6.7m in 2006/07 to £8.6m in 2009/10. In addition, there are significant year-to-year fluctuations in the observed level of costs, notably for 2008/09 where BT's modelled costs are almost double those of 2006/07, despite volumes being kept at a constant level.

Table 5 BT estimates for the additional POH costs as per its original model (FAC basis).

Costs (£m)	2009/2010	2008/2009	2007/2008	2006/2007
Total costs	**8.6**	**13.7**	**8.9**	**6.7**
Analysis by PH type				
Type I POH costs	4.5	8.0	5.5	3.8
Type II POH costs	4.1	5.7	3.4	2.9

4.11 We have reviewed the inputs, calculations and outputs in BT's original model. Given the volatility observed in the additional POH cost estimates over time we have also examined potential sources and likely reasons for this. Some of the movement is due to an increase in accommodation costs for 2008/2009, possibly related to a one-off provision made by BT for the costs of rationalising accommodation. More specifically, BT's approach uses the ratio of underlying operating costs to depreciation to apportion costs to POHs. Our analysis shows that depreciation has declined and as a result this ratio has increased between 2006/07 and 2009/10, which added to the volatility of the cost estimates over time. For more details of our review see Annex 5.

4.12 BT's latest estimate of the additional POH costs is £8.6m in 2009/10 based on its original model. However, as discussed above, we are concerned about the volatility of the POH cost estimates generated by this model. Whilst the movement in

underlying costs accounts for some of the variance, we found, and BT offered, no objective reasons for such significant variances. In light of this, our conclusion from this detailed review is that BT's calculations in its original model do not provide an appropriate and reliable basis for determining the additional POH charges.

BT has provided alternative approaches to estimating the additional POH costs on a FAC basis

4.13 Given the volatility observed in the cost estimates from its original model, BT has also provided Ofcom with two alternative approaches for estimating the additional POH costs ('the BT alternative models'). These are:

- 'Adjusted Notional Depreciation' approach. As we explain in Annex 5, as a first step in its model, BT calculated a notional depreciation for the relevant POH equipment based on the equipment prices in its Carrier Price List ('CPL'). In its original model, BT calculated notional depreciation using asset lives consistent with its accounting policies. However, in this alternative model, BT calculated notional depreciation based on the asset lives it derives by taking the ratio of the Gross Book Value ('GBV') of the relevant assets divided by the actual depreciation costs for the year. This approach removes some of the fluctuation observed in the cost estimates. However it also implies what may be regarded as implausibly long asset lives (e.g. 60 years for 16x2 PDH POHs).

- 'Mux Count' approach. This is a simplified model where BT counted the total number of muxes (and those that relate to POHs) based on its engineering systems. BT then apportioned the total SDH/PDH plant group costs to POHs based on the number of POH muxes as a percentage of the total. The proportion of POH muxes is only around 3-4% of the total mux number, therefore due to the nature of the approach and lack of granularity in the costing system, the resulting POH costs may not be representative of actual costs.

4.14 For a detailed description of the BT alternative models see Annex 5. The costs per the BT additional models are set out below.

Table 6 Total additional POH costs as per BT's alternative models.

Approach (£m)	2009/2010	2008/2009	2007/2008
Original BT model	8.6	13.7	8.9
Adjusted Depreciation approach	5.2	7.4	6.9
Mux Count approach	5.9	7.5	6.4

4.15 In our view the BT alternative models, although an improvement on its original model, are still not sufficiently reliable:

- Both of BT's new approaches produce a lower estimate for the additional POH costs that are more consistent over time. However, there is still some unexplained underlying fluctuation remaining in these cost estimates, which BT has not been able to explain.

- In addition, both of the new approaches also result in more costs being apportioned to Type I POHs than Type II POHs when compared to BT's original model. BT agrees that the split of these costs obtained using the alternative models is somewhat inconsistent with the underlying costs of Type I and Type II POHs.

Table 7 Ratio of Type I to Type II POH costs in BT's various models.

Approach (%)	2009/2010	2008/2009	2007/2008
Original BT model	1.1	1.4	1.6
Adjusted Depreciation approach	2.0	1.9	2.1
Mux Count approach	6.7	5.8	5.2

BT updated POH volumes

4.16 BT also provided updated POH volumes as at September 2010 based on data from its engineering systems. This data resulted in higher PDH and SDH POH volumes than originally provided, as well as a higher percentage of non-PPC circuits for each mux type.

4.17 BT also updated its alternative models using these latest volumes. The results of this exercise are shown in the table below. The additional POH costs estimated using the Adjusted Depreciation approach reduced, mainly due to the higher percentage of non-PPC circuits. On the other hand, the costs estimated using the Mux Count approach resulted in higher numbers. This is due to inherent differences in these two approaches. The Mux Count approach uses the updated total mux and PPC mux volumes and does not use the percentage of non-PPC circuits as inputs into the calculations.

Table 8 Total additional POH costs as per the BT additional models and with updated volumes.

Approach (£m)	2009/2010	2008/2009	2007/2008
Adjusted Depreciation approach	5.0	7.2	6.5
Mux Count approach	6.4	8.1	7.0

BT estimated POH costs on a LRIC basis

4.18 BT also provided estimates of additional POH costs on a LRIC basis using the incremental costs of 2 Mbit/s main link services as a proxy on the basis that these use the same equipment as POH services. The resulting LRIC/FAC ratio is 87%, whilst the DLRIC[58]/FAC ratio is 95%. For a description of BT's method and discussion of this approach, see Annex 5.

4.19 We do not believe that BT's LRIC estimates are sufficiently robust to use in setting POH charges. In our view, the main increments (such as Core and Access) defined in BT's LRIC model, from which BT's proxy calculations are derived, are much broader than is appropriate for assessing the incremental costs incurred in the provision of POH services. For example, the revenues from the 2 Mbit/s main link service were £66m in BT's 2009/10 RFSs, whilst additional POH costs only amount to around £5.0 to £6.4m (as per BT's alternative models, see Table 8). Using such broad increments risks the inclusion of costs which are not truly incremental to POH. In addition:

[58] Distributed long run incremental cost ('DLRIC') is the LRIC of the individual service plus a share of costs which are common to other services over BT's "core" network.

- BT's LRIC model derives data from the same financial costing base as used in its FAC models and therefore may inherit some of the volatility seen in the latter; and

- When estimating the additional POH costs on a LRIC basis, BT adopted a top-down approach rather than a bottom-up approach which, in our view, would be more appropriate in identifying costs which would directly relate to the provision of POHs.

Table 9 Total additional POH LRIC costs as per BT's additional models with updated volumes and a LRIC/FAC ratio of 87%.

Approach (£m)	2009/2010	2008/2009	2007/2008
Original approach[59]	7.5	11.9	7.7
Adjusted Depreciation approach	4.4	6.3	5.7
Mux Count approach	5.6	7.0	6.1

The Ofcom bottom-up model

We have developed our own bottom-up model on a LRIC basis

4.20 As well as checking the BT models in detail, we have also developed our own bottom-up model ('the Ofcom model') to estimate the level of the additional POH costs on a LRIC basis. We have then cross-checked the results of the Ofcom model against BT's estimates of the costs based on its top-down models.

4.21 The purpose of this section is to summarise, at a high level, our approach to estimating the additional POH costs. The Ofcom model is explained in more detail in Annex 6. In addition we have also published the model on our web-site.[60]

4.22 There are some key advantages associated with estimating costs based on bottom-up models.

- The bottom-up approach allows us to focus on the costs which directly relate to the provision of POHs. Construction of a bottom-up model naturally requires the builder to identify the incremental equipment and activities necessary to provide the service being modelled. This means that the danger of including irrelevant items is reduced compared to a top-down approach which starts from a set of accounts prepared on a FAC basis.

- In principle, such bottom-up models are also well suited to the calculation of incremental costs for the reason set out in the bullet point above.

4.23 We also recognise that there could be some drawbacks to relying on bottom-up models in that they may omit key cost items. We have mitigated against this issue by cross-checking the output from our bottom-up model against BT's top-down estimates.

[59] The LRIC estimate per the original model uses original (as at March 2010) rather than subsequently updated volumes (as at September 2010).
[60] http://stakeholders.ofcom.org.uk/binaries/consultations/points-handover-pricing/annexes/model.xls

4.24 However, in developing our bottom-up model we have also relied on BT's published charges for the costs of some items. Such charges may include an implicit recovery of BT overheads, since BT's wholesale charges are generally set on an FAC basis even where they are subject to charge control. We have indicated below which of the BT charges we have used as inputs to our model are subject to another charge control and the basis on which that control has been determined. This means that although we have relied on some BT charges as inputs to our model, to the extent that they are subject to a charge control it is reasonable to assume that they are broadly reflective of underlying costs.

4.25 In order to convert our model to 'pure' LRIC, we have applied a suitable LRIC/Price ratio (rather than a LRIC/FAC ratio) to BT's published charges which we have used as inputs. In this regard we have considered two options:

- Option 1: Use a LRIC/Price ratio based on BT's view of the LRIC for the additional POH costs. This could be determined by either looking at the LRIC/Price ratio for POH services as reported in BT's RFSs in 2009/10 or by taking into account BT's latest view of the LRIC for additional POH services based on its models. As we have discussed above, BT has also provided an estimate of additional POH costs on a LRIC basis using the incremental costs of 2 Mbit/s main link services as a proxy on the basis that these use the same equipment as POH services.

- Option 2: Use a LRIC/Price ratio which is more consistent with the published charges used as inputs in the Ofcom model. Option 2 will yield better estimates than Option 1 if LRIC reflects the nature of the service rather than what it is used for. If so, we will get a better estimate of the LRIC of an accommodation service (for example) if we calculate our LRIC/Price ratio from data for similar accommodation services rather than from LRICs and prices of PPC or POH services. This will be the case even where the service is used as an input to the provision of POH.

4.26 On balance we propose to implement Option 2. The inputs we wish to cost in this way, which largely relate to accommodation in BT's exchanges, are not themselves POH or PPC services. In fact they are similar to a set of services called LLU co-mingling services. Therefore, most of the prices we have used as inputs to our model are derived from BT's Local Loop Unbundling ('LLU') co-mingling prices, rather than being based on BT's POH prices or costs. We therefore think that by calculating LRIC/Price ratios for these LLU co-mingling services we will obtain better estimates of the LRIC of relevant inputs to our model.

4.27 We can obtain the data we need to calculate LRIC/Price ratios from BT's RFSs for 2009/10. In the RFSs, financial data are reported by market. LLU services, including LLU co-mingling services, are part of the Wholesale Local Access ('WLA') market. Of the six services reported in this market the ones we have considered using as a proxy are MPF Hostel Rentals and Tie Cables. This is on the basis that the majority of the costs we are trying to estimate in this way are related to accommodation and activities within BT's exchange buildings.[61]

[61] See BT's RFSs in 2009/10 (page 55). The services we have excluded are External MPF Connections, External MPF rentals, External SMPF Connections, External SMPF Rentals on the basis that the costs recovered by these services are different in nature to the additional POH costs we are trying to estimate. We have also excluded MPF Room Build as the accounting for this service

4.28 The revenue-weighted[62] average LRIC/Price ratio for these two services based on BT's RFSs in 2009/10 is 69.6%. We recognise the fact that the LRIC numbers in BT's RFSs can show a high degree of volatility year-on-year and we therefore propose to round-up the resulting LRIC/Price ratio to the nearest 5 percentage points, i.e. to 70%. We have included the details of our methodology and calculations in Annex 6.

4.29 In our view our proposed approach is practicable in that it uses the best sources of information available to us at present. Our approach is also proportionate as BT would be able to recover the common costs that we have excluded from other services in the TI basket.

Question 7 Do respondents agree with our proposed method for converting published charges into LRIC estimates, for use in our LRIC model? If not please explain why and propose an alternative approach including relevant LRIC/Price ratios we could use.

We have used various sources of information

4.30 We have used a number of different sources of information for the inputs and assumptions used in the Ofcom model. For example:

- We have used BT's latest POH volumes as at September 2010, which we have compared to OCP data obtained using our formal powers. The September 2010 volumes have been used in our bottom-up model on the grounds that this is the best and most recent data available.
- We have used BT publicly available data where possible. For example, we have used Openreach's LLU co-mingling prices[63] to estimate the operational costs.
- We have used data obtained from OCPs using our formal powers (for example, power consumption and space costs).

4.31 Where we have not been able to verify an assumption independently, we have performed a sensitivity analysis to determine its impact on the reasonableness of our estimate for additional POH costs. In cases where we have determined the impact to be material we have asked a specific consultation question on this.

We have estimated additional POH costs in detail

4.32 There are three major cost categories associated with the provision of a POH:

- Category 1 - Capital: the capital costs of duct, fibre and equipment spares;
- Category 2 - Operational: accommodation, power, air conditioning, maintenance, network management, monitoring and security; and

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does not recognise the costs in the year which are incurred and hence would give rise to distorted LRIC/Price ratios.

[62] We have used the revenues of these two services, rather than the reported volumes, to calculate a weighted average LRIC/Price ratio. This is because the volumes of these two services are not reported using the same units: the volumes of Hostel Rentals are the number of hostels and the volumes of Tie Cables are the number of cables.

[63] http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPrices.do?data=%2Bs55xT91%2FPruY0Pxlyi4HVnqs1m6OcKz301sgolk8P2FdiaKKPEfrCsJCb3sZkzJ.

- Category 3 - Support: marketing and sales, design, installation, commissioning, customer support.

4.33 The Ofcom model estimates mainly the operational costs associated with the provision of POHs. However, as summarised in Annex 6, additional POH costs also include the capital costs associated with duct, blown fibre and incremental equipment spares. We have also estimated the maintenance costs in relation to Type II POHs (whilst BT already levies a separate maintenance charge in relation to Type I POHs). Finally, we have included an element of support costs related to the marketing, sales and customer support of POHs. We discuss these cost categories in more detail below (and in Annex 6).

4.34 We note that our bottom-up model calculates the unit cost for each type of POH. It then calculates the total additional POH costs by multiplying the unit POH costs with the relevant volume of POHs. In instances where retail (non-PPC) circuits are carried over a POH, the costs associated with these circuits are excluded from our calculations of the relevant additional POH charges.

Capital costs

4.35 We have estimated the capital costs incurred in relation to the bearers used in providing Type I and Type II CSH and ISH Ext POHs. The bearer costs include the capital costs of duct and spine fibre provided by BT. We have estimated these costs as follows:

- We have first calculated the total up-front cost of duct and fibre used in the provision of a POH based on Openreach's prices[64] for footway duct, sub-duct and fibre (adjusted by our proposed LRIC/Price ratio of 70%) to calculate a cost of duct and a fibre pair per meter. Based on information we have received from BT we have assumed an average distance of 980m between the BT and OCP nodes. We have also assumed 240 fibres per duct.

- We have then converted the up-front duct and fibre total costs into an annual rental charge by calculating an annuity using the 'rest of BT' rate of 9.3%.[65]

4.36 The total duct and fibre capital costs we have estimated are £173k p.a. for Type I POHs and £847k p.a. for Type II POHs. We explain our methodology in more detail in Annex 6.

Question 8 Do respondents agree with the inputs we have used to estimate the annual rental charge for the duct and fibre used in the provision of POHs? If not, please explain why and provide alternative data.

64 http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=ZdqG%2Fxv%2FjSuBEEITnogh5uNOEwQ2%2FKws5WBAVcIlcholMnGHsqdC0vzO163bJmh34D91D7M0q8u%2F%0AIlSgtIFAKw%3D%3D

65 The WBA charge control consultation has proposed a range of 8.5% to 10.0% for the 'rest of BT' weighted average cost of capital (WACC) rate (pre-tax nominal), with a mid-point estimate of 9.3%. We have used the mid-point estimate for the 'rest of BT' rate to calculate the ROCE on BT's spares holding.

Operational costs

4.37 Operational costs include accommodation, power, air conditioning, maintenance, network management, monitoring and security in relation to the provision of POHs.

4.38 We have used Openreach prices for co-location of LLU equipment[66] (adjusted by our proposed LRIC/Price ratio of 70%) to estimate the costs associated with space and rack rental, power, air conditioning and security. These prices are subject to a charge control[67] and therefore in our view are set at a reasonable level and we remove any overheads through the use of the LRIC/Price ratio. To calculate these costs we have also estimated the power consumption and size of SDH and PDH muxes, which we have verified where possible against information gathered from OCPs under our formal powers.

4.39 In relation to maintenance costs we have estimated these only in relation to Type II POHs, as BT levies a separate charge for Type I POHs. We have estimated maintenance costs of POHs based on the costs of equipment failing as follows:

- First, we have estimated the replacement costs associated with equipment parts failing.
- Second, we have estimated the engineering call-out costs associated with repairing a failed part. We have calculated the engineering call-out costs by assuming a time to repair of 4 hours (the industry norm) and an average engineer's rate of £50/hour (based on our own internal industry experience).
- Third, we have estimated the incremental costs associated with BT holding a selection of spares available for use making some assumptions based on our internal industry experience. We have estimated the additional number of spares it would be sufficient to have based on the proportion of network equipment used for POH, the rate of consumption of the spares, the number of locations BT hold spares and the expected replacement time for spares (assumed to be four weeks). We have used these to estimate the capital costs of spares. We have also calculated the annual cost for storing the additional spares based on LLU charges for space, racks and security.
- Finally, we have converted the capital cost into an annual rental charge by calculating a perpetuity using the 'rest of BT' rate of 9.3%.

4.40 We have also estimated duct and fibre maintenance costs assuming a duct fault rate of one fault per 100km per year. We have then multiplied the fault rates with our assumptions of duct fault repair time of 28 man-hours and costs £50 per hour (based on our own industry experience).

4.41 We have estimated network management costs based on confidential industry figures showing a breakdown of network operator operational costs. Based on this

66 http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPrices.do?data=%2Bs55xT91%2FPruY0Pxlyi4HVnqs1m6OcKz301sgolk8P2FdiaKKPEfrCsJCb3sZkzJ.

67 The LLU co-mingling prices we have used as inputs to our model are included in the Co-mingling Ancillary Services Basket of the LLU charge controls. BT cannot increase the price of these services for the remainder of the charge control period which is due to expire on 31 March 2011. http://stakeholders.ofcom.org.uk/binaries/consultations/openreachframework/statement/revisedsmpconditions.pdf.

survey, network management costs are 23% of the operational costs and we have used this ratio to produce our own estimates.

4.42 The total operational costs we have estimated are £814k p.a. for Type I POHs and £1.6m p.a. for Type II POHs. We explain our methodology in more detail in Annex 6.

Question 9 Do respondents agree with the inputs we have used to estimate the operational costs associated with POHs, especially in relation to network management costs? If not, please explain why and provide alternative data.

Support costs

4.43 POH support costs include marketing and sales, design, installation, commissioning and customer support. We have not estimated the engineering time and cost to design, install and commission a POH, as these are initial costs which BT recovers in its up-front connection charges.

4.44 To estimate the marketing and sales costs we have considered the range of PPC wholesale customers and their experience. There are 18 OCPs which buy POHs from BT, which in our view have a high level of experience and technical knowledge of the service. We believe that there is only a limited need for resource for marketing and sales of POHs, especially if one also takes into account that this is a declining market. We estimate that a dedicated team of three people should be able to cover POH marketing and sales activities. Our estimate of the annual cost including overheads of a marketing or sales person is £100k.

4.45 The total support costs we have estimated are £0.3m p.a. We explain our methodology in more detail in Annex 6.

Question 10 Do respondents agree with the inputs we have used to estimate the support costs associated with POHs? If not, please explain why and provide alternative data.

We propose to use our bottom-up model to estimate the level of additional POH costs

4.46 Our bottom-up model estimates the total additional POH costs to be £4.9m (FAC basis) and £3.8m (LRIC basis). The LRIC cost breakdown is shown in Table 10. Based on the sensitivity analysis we have performed (see Annex 6) the range for additional POH costs we have estimated (based on LRIC) is £3.5m to £4.1m. We have calculated this range by changing our assumptions with regards to network management costs, BT's WACC and the volumes of POH muxes/retail circuits.

Table 10 Summary of additional POH costs on a LRIC basis as per the Ofcom model.

Total POH costs		Total BT POH volumes	non PPC volumes	BT POH volumes minus non PPC	Costs				Additional POH costs
					Annual	Bearer charge	Maintenance incl network management		
SMA-1	CSH	96	1.1%	95	£61,560	£38,057			£99,618
	ISH Extn	0	1.1%	0	£0	£0			£0
	ISH	12	2.5%	12	£7,776	£0			£7,776
	Retail	26	74.7%	7	£4,536	£2,804	£7,698		£15,038
	Retail other	505	74.7%	128	£82,944	£51,277	£140,763		£274,984
SMA-4	CSH	197	1.1%	195	£146,873	£78,118			£224,991
	ISH Extn	61	1.1%	60	£45,192	£24,036			£69,228
	ISH	315	2.5%	307	£231,231	£0			£231,231
	Retail	226	74.7%	57	£42,932	£22,834	£80,078		£145,845
SMA-16	CSH	53	1.1%	52	£111,015	£20,831			£131,846
	ISH Extn	29	1.1%	29	£61,912	£11,618			£73,530
	ISH	113	2.5%	110	£234,839	£0			£234,839
	Retail	49	74.7%	12	£25,619	£4,807	£52,101		£82,527
4x2		835	14.3%	716	£116,005	£286,833	£124,304		£527,143
16x2		1471	18.8%	1194	£429,547	£478,323	£742,799		£1,650,668
	Totals	3988		2974	£1,601,981	£1,019,540	£1,147,743	Total	**£3,769,264**

4.47 BT's top-down LRIC estimates based on its additional models and using the latest POH volumes are in the range of £4.4m to £5.6m (see Table 9 above). Our LRIC estimate for additional POH costs is in the region of £3.8m, which is below the lower end of BT's range. As can be seen from the above table the majority of the costs are associated with Type II POHs, rather than Type I POHs. This is because, when compared to Type I POHs, the volume of Type II POHs is higher and the associated equipment supports fewer PPCs incurring greater "accommodation" related costs (i.e. space, power etc).

4.48 On the basis of our observations in relation to the BT models, and particularly for the reasons given in paragraph 4.19 above, we propose to use our own bottom-up model to set the additional POH costs to be recovered. The Ofcom model does not suffer from the fluctuations observed in BT's top-down (FAC/LRIC) estimates. We have also used the best information available to convert our FAC bottom-up estimates into LRIC.

Question 11 Do respondents agree that we should use our own bottom-up model to set the level of the additional POH costs to be recovered?

We have reviewed BT's current charging structure

4.49 As part of the LLCC Statement (paragraph 4.161) we required BT to implement an improved charging structure which incentivised migration from Type II to Type I POHs, on the basis that the latter allow more efficient POH utilisation.[68]

4.50 BT implemented its improved charging structure on 1st July 2010 following consultation with industry and introduced separate charges for Type I and Type II POHs. Migration to the more efficient POHs is achieved by making the rental for Type I POHs lower than for Type II POHs, if the number of PPC circuits carried over them is high. The structure of prices is two-fold (see Table 11):

- A rental charge per annum per Type I POH (with no per circuit POH charges for any PPCs handed over these handovers); and
- A rental charge per annum per circuit for Type II POHs.

[68] http://stakeholders.ofcom.org.uk/consultations/llcc/statement/

Table 11 BT charging structure for additional POH costs (as of January 2011).

Type I POHs (£ per POH)	SMA-1	SMA-4	SMA-16	Bearer
BT current charges[69]	£3,435.27	£5,108.81	£8,151.42	£338.07
Type II POHs (£ per circuit)	**Sub 2M**	**2M**	**34M**	**155M**
BT current charges[70]	£103.31	£175.63	£888.47	£1,652.96

We have considered alternatives to BT's current charging structure

4.51 As we discussed above, BT's current charging structure for additional POH costs differentiates between Type I and Type II POHs. As Type I POHs are solely based on SDH technology, whilst Type II POHs can be either SDH or PDH, BT's current charging structure already differentiates to some extent between the technologies used to provide a POH.[71]

4.52 We have also considered making BT's current charges more granular, which we discuss in more detail below.

We propose not to differentiate Type II POH charges by technology

4.53 Type I POHs only use SDH technology and therefore no further differentiation of Type I charges based on technology is required. On the other hand Type II POHs are based on PDH or SDH technology.

4.54 We do recognise that out of the £2.7m of Type II additional POH costs, only around £519k relates to Type II SDH POHs, the rest being attributable to Type II PDH POHs. The difference in the relative level of total costs is to a certain extent influenced by the fact that Type II SDH POHs carry a large amount of non-PPC circuits when compared to Type II PDH POHs (75% and 19% respectively), which we have excluded from our cost base. This is because our model aims to estimate the additional POH costs in relation to PPCs. In addition, our analysis has also confirmed that it is much cheaper to carry a PPC circuit using an SDH POH rather than a PDH POH. For example, on average it costs an estimated £34 to carry a 2Mbit/s circuit over an SMA-1 SDH POH (for CSH configuration), whilst this cost rises to around £184 using a 4x2 PDH POH (assuming full utilisation of both types of POHs).[72]

4.55 We have therefore considered whether there is a need to further differentiate Type II charges between PDH and SDH POHs. Such a differentiation would make charges more cost reflective, with Type II SDH POH users paying less in aggregate. Such a differentiation in charges would also promote efficiency if it induced a migration to the more efficient SDH POHs. However, evidence from industry suggests that such

[69] See BT price list Part B8, Section 8.01, Sub-section 1.6 at: http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

[70] See BT price list Part B8, Section 8.03, Sub-section 1.1 at: http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

[71] This assessment is consistent with the Determination (paragraph 5.374) in relation to mandating separation of charges based on SDH and PDH technologies.

[72] See Annex 6, Table 30 for more details.

migrations are unlikely to happen in practice.[73] In addition, BT has also informed us that OCPs cannot in practice request a migration from Type II PDH POHs to Type II SDH POHs. It might also be regarded as unfair for users of PDH POHs to be penalised through higher prices, when they were not responsible for the original choice of technology.[74] In light of this we do not propose to further differentiate Type II charges by technology. This also has the added benefit of not further complicating the current charging structure.

Question 12 Do respondents agree that we should not differentiate Type II POH charges between SDH and PDH technology?

We propose not to determine a single charge for all SDH POHs

4.56 Another option we have considered is whether we should determine a single charge for SDH POHs of a given by capacity (i.e. SMA-1, SMA-4 and SMA-16 POHs) across Type I and Type II (i.e. for example, a single price for an SMA-1 POH irrespective of whether it is a Type I or a Type II POH). On the face of it this approach would seem reasonable as the same technology/box is used to provide a Type I and Type II SDH POH of a given capacity. This option could be seen as a particular form of charging by technology, as discussed above.

4.57 As we have explained above, the aim behind BT's current charging regime is to encourage efficient POH utilisation by incentivising migration to Type I POHs. Creating a set of charges averaged across SDH POHs by capacity would not incentivise migration from Type II to Type I SDH POHs, although it may result in OCPs paying lower charges for their Type II SDH POHs. However, if OCPs would like to take advantage of the lower Type I charges, they can re-designate their Type II SDH POHs to become Type I SDH POHs. In Annex 6, Table 32, we have provided a break even analysis where we have calculated the number of 2 Mbit/s PPC circuits that an OCP would require to ensure that it would be economical for it to move from a Type II SDH POH to a Type I SDH POH. For example, under our preferred charging option an OCP would need at least three 2 Mbit/s circuits to make a move from a Type II SDH POH to a Type I SDH POH (for an SMA-1 ISH configuration).

4.58 On this basis we do not propose to calculate a single charge for SDH POHs by capacity (irrespective of whether they are Type I or Type II).

Question 13 Do respondents agree that we should not set a single charge per SDH POH by capacity (irrespective of whether they are Type I or Type II)?

We propose a fixed bearer charge

4.59 Currently BT charges a fixed bearer charge for Type I CSH and ISH Ext POHs, whilst the costs of the bearer for Type II POHs is included in the per circuit charges. This charge is independent of the actual length of the bearer. We have considered whether this charge should vary by distance or be disaggregated further by type of

[73] For example, as summarised in paragraphs 5.368 to 5.371 of the Determination, C&W noted that migrations between Type II POHs are unlikely to happen due to the costs associated and the need for them to take place in the wider business context of winning a customer from BT.
[74] As explained in paragraph 2.16, before PPCs were introduced, BT decided on the type of equipment used to provide POHs.

POH (for example the bearer charge could differentiate between Type I CSH and Type I ISH Ext POHs).

4.60 In principle, differentiating the bearer charge by distance might be beneficial as it could encourage OCPs to locate closer to BT nodes. But in practice, it seems unlikely that OCPs would respond by relocating their nodes, given the small scale of the likely savings (the total costs we have estimated for Type I CSH and ISH Ext bearers are around £173k in aggregate).

4.61 In light of the above, we do not propose converting the fixed bearer charge to a per km charge or differentiating the bearer charge between Type I CSH and ISH Ext POHs.

Question 14 Do respondents agree that we should not disaggregate the current bearer charge for Type I POHs further?

We propose to bring Type I and Type II POH charges into line with LRIC

4.62 Overall the estimate for the total additional POH costs has fallen (from £6.7m to a central estimate of £3.8m). However, the level of the additional POH charges will depend on whether we retain the price structure inherent in BT's current charges. BT's current charging structure differentiates between Type I and Type II POHs. Our analysis indicates that charges for Type I SDH POHs appear to be well above LRIC, whereas charges for Type II PDH POHs appear to be below LRIC. Based on this, it is clear that Type I SDH POHs make a much greater contribution to cost recovery than Type II PDH POHs.

4.63 We have considered three charging options which we discuss below.

Table 12 Charging options for additional POH costs.

Option	Description	Type I POH costs	Type II POH costs	Comment
Current		*£4.9m*	*£1.9m*	
Option A	Reduce price of Type I POHs whilst keeping Type II charges unchanged	£1.9m	£1.9m	Type I users benefit from cost reduction, but pay more than under Option C. Type II users are no worse/better off.
Option B	Reduce price of all POHs by the same % amount	£2.8m	£1.0m	Both Type I and Type II users benefit from price reductions. Type I users pay more than under Options A and C.
Option C	Bring Type I and Type II charges into line with costs	£1.1m	£2.7m	Charges are cost reflective. However charges for Type II users increase materially (by £0.8m).

4.64 There are some important differences between the various options:

- For Option A we have retained BT's current charging structure and calculated the new Type I charges based on BT's current bandwidth gradient.[75] Under this option Type I users benefit entirely from the reduction in the level of additional POH costs, whilst charges for Type II users are unchanged.

- For Option B we have re-calculated both Type I and Type II charges by reducing all charges by the same proportion and retaining BT's current bandwidth gradient. Under this option all POH users benefit from the reduction in the total additional POH costs. However Type I POHs make a much greater contribution to cost recovery than Type II POHs when compared to Option A. This option is therefore the least cost reflective one.

- For Option C we have brought both Type I and Type II charges into line with their respective LRICs. We have used the bandwidth gradient inherent in our cost estimates to re-set Type I charges, whilst we have maintained BT's bandwidth gradient when re-setting Type II charges. This option results in a set of charges which reflect better the underlying costs of provision based on our own estimates of the costs, giving OCPs a stronger incentive to use the more efficient technology and minimise their overall costs. However, this option also results in material increases in the Type II charges.

4.65 The table below sets out the individual charges under each of these three options, based on our central additional POH cost estimate of £3.8m.

Table 13 POH charges for Option A.

Type I POHs (£ per POH)	**SMA-1**	**SMA-4**	**SMA-16**	**Bearer**
BT current charges	£3,435.27	£5,108.81	£8,151.42	£338.07
Ofcom model approach	£1,214	£1,805	£2,880	£401
Type II POHs (£ per circuit)	**Sub 2M**	**2M**	**34M**	**155M**
BT current charges	£103.31	£175.63	£888.47	£1,652.96
Ofcom model approach	unchanged			

[75] The bandwidth gradient shows how the unit price of capacity (or bandwidth) changes as the capacity of the POH circuits increases. See Table 11 for the current charges.

Table 14 POH charges for Option B.

Type I POHs (£ per POH)	SMA-1	SMA-4	SMA-16	Bearer
BT current charges	£3,435.27	£5,108.81	£8,151.42	£338.07
Ofcom model approach	£1,845	£2,743	£4,377	£401
Type II POHs (£ per circuit)	**Sub 2M**	**2M**	**34M**	**155M**
BT current charges	£103.31	£175.63	£888.47	£1,652.96
Ofcom model approach	£55	£94	£477	£888

Table 15 POH charges for Option C.

Type I POHs (£ per POH)	SMA-1	SMA-4	SMA-16	Bearer
BT current charges	£3,435.27	£5,108.81	£8,151.42	£338.07
Ofcom model approach	£648	£753	£2,135	£401
Type II POHs (£ per circuit)	**Sub 2M**	**2M**	**34M**	**155M**
BT current charges	£103.31	£175.63	£888.47	£1,652.96
Ofcom bottom-up model	£146	£249	£1,259	£2,343

4.66 In our view Option C is most consistent with promoting efficiency, as the individual charges are cost reflective, giving OCPs the most correct “buy or build” signals and the strongest incentive to migrate from Type II to Type I POHs. Option B, on the other hand, retains the existing charging structure and is the least cost reflective option. Option A can be viewed as an intermediate option, involving a partial move towards LRIC pricing, while avoiding the potentially disruptive effect of price increases. On balance, our view is that all charges for Type I and Type II POHs should be brought into line with their respective LRICs i.e. our preference is for Option C. This is consistent with the reasoning set out in section 3.

4.67 The key question remaining is one of timing i.e. should Type I and Type II POH charges reflect their LRIC estimates now (Option C) or should the price changes be phased in over a period. We consider this question below.

We propose Type I POH charges reduce to LRIC immediately, whilst Type II POH price increases are phased

4.68 As we have discussed above, Option C is most consistent with promoting efficiency. However, this option would also require some significant price adjustments, with most Type I charges falling sharply and Type II charges rising by about 42% (amounting to an increase in additional Type II POH costs of £0.8m). Given the scale of these adjustments, we have considered whether and how their implementation should be phased.

4.69 For Type I POH services, we see no reason to delay the move the LRIC prices. We therefore propose that Type I charges should be adjusted to LRIC without delay, either at the time our statement is published or shortly thereafter (e.g. at the beginning of the month following the date of publication). This will ensure that Type I prices are at an appropriate level, consistent with our analysis in section 3. POH users will then get the full benefit of the price decreases and this will give improved incentives to make the efficient choice of technology.

4.70 However, we are concerned that a one-off increase (to LRIC) in Type II POH charges could be disruptive to OCPs. As only OCPs pay POH charges, such disruption could disadvantage them when compared to BT, which does not incur POH charges, and could tend to weaken competition. The fact that increases in POH charges only affect OCPs is therefore a reason for taking a cautious approach and phasing in the increases even though, in other cases, we have allowed charges which were below LRIC to be brought to LRIC by means of a single one-off adjustment at the start of a new control, without phasing. Because of the potential for an effect on competition, we think that phasing in the increases in this way is consistent with our analysis in section 3. We have noted that there may sometimes be a case for charges to be below LRIC, where competition or other wider benefits justify it, whilst the short period for which this will be the case means the risk of encouraging inefficient entry or investment can be discounted.

4.71 OCPs have, in the past, emphasised the need for a period of advance notification before price increases are implemented. Advance notification would allow OCPs to put in place the necessary pass-through mechanisms for price changes and, if deemed necessary, make changes to their own network plans. For example, faced with Type II price increases, an OCP may decide to either re-designate a Type II SDH POH as a Type I or migrate from a Type II PDH POH to a Type I SDH POH. The latter option would require some planning on the OCP's part as it will need to decide on the capacity of the Type I SDH POH to use and it will also need to plan for the additional costs it will incur (for example, the OCP will incur a connection charge for new POH equipment and additional costs associated with re-arranging circuits from the old to the new POH).

4.72 In view of these considerations, we propose that the price adjustments for Type II POH services should occur in two phases:

- Phase I: Type II POH charges to increase by half the amount required to align them with their respective LRIC estimates (i.e. by 21%, amounting to an increase in additional Type II POH costs of £0.4m). This price increase will be effective with the publication of our statement or shortly thereafter (e.g. at the beginning of the month following the date of publication).

- Phase II: Type II POH charges to increase to our estimate of LRIC as set out above (i.e. by an additional 21% of the current price) on 1st April 2012.

4.73 One of the advantages of phasing the increases in the Type II POH charges in the manner described above is that the charges will be aligned with their LRIC estimates before the end of the current leased lines charge control period on 30 September 2012. This approach also ensures that OCPs have the necessary advance notification in relation to the expected price increases.

The proposed price ranges

4.74 As noted above, we estimate that the total LRIC for additional POH services lies between £3.5m and £4.1m, with a central estimate of £3.8m. Our proposed price ranges are broadly consistent with this range of cost estimates, in that for each price we propose a central estimate with a range of plus or minus 5%. The sensitivity analysis which underpins the proposed ranges is set out in Annex 6.

4.75 The proposed price ranges are shown in the table below.

Table 16 Proposed POH charges (Option C1).

Type I POHs (£ per POH)	SMA-1	SMA-4	SMA-16	Bearer
BT current charges	£3,435.27	£5,108.81	£8,151.42	£338.07
Proposed charges (Summer 2011)				
- Lower estimate	£616	£716	£2,028	£381
- Central estimate	£648	£753	£2,135	£401
- Upper estimate	£680	£791	£2,242	£421
Type II POHs (£ per circuit)	**Sub 2M**	**2M**	**34M**	**155M**
BT current charges	£103.31	£175.63	£888.47	£1,652.96
Proposed charges (Phase I-Summer 2011)				
- Lower estimate	£119	£202	£1,020	£1,898
- Central estimate	£125	£212	£1,074	£1,998
- Upper estimate	£131	£223	£1,128	£2,098
Proposed charges (Phase II-April 2012)				
- Lower estimate	£139	£236	£1,196	£2,226
- Central estimate	£146	£249	£1,259	£2,343
- Upper estimate	£154	£261	£1,322	£2,460

4.76 We do not propose to make an inflation adjustment to the price increases which will be implemented on 1st April 2012. This means that the value of these price increases are likely to be slightly lower in real terms than if they had taken effect on publication of the statement. We think this is reasonable, as unit costs will be influenced by a range of factors and it is not clear whether they will rise or fall over the intervening period. In addition, the proposed price increases will take effect in a relatively short period of time (i.e. within one year). In any case we think it would be difficult to make a more accurate forecast of these costs on a LRIC basis - our bottom-up model is not a forecasting model.

Question 15 Do respondents agree that we should implement the additional POH charges as set out under Option C1, where we have proposed a one-off decrease in Type I POH charges to LRIC, whilst Type II POH charges are increased to LRIC in two phases?

Other implementation considerations

4.77 Under our proposed approach price increases for Type II POH charges will be implemented in two phases, increasing by 21% (of the current price) in each phase. Such price increases would breach the RPI+0% sub-cap we imposed on additional POH charges in the LLCC Statement which prevents BT from increasing these charges in real terms.[76]

4.78 We therefore propose the following:

- Type I POH charges, BT should not charge more than the LRIC estimates between the date of implementation of the proposed prices and 30th September 2011. Between 1st October 2011 and 30th September 2012 BT is allowed to increase Type I POH charges by up to RPI-0%.

[76] See Annex 9 of the LLCC Statement, Conditions G4.10, GG4.10, GH4.10 and H4.10 in Annex D to the Schedules.

- For Type II POH charges, BT should not charge more than the levels proposed by Ofcom in each of the two phases (see Table 16). This means that Type II POH charges should not exceed Phase I levels between the date of implementation and 31st March 2012, and Phase II levels between 1st April 2012 and 30th September 2012. In addition, the RPI-0% sub-cap imposed on the additional POH charges should not be applicable for the purposes of the price increases we have proposed for Type II POH charges.

Question 16 Do respondents agree that BT should be allowed to increase Type I POH charges by RPI-0% (between 1st October 2011 and 30 September 2012), whilst it is required not to exceed the Type II POH charge levels proposed by Ofcom?

4.79 In the BCMR Statement[77] we placed requirements on BT relating to the notification period for changes to any charges (for services provided by BT within the leased lines 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 in respect of the price changes we have proposed in Table 16.

Question 17 Do stakeholders agree that the required notification period should be waived in respect of the proposed changes to Type I and Type II POH charges?

[77] http://stakeholders.ofcom.org.uk/consultations/bcmr08/

Section 5

Section 88 and 47 tests

Introduction

5.1 The aim of this section is to discuss our proposals in sections 3 and 4 of this document against the requirements of sections 88 and 47 of the Act.

5.2 As discussed in section 2, 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.

5.3 In addition, in setting the price control, Ofcom must take account of the extent of the investment in the matters to which the condition relates of the person to whom it is to apply (section 88(2)).

5.4 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 person;
- proportionate to what the condition is intended to achieve; and
- in relation to what is intended to achieve, transparent.

Our proposals

5.5 In section 3 we proposed that, based on our preliminary analysis and consideration of various factors, additional POH costs should be recovered on a LRIC basis as this will best promote sustainable competition.

5.6 In section 4 we have discussed our review of BT's estimates of additional POH costs. We have also discussed the additional POH cost estimates derived using our own bottom-up model. Based on the analysis included in this section we have then proposed the following:

- The new charges for recovering additional POH costs should be based on LRIC estimates derived from our own bottom-up model,[78] which we consider to be more robust than the LRIC estimates provided by BT;

- Based on our bottom-up model, we estimate that the costs of providing additional POH costs are between £3.5m and £4.1m on a LRIC basis, with a central estimate of £3.8m[79]; and

- Type I POH charges should be reduced immediately to LRIC, while Type II charges should be aligned with LRIC in two stages, with half the adjustment occurring upon publication of our statement (or shortly thereafter), and the other half occurring on 1st April 2012.

5.7 We also proposed to use our own bottom-up model to set the charges.

Our proposals meet the section 88 and 47 tests

Section 88 tests

Efficiency

5.8 We consider that the proposed additional POH charges (based on recovery of LRIC costs) are appropriate for promoting efficiency.

5.9 Under a LRIC pricing approach, OCPs would only pay for costs they cause to be incurred in the long run, rather than contributing to the recovery of any common costs incurred in the provision of POHs. A LRIC pricing approach is also likely to promote cost minimisation, and therefore efficiency, in two ways: a) by not allowing overheads to be passed on in POH charges (which increases BT's incentive to minimise them) and b) by ensuring that OCPs still pay for the direct costs they incur (which increases OCPs' incentives to minimise costs).

5.10 In addition:

- We have set the proposed charges on the basis of the latest information available to us. The charges are set at such a level that they would recover a lower level of additional POH costs in total (i.e. the total additional POH costs to be recovered have decreased from the current level £6.7m to £3.8m based on the Ofcom model).

- The additional POH charges are included in the TI basket and subject to the overall cap of RPI-1.75%. Each additional POH charge is also each subject to a safeguard cap of RPI-0%, which means that BT cannot increase charges in real terms. Both the overall TI basket cap and the safe-guar cap provide incentives for BT to minimise its costs and reduce static inefficiency. BT also has an incentive to minimise its POH costs because it incurs these when interfacing its core networks with its IP-VPN platforms.

- We have set the structure of charges in such a manner as to incentivise OCPs to migrate from the less efficient Type II POHs, to the more efficient Type I POHs. We have achieved this by making charges more cost reflective whereby the

[78] http://stakeholders.ofcom.org.uk/binaries/consultations/points-handover-pricing/annexes/model.xls
[79] Based on latest POH volumes as of September 2010.

rental charge for Type I POHs lower than Type II POHs provided OCPs achieve the required level of utilisation.

Sustainable competition

5.11 We also consider that the proposed new additional POH charges (based on recovery of LRIC costs) are appropriate to ensure sustainable competition because the costs incurred are recovered from those that cause them and the cost disadvantage that OCPs face is decreased by a move to LRIC pricing. As we have discussed above, under a LRIC pricing approach OCPs would only pay for costs they have incurred in the long run, rather than contributing to the recovery of any common costs incurred in the provision of POHs. In addition a pricing based on LRIC is likely to give the correct "buy and build" incentives to OCPs enabling sustainable competition.

5.12 We have also proposed that Type I POH charges are reduced to LRIC with immediate effect, whilst Type II POH charges are increased in two phases. We recognise that this approach will mean that, for a period of several months (from publication of the statement until 1st April 2012), the charges for additional POH services will not, in aggregate, be sufficient to cover the LRIC of providing these services. However, we consider that phasing the price increases for Type II services is desirable because it will give OCPs time to respond to the planned changes (e.g. by moving to Type I POH services), and that BT will be able to recover the shortfall by adjusting its charges for other services within the TI basket.

Confers greatest possible benefits

5.13 The proposed additional POH charges (based on recovery of LRIC costs) are also set at a level which confers the greatest possible benefits on users of public electronic communication services. The total level of the additional POH costs has decreased (from the current level of £6.7m to £3.8m).

5.14 We propose Type I POH charges are reduced to their LRIC immediately (with the publication of our statement), which means users of these POHs will benefit in full from their choice of the more efficient technology as they will be able to take advantage of the proposed reductions in prices sooner rather than later. On the other hand we propose Type II charges are increased up to their LRIC estimate in two phases. Although users of Type II POHs are faced with price increases, these charges will be better aligned with the underlying costs of provision. In turn these charges will give these users the greatest incentive to move to the more efficient POHs and confer the greatest possible benefits in the longer term.

Investment matters

5.15 When setting the level of the additional POH charges we have also taken into account the need to ensure that BT has the correct incentives to invest and innovate:

- First, in modelling BT's likely capital costs in relation to duct, fibre and equipment spares, we have built in a reasonable return on capital employed to provide an adequate return on BT's investment.

- Second, by including the additional POH charges in the TI basket we have ensured that BT is rewarded for investment in new and more efficient technologies (as BT can keep any efficiency savings associated with new and more efficient ways of providing POHs).

5.16 It follows that, if BT is able to achieve cost savings over and above those we have assumed in setting our charge control by investing and introducing a new network with a lower cost base this will mean a higher level of profitability. In other words, BT will be able to earn a rate of return above its cost of capital.

5.17 We have also taken account of investment by ensuring that OCPs pay cost reflective charges and have the correct signals for investing in the right type of POH. We have achieved this by making the rental charge for Type I POHs lower than Type II POHs provided OCPs achieve the required level of utilisation.

Section 47 tests

5.18 We are satisfied that the proposed additional POH charges (based on recovery of LRIC costs) meet the required section 47 tests.

Objective justification

5.19 BT's SMP in traditional interface ('TI') leased lines services allows it to set charges unilaterally and, in the absence of any controls, this would have adverse impacts on both the ability of companies to compete in the downstream provision of leased lines services and on consumer choice and value for money. By setting the additional POH charges we have required BT to deliver the lowest possible charges to competitors for the wholesale services, while ensuring that BT is able to recover costs, including a reasonable return on its investment.

5.20 Setting the additional POH charges at LRIC is also consistent with our pricing principles, in particular cost causation, cost minimisation and the promotion of effective/sustainable competition.

5.21 In addition, BT is not disadvantaged by our approach as it would be able to recover the common costs we have excluded by increasing the price of other services in the TI basket. These are used both by OCPs and by BT to provide retail leased lines.

Undue discrimination

5.22 We do not consider that setting the additional POH charges based on LRIC would unduly discriminate between BT and OCPs as these are based on the costs incurred as a result of OCPs demand for POHs and are consistent with the promotion of sustainable competition.

Proportionate

5.23 The proposed additional POH charges are proportionate. They are focused on ensuring that there are reasonable prices for those access services, which are critical for sustaining a competitive market. BT is, however, allowed to recover a reasonable return on investment. Moreover, we have set the charges using the latest information available to us and have cross-checked our cost analysis against BT's own estimates of the costs and ensured that they do not under-recover efficiently incurred costs.

5.24 Our proposal to set the additional POH charges based on the LRIC estimates from our bottom-up model is also a proportionate and practicable solution.

5.25 A bottom-up approach such as the Ofcom model, can be well suited to producing estimates of incremental costs. However, as explained in section 4, we have had to rely on BT's LLU co-mingling prices for some key inputs and these may include some

overheads. We have proposed to adjust these prices using suitable LRIC/Price ratios based on some of the services BT supplies in the WLA market and reports in its financial statements. Our approach uses the best information available to us and also ensures that both of the charges and the LRIC/Price ratios we have used are consistent in that they relate to the same underlying market. Finally, as we have discussed in section 3, our approach to estimating the LRIC/Price ratios we have used in our bottom-up model is a practical and reasonable compromise made in order to expedite the setting of new charges on a LRIC basis.

5.26 We have also adopted a proportionate response in relation to the granularity of the additional POH charges. As we have discussed in section 4, we do not propose do increase the granularity of the current charges on the basis of the limited cost savings that would accrue to stakeholders in practice.

Transparent

5.27 Finally, for reasons discussed above, we consider that the additional POH charges and their aims and effects are transparent. We have discussed our (and BT's) estimates for the additional POH charges in detail in this consultation document. We have also published the Ofcom model that we have used to calculate the additional POH charges and in doing so we have ensured maximum transparency.

Section 6

Implementation of the proposed starting charges for additional POH charges

Introduction

6.1 The aim of this section is to discuss briefly how we propose to give effect to the new proposed additional POH charges we have discussed in section 4 and how we propose to amend the relevant charge control conditions we imposed on BT in the LLCC Statement.

The new additional POH charges are included in the TI basket

6.2 On 2 July 2009 we published the LLCC Statement[80] imposing charge controls on the supply of some wholesale leased lines services pursuant to sections 45, 87 and 88 of the 2003 Act. As stated in paragraph 4.26 of the LLCC Statement, we decided to impose a single TI basket including all traditional interface ('TI') terminating and trunk segments. As further stated in paragraph 4.165 of the LLCC statement, we also decided to include additional POH charges in the TI basket.

6.3 In the light of the above, the additional POH charges we have proposed in section 4 will continue to be included in the TI basket. The implications of this are as follows:

- Additional POH charges are subject to an overall cap of RPI-1.75%. Following the CAT's direction dated 20 September 2010[81], we have amended the Controlling Percentage for the TI basket to RPI – 1.75% for the charge control years 2010/11 and 2011/12. As the additional POH charges are included in the TI basket, they are overall subject to the cap RPI-1.75% for the remainder of the charge control period.

- As stated in paragraph 4.165 of the LLCC Statement, each POH charge is also subject to a safe-guard cap of RPI-0%. As explained in paragraph 4.24 of the LLCC Statement, this safe-guard cap is intended to address the concern that BT could discriminate against external users of PPCs by raising additional POH charges. This ensures that BT cannot increase these charges in real terms.

We propose to revise BT's current SMP services conditions

6.4 In section 4 we have proposed the new Type I and Type II POH charges. We have also proposed that:

- Type I POH charges are reduced immediately to their respective LRIC estimates on date of the publication of the statement (or at the beginning of the month following the date of publication[82]). Type I POH charges are not to exceed the prescribed maximum levels (as set out in Table 16) between the date of their implementation and 30th September 2011; and

[80] http://stakeholders.ofcom.org.uk/consultations/llcc/statement/
[81] http://www.catribunal.org.uk/files/1112_Cable_Wireless_Ruling_200910.pdf
[82] BT has in the past emphasised that it is easier from a billing perspective to introduce price changes on the 1st of a month.

- Type II POH charges are increased up to a maximum of their respective LRIC estimates in two phases. Phase I increases to be introduced on date of the publication of the statement (or at the beginning of the month following the date of publication) and these charges not to exceed the prescribed maximum levels until 31st March 2012 (as set out in Table 16). Phase II increases to be introduced on 1st April 2012 and charges not to exceed the prescribed maximum levels until 30th September 2012 (as set out in Table 16).

6.5 We therefore need to modify BT's current charge control conditions to give effect to our proposed additional POH charges. In addition, we also need to dis-apply the safe-guard cap of RPI-0% in order to enable BT to implement the proposed price increases. We discuss these in more detail below.

We propose to give effect to the new additional POH charges

6.6 We propose to give effect to the proposed additional POH charges via the new paragraphs G4.1(a), GG4.1(a), GH4.1(a) and H4.1(a) as follows (for simplicity we have only shown the proposed text for paragraph G4.1(a)):

*"**G4.1(a)** The Dominant Provider shall not charge more than:*

(a) for each of the Type I POH services, the maximum amount prescribed by Table 1 of Annex E for the corresponding Type I POH service during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011;

(b) for each of the Type II POH services, the maximum amount prescribed by:

(i) Column A of Table 2 of Annex E for the corresponding Type II POH service during the period beginning on [see Consultation Document for start date] and ending on 31st March 2012;

(ii) Column B of Table 2 of Annex E for the corresponding Type II POH service during the period beginning on 1st April 2012 and ending on 30th September 2012."

6.7 The proposed additional POH charges are also listed in the new Annex E to Conditions G4, GG4, GH4 and H4 as per the tables below.

Table 1	
Type I POHs	***Maximum price (£) [statement date to 30th September 2011]***
SMA-1	*648*
SMA-4	*753*
SMA-16	*2,135*
Bearer	*401*

Table 2	***A***	***B***
Type II POHs	***Maximum price (£) [statement date to 31st March 2012]***	***Maximum price (£) [1st April 2012 to 30th September 2012]***
64 kbit/s	*125*	*146*
2 Mbit/s	*212*	*249*
34/45 Mbit/s	*1,074*	*1,259*
140/155 Mbit/s	*1,998*	*2,343*

We propose the safe-guard of cap of RPI-0% does not apply for the purposes of the proposed price increases for Type II POHs

6.8 As discussed above each additional POH charge is subject to an RPI-0% safe-guard cap. This safe-guard cap is imposed via paragraphs G4.10, GG4.10, GH4.10 and H4.10.[83] In section 4 we have made two proposals for which this condition would not apply:

- Firstly, to Type I POH charge increases between the date of implementation and 30th September 2011, during which BT is allowed to charge up to the maximum of the LRIC estimates we have proposed (as set out in Table 16); and
- Secondly, to Type II POH charge increases between the period of implementation and 30th September 2012, during which BT is allowed to charge up to maximum of the LRIC estimates we have proposed (as set out in Table 16).

6.9 Following on from this, we propose to amend paragraphs G4.10, GG4.10, GH4.10 and H4.10 as follows (for simplicity we have only shown the example for Condition G4.10):

"*...Subject to paragraph G4.10(a), [...]*."

6.10 Linked to the above, we also propose to implement the following new paragraphs G4.10a, GG4.10a, GH4.10a and H4.10a (for simplicity we have only shown the example for Condition G4.10a):

"G4.10(a) *Paragraph G4.10 shall not apply to:*

[83] See Schedule 1 of Annex 9 of the LLCC Statement.

(a) Type I POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011 for which period the prescribed maximum amounts pursuant to paragraph G4.1(a) shall apply. For the avoidance of doubt, paragraph G4.10 shall thereafter apply to any charges by the Dominant Provider for such services during the Third Relevant Year.

(b) Type II POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2012. For the avoidance of doubt, during that period only the prescribed maximum amounts pursuant to paragraph G4.1(a) shall apply."

We propose to amend the list of services

6.11 When we published the LLCC Statement we listed the relevant services in Part 2c of Annex A to Conditions G4, GG4, GH4 and H4.

6.12 We now propose to adopt the following revisions to the list of services included in Part 2c of Annex A to Conditions G4, GG4, GH4 and H4. We have extended the original list of services included in the LLCC Statement, to capture the Type I POH rental charges BT introduced since the publication of the LLCC Statement (i.e. SMA-1, SMA-4, SMA-16 and Bearer[84]).

"...

Part 2c: Rental and maintenance services in respect of the provision of Partial Private Circuits Points of Handover in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area (in relation to 34/45 Mbit/s and 140/155 Mbit/s products below) and the Hull Area (for all products below) as specified in Part 1 of Annex D to this Condition.

- 64 kbit/s
- 2 Mbit/s
- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s
- *SMA-1*
- *SMA-2*
- *SMA-16*
- *Bearer*

…"

[84] See BT price list Section B8, Part B8.01, Sub-section 1.6 at: http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

We will meet our obligations to the Commission, Other National Regulatory Authorities and the Secretary of State

6.13 Ofcom sets out in Annex 7 the draft Notification under section 48(2) of the Act and a draft Direction under the above Notification.

6.14 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.

6.15 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.

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 23 March 2011**.

A1.2 Ofcom strongly prefers to receive responses using the online web form at https://stakeholders.ofcom.org.uk/consultations/points-handover-pricing/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 Stoimenof
Floor Four
Competition Group
Riverside House
2A Southwark Bridge Road
London SE1 9HA

Fax: 020 7783 4163

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 7783 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 Spring 2011.

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 Below is a consolidated list of the consultation questions contained in this document.

Question 1 Do respondents agree that Options 1 and 4 are consistent with cost causation whilst Options 2 and 3 are not?

Question 2 Do respondents agree with our analysis of cost minimisation and with our view that we should give more weight to cost causation?

Question 3 Do respondents agree that Option 4 is most consistent with the distribution of benefits principle?

Question 4 Do respondents agree that Option 4 is most consistent with the effective competition principle?

Question 5 Do respondents agree with our analysis of practicability?

Question 6 Do respondents agree with our analysis of the four options?

Question 7 Do respondents agree with our proposed method for converting published charges into LRIC estimates, for use in our LRIC model? If not please explain why and propose an alternative approach including relevant LRIC/Price ratios we could use.

Question 8 Do respondents agree with the inputs we have used to estimate the annual rental charge for the duct and fibre used in the provision of POHs? If not, please explain why and provide alternative data.

Question 9 Do respondents agree with the inputs we have used to estimate the operational costs associated with POHs, especially in relation to network management costs? If not, please explain why and provide alternative data.

Question 10 Do respondents agree with the inputs we have used to estimate the support costs associated with POHs? If not, please explain why and provide alternative data.

Question 11 Do respondents agree that we should use our own bottom-up model to set the level of the additional POH costs to be recovered?

Question 12 Do respondents agree that we should not differentiate Type II POH charges between SDH and PDH technology?

Question 13 Do respondents agree that we should not set a single charge per SDH POH by capacity (irrespective of whether they are Type I or Type II)?

Question 14 Do respondents agree that we should not disaggregate the current bearer charge for Type I POHs further?

Question 15 Do respondents agree that we should implement the additional POH charges as set out under Option C1, where we have proposed a one-off decrease in Type I POH charges to LRIC, whilst Type II POH charges are increased to LRIC in two phases?

Question 16 Do respondents agree that BT should be allowed to increase Type I POH charges by RPI-0% (between 1st October 2011 and 30 September 2012), whilst it is required not to exceed the Type II POH charge levels proposed by Ofcom?

Question 17 Do stakeholders agree that the required notification period should be waived in respect of the proposed changes to Type I and Type II POH charges?

Annex 5

Detailed analysis of BT's cost estimates

The LLCC project determined the relevant POH costs

A5.1 The diagram below illustrates the costs that BT incurs in the provision of both Type I and Type II POHs. Within the scope of this project, we are only reviewing the costs that are recovered by the additional POH charges which are those reflected in the 'PPC charges' column in the diagram below.

Figure 3 Comparing and contrasting cost recovery between Type I and Type II POHs.

		Wholesale charges			Retail 4
		Point of handover link		PPC charges	Circuit charges
		Connection	Rental	Additional charges	Rental & conn
Type I POH					
Capital	Equipment	✓			not applicable
	Blown fibre	✓			
	Spine fibre			✓	
	Copper	not applicable			
	Duct			✓	
Mtce	Equipment		✓		
	Blown fibre			✓	
	Spine fibre			✓	
	Copper	not applicable			
	Duct			✓	
Other	Accommodation 1			✓	
	Selling 2			✓	
	Other 3			✓	
Type II POH					
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

A5.2 As can be seen in the table above:

- BT uses different equipment and infrastructure for the different arrangements. Type I POHs are always provided over fibre and have a minimum bandwidth of 155Mbit/s. In contrast, Type II POHs can be provided over copper (indicated in blue).

- For both Type I and Type II POHs the capital costs of POH equipment and blown fibre are recovered in up-front connection charges. For Type II POHs it is assumed that any customer-specific capital expenditure (indicated in pink) has already been recovered through retail charges.

- Equipment maintenance costs (indicated in purple) are recovered through separate BT charges for Type I POHs. However, for Type II POHs maintenance costs are included in the additional POH costs.

- Finally, the additional POH costs are intended to recover the remaining capital (on duct and spine fibre), maintenance, accommodation, selling and other costs as indicated in Figure 3 above.

A5.3 We discuss in more detail the specific costs which make up the additional POH costs later on in this annex.

BT's estimates for the additional POH costs

BT's original POH FAC cost estimates show a degree of volatility

A5.4 The original version of BT's model was submitted to Ofcom as part of the LLCC project and estimated the total level of costs to be in the region of £11.7m. During the LLCC Appeal, BT provided an updated version of the model to the CC where the total level of costs to be recovered was reduced to around £6.7m.

A5.5 The reasons behind this reduction as explained by BT to the CC were as follows:

- '*PDH costs represented a small percentage of the overall POH costs*';

- '*no circuits were handed over on copper'*; and

- *'revised BT estimated costs are approximately 40 per cent lower than the original estimated costs*.'[85]

A5.6 As part of the current project we asked BT for updated versions of its original model, recalculated for 2007/08, 2008/09, 2009/10 and a forecast version for 2010/11('the BT original models'). BT could not provide the requested time trend for the POH volumes used in its model for each year from 2007/08. This is because BT obtained the relevant volume data from its engineering systems which only store information in real time. Therefore the POH volumes used in all its models are constant at the March 2010 level. BT subsequently provided updated volumes at September 2010.

A5.7 BT's model combines volume data from its engineering systems, costs for the total SDH and PDH plant group[86] from its costing system and equipment prices from its Carrier Price List ('CPL'). We have summarised below the main calculation steps

[85] See paragraphs 5.37 to 5.38 of Determination.
[86] Plant groups are aggregated costs for products that utilise similar technologies, for the purpose of apportioning these costs to services.

used in BT's original model. For simplicity we only summarise the calculation steps for a Type I SDH POH (BT follows the same steps to calculate the costs of Type II POHs).

- Firstly, BT takes the equipment costs for the relevant POH from its CPL and calculates a notional depreciation figure consistent with its RFSs. BT estimates the level of notional depreciation for relevant SDH POH equipment at the exchange and the customer sites.[87]

- Secondly, BT apportions the relevant SDH plant group operating costs to SDH POHs in proportion to the ratio of equipment depreciation to total SDH depreciation. This calculation is done separately for the exchange and customer sites. This is because operating costs at a customer site only include maintenance, whilst those at the exchange also include accommodation and general management costs.

- Thirdly, BT adds the SDH operating costs by SDH POH (at the exchange and customer site) to the bearer costs (for ISH Ext and CSH POHs) to calculate the relevant Sales, General and Administration ('SG&A') costs. For this calculation BT applies an SG&A rate calculated on the basis of the relevant administration costs as a percentage of total costs for the PPC markets. These costs are consistent with BT's RFSs.

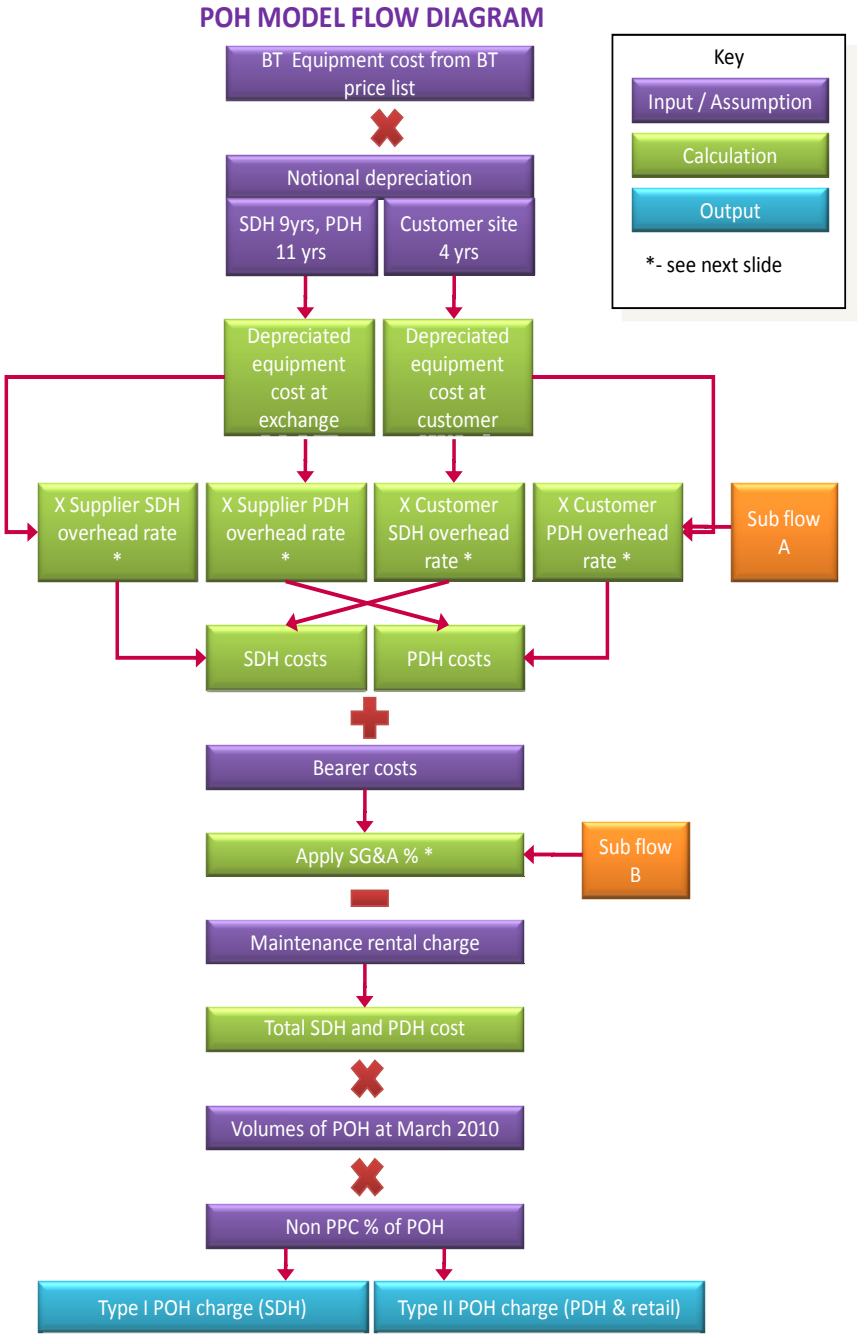
- Fourthly, BT calculates a 'unit additional POH cost' for each SDH POH which is equal to the sum of the SDH operating costs at the exchange and customer site, the relevant bearer cost and the SG&A cost. The maintenance cost, which is levied separately by BT for Type I POHs, is deducted at this stage. We note that BT does not charge a separate maintenance charge for Type II POHs.

- Finally, BT calculates the total additional SDH POH costs by multiplying the unit additional SDH POH costs by the volume of SDH POHs (excluding the % on non-PPC circuits).

A5.8 The flow diagram below summarises the key steps in BT's approach to estimating additional POH costs.

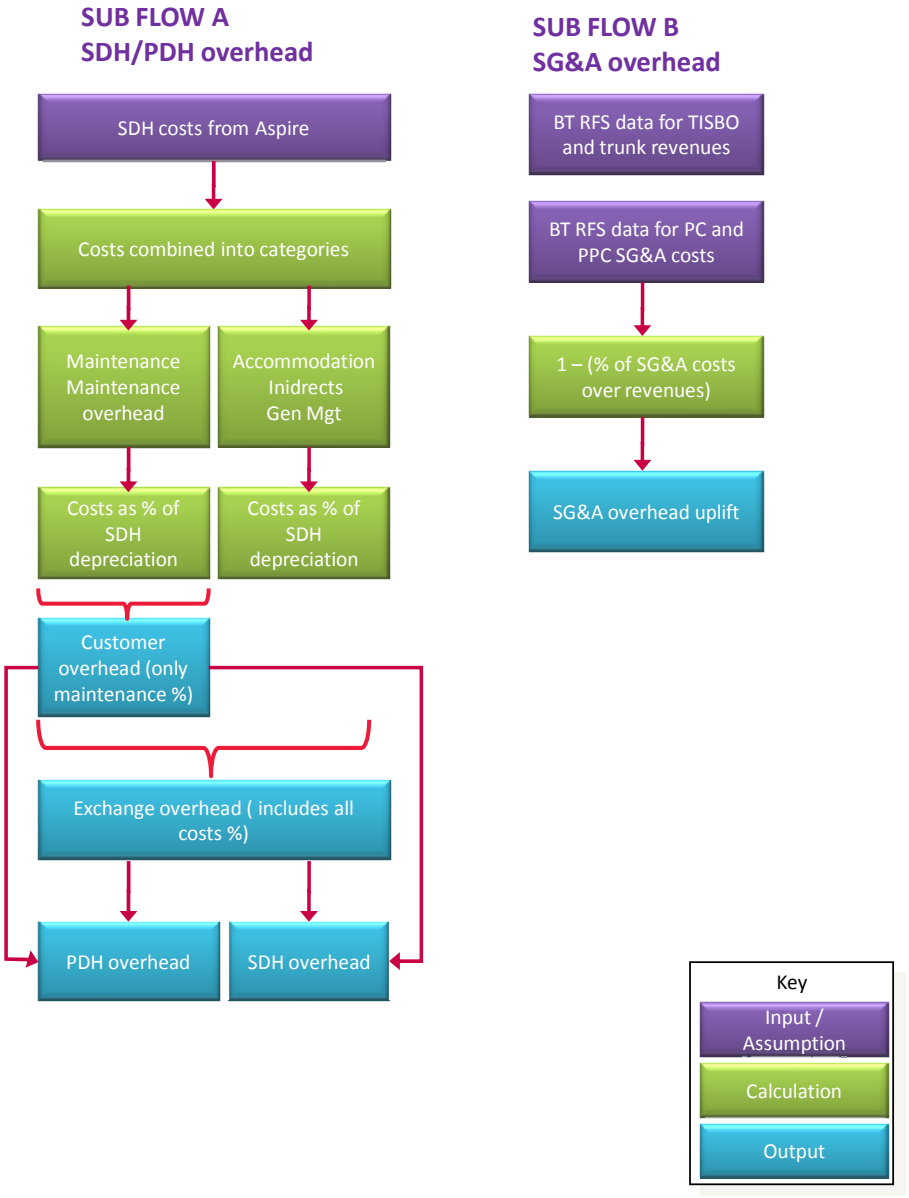
[87] The relevant Type I POHs included in BT's analysis are disaggregated by SMA-1, SMA-4 and SMA-16 and within these by ISH, ISH Ext, CSH and those SMAs which carry retail circuits.

Figure 4 Flow diagram for BT's POH cost model.



A5.9 The diagram below summarises BT's approach to calculating the SDH, PDH and SG&A overhead rates.

Figure 5 Flow diagram for BT's estimation of POH and SG&A costs.



BT's outputs and cost stacks as per its original model

A5.10 BT's estimates for the additional POH costs between 2006/07 and 2009/10 are shown below. As we explained above, when providing the requested time trend BT only updated the underlying cost data, but not the volumes of POHs. These estimates show:

- A degree of fluctuation in the underlying costs estimates, where costs have almost doubled in 2008/09 when compared to 2006/07.
- An increased level of costs has been apportioned to both SDH and PDH POHs.

Table 17 Additional POH cost estimates as per original BT model.

Costs (£m)	2009/2010	2008/2009	2007/2008	2006/2007
Total costs	**8.6**	**13.7**	**8.9**	**6.7**
Analysis by type of POH				
Type I costs	4.5	8.0	5.5	3.8
Type II costs	4.1	5.7	3.4	2.9

A5.11 The cost stacks extracted from BT's model on a FAC basis for 2006/07 and 2008/09 are set out below. The main costs are accommodation, maintenance and general management. We have totalled 34 other minor cost categories and shown these as 'other aggregated costs'.

Table 18 BT FAC cost stacks for the additional POH costs as per its original model.

Costs (£m)	2009/2010	2006/2007
Accommodation	2.7	2.0
Maintenance	1.4	1.3
Gen Management & Other	1.3	1.3
Other Aggregated Costs	3.2	2.1
Total	**8.6**	**6.7**
Analysis by type of POH		
Type I costs	4.5	3.8
Type II costs	4.1	2.9

We have reviewed BT's cost estimates as per its original model

A5.12 We have reviewed the inputs, calculations and outputs of BT's original model. Given the fluctuation observed in the additional POH cost estimates over time we have also examined potential sources and likely reasons for this.

A5.13 We note that the amount of costs by category allocated to POHs is very small compared to the total value of these cost categories. For example, accommodation costs for POHs for 2009/10 are around £2-3m as shown in Table 18 above. This represents 0.3% of the total Wholesale Services accommodation costs of £711m in BT's RFSs in 2009/10. Therefore, small changes in the allocation basis for accommodation could lead, in part, to the volatility we have observed in the results.

A5.14 BT's original model uses the equipment cost of POHs as a starting point for apportioning costs. By using the lowest price from its CPL, BT has adopted a conservative approach to its estimates.

A5.15 Our other key observations in relation to the original BT model are summarised below:

- The cost estimates produced by the BT model show a degree of fluctuation, despite volumes being kept constant at March 2010 levels throughout. The variation is from £6.7m in 2006/07 to £13.7 in 2008 to £8.6m in 2009 (see Table

17). Some of the movement is due to an increase in accommodation costs for 2008/2009 possibly down to a one-off provision made by BT for the costs of rationalising accommodation. Whilst the movement in underlying costs accounts for some of the variance, we found and BT offered no objective reasons for such significant variances.

- Accommodation, maintenance and general management costs make up 60-65% of total POH costs. The value of these cost categories for SDH and PDH components (as shown in the source data populating BT's model) has fallen over the four year period. However, the amount allocated to POHs has increased. It is unclear why there is inconsistency in the underlying costs.

- BT's approach uses the ratio of underlying operating costs to depreciation to apportion costs to POH. Our analysis shows that depreciation has declined and as a result the ratio has increased between 2006/07 and 2009/10, which partly explains the volatility in the total POH cost estimates over time.

A5.16 BT uses an estimate of bearer costs from 2006/07 across all its models. The estimate is around £0.5m and due to the small amount, BT argued that it would be impractical to estimate this cost for each year.

BT provided alternative approaches to estimating the additional POH costs on a FAC basis

A5.17 We discussed our observations in relation to its original models with BT. As a result BT provided Ofcom with two alternative approaches for estimating the additional POH costs ('the BT alternative models').

- 'Adjusted Notional Depreciation' approach. As we have explained above, as a first step in its model, BT calculates a notional depreciation for the relevant POH equipment based on its equipment prices from its CPL. In its original models, BT calculates notional depreciation using asset lives consistent with its accounting policies. However, in this alternative model, BT calculates notional depreciation based on the asset lives it derives by taking the ratio of the Gross Book Value ('GBV') of the relevant assets divided by the actual depreciation costs for the year.

  This approach removes some of the fluctuation observed in the cost estimates in BT's original models, but does imply unusually long asset lives (e.g. 60 years for 16x2 PDH POHs).[88]

- 'Mux Count' approach. For this simplified model, BT counted the total number of muxes (and those relate to POHs) recorded in its engineering systems. BT then apportioned the total SDH/PDH plant group costs to POHs based on the number of POH muxes as a percentage of the total.

  The proportion of POH muxes is only around 3-4% of the total mux number. Given the nature of the approach and lack of granularity in the costing system, the resulting POH costs may not be representative of actual costs.

[88] Our understanding is that standard asset life for transmission equipment is between 10 and 20 years.

A5.18 Both of BT's suggested new approaches produce lower total POH costs that are more consistent over time. There is still some fluctuation in the costs, which is in line with the movement of the underlying costs.

Table 19 Total additional POH costs as per BT's alternative models.

Approach (£m)	2009/2010	2008/2009	2007/2008
Original BT model	8.6	13.7	8.9
Adjusted Depreciation approach	5.2	7.4	6.9
Mux Count approach	5.9	7.5	6.4

A5.19 Our key observations in relation to the alternative BT models are as follows:

- There is still some underlying fluctuation remaining in the cost estimates. According to BT, it is not possible to meaningfully disaggregate these costs further to obtain a full explanation of the movement.
- Both new approaches result in more costs being apportioned to Type I POHs than Type II POHs when compared to BT's original model (see Table 20). BT agrees that the split of these costs in the new approaches is somewhat inconsistent with underlying costs of relevant technology.

Table 20 Ratio of Type I to Type II POH costs as per BT's various approaches.

Approach (%)	2009/2010	2008/2009	2007/2008
Original BT model	1.1	1.4	1.6
Adjusted Depreciation approach	2.0	1.9	2.1
Mux Count approach	6.7	5.8	5.2

BT updated the volumes of POHs

A5.20 BT also reviewed the volumes of POHs in its original model and provided an updated set of volumes as at September 2010 based on its engineering systems. This data resulted in higher PDH and SDH POH volumes than originally provided, as well as a higher percentage of non-PPC circuits for each mux type.

A5.21 BT provided a recalculated version of its Adjusted Depreciation and Mux Count models using the updated volumes, and the results are shown in Table 21 below.

Table 21 Total additional POH costs with updated volumes.

Approach (£m)	2009/2010	2008/2009	2007/2008
Adjusted Depreciation approach	5.0	7.2	6.5
Mux Count approach	6.4	8.1	7.0

A5.22 We have also cross-checked BT's volumes against those we have received from OCPs under our formal powers. We have not been able to reconcile volumes, possibly due to the different systems used by different providers. However, as we

have discussed in section 4 and Annex 6, the total volume of POHs has an impact on the total level of additional POH costs but very little effect on the individual and per circuit POH charges.

Comparison against BT's published RFS data

A5.23 BT prepared and published for the first time cost and revenue data on POH services in the 2009/10 RFSs. The RFSs include rental and connection revenues and costs for the year. The New POH Charges,[89] which were introduced from 1 October 2009 following publication of the LLCC Statement, were included for only six months. BT's latest POH charges, which were introduced from 1 July 2010 (£6.7m) following its industry consultation, are not included in these figures. This is because the new charges were only introduced after the end of BT's 2009/10 financial year.

A5.24 The additional POH costs in the 2009/10 RFSs are different from the costs per BT's models as they were calculated on a different basis. Before the introduction of New POH Charges on 1 October 2009, the corresponding costs used to be included within the Local End charges. BT extracted and pro-rated these costs in the RFSs to estimate the additional POH costs. However, the method proved to be insufficiently accurate for our purposes.

A5.25 We recognise that this was the first time this cost data was extracted and disclosed against these services and that market level cost and revenue data is rounded to the nearest £1m in BT's RFSs. The rounding assumption in particular recognises that care must be taken in interpreting the RFS results or placing too much reliance on the precision of the costing system, especially for services with small revenues and costs.

BT also provided POH costs on a LRIC basis

BT's approach to estimating POH costs on a LRIC basis

A5.26 BT also estimated POH costs on a LRIC basis using the 2 Mbit Link component as a proxy as this relates to transmission equipment within BT's exchanges. An exception to this was the POH bearer costs, which BT estimated on a LRIC basis using 2 Mbit Local End Fibre component as the proxy. This is because bearer costs are incurred outside the exchange and therefore the 2 Mbit Link component is less relevant as the indicator of incremental costs.

A5.27 BT derived the LRIC values for the 2Mbit/s main link services directly from its LRIC model. The LRIC model uses BT's actual costs, and applies cost volume relationships ('CVRs') to specific cost categories. The costs of the 2Mbit Link component and POH services are broken down into cost categories consistent with those in BT's LRIC model. BT then used the LRIC/FAC ratio derived for each 2 Mbit Link cost category to the FAC costs of POHs (excluding bearers) and summed these to derive an overall LRIC value. The resulting LRIC/FAC ratio is 87%, whilst the DLRIC/FAC ratio is 95%.

A5.28 BT also followed a similar approach to derive the POH bearer costs on a LRIC basis. The resulting DLRIC/FAC ratio is 68%.

[89] The New POH Charges are those charges implemented with the publication of the LLCC Statement (see Table 4.4 of the LLCC Statement).

A5.29 The table below shows the total additional POH LRIC costs according to the different BT approaches.

Table 22 Total additional POH LRIC costs as per BT's additional models with updated volumes and a LRIC/FAC ratio of 87% applied to all costs (including bearers).

Approach (£m)	2009/2010	2008/2009	2007/2008
Adjusted Depreciation approach	4.4	6.3	5.7
Mux Count approach	5.6	7.0	6.1

Reconciliation of BT's LRIC estimates with its RFSs in 2009/10

A5.30 As we have discussed above the POH costs within the RFSs represent six months of cost only. The costs for the first six months of the financial year remained within the Local End component.

A5.31 The Local End component includes the bearer from the BT exchange to the customer premises and so includes a much higher proportion of duct and fibre/copper costs than the costs that are recovered from the POH charges. The POH costs represent mainly the maintenance and exchange based costs associated with operating the POH muxes. The high level of fixed common costs within the access network (for duct/copper/fibre) result in a much lower LRIC/FAC ratio for the Local End component that the 2Mbit Link component. This is because the 2 Mbit Link component comprises mainly transmission electronics, where the proportion of fixed common costs is much lower. BT used the 2 Mbit Link components as a proxy when calculating the LRIC for POHs, as the two use the same type of equipment.

Annex 6

Ofcom bottom-up model

Introduction

A6.1 As explained in section 4, we have developed a bottom-up model ('the Ofcom model') in order to estimate the additional POH costs. In this annex we:

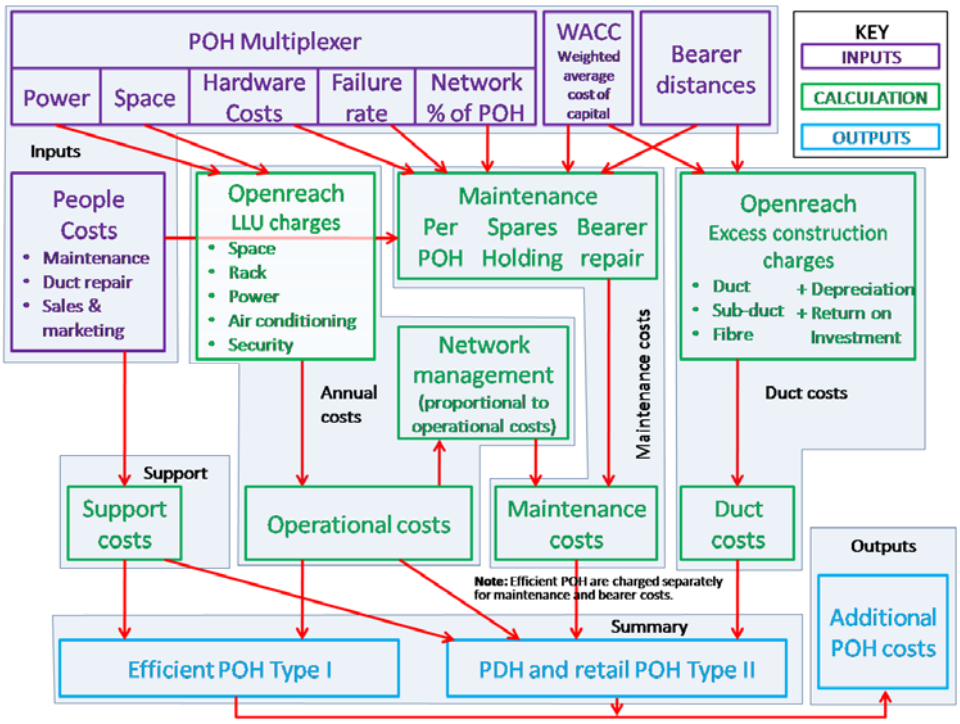
- provide an overview of the Ofcom model;
- provide details on the construction of the model and the model's calculations;
- summarise our key assumptions; and
- provide a sensitivity analysis based on different assumptions of key inputs.

A6.2 We have published the Ofcom model alongside our consultation.[90] This annex is our model documentation which we have provided to aid understanding of the Ofcom model.

Model structure

A6.3 The Ofcom model comprises an Excel workbook containing seven worksheets. The purpose of the model is to estimate the additional POH costs. We explain below how the model achieves this with reference to key inputs, assumptions, model calculations and outputs.

Figure 6 The Ofcom model structure.



[90] http://stakeholders.ofcom.org.uk/binaries/consultations/points-handover-pricing/annexes/model.xls

Contents

A6.4 In this worksheet we have provided summary information for the spreadsheet and a brief description of each workbook.

Inputs

A6.5 In this worksheet we have listed all the assumptions we have used in estimating the additional POH costs. Respondents to this consultation can determine the sensitivity of the outputs to the inputs we have used, by changing any of the assumptions we have listed.

A6.6 In this spreadsheet we have also listed all of the sources of information we have used, which are as follows:

- We have based the cost, size and power consumption for the multiplexers on information we have received from OCPs under our formal powers. We have used our own estimates for the equipment failure information.
- We have based the duct and fibre costs on Openreach's published prices for 'Excess Construction Charges'.[91]
- We have used Openreach's published prices for LLU Plan and Build to estimate the operational costs.[92]
- We have used duct and fibre depreciation assumptions which are consistent with BT's regulatory financial statements ('RFSs').
- We have used our latest estimate for BT's weighted average cost of capital ('WACC'). The Wholesale Broadband Access ('WBA') charge control[93] is consulting on a range of 8.5% to 10.0% for the 'rest of BT rate', with a mid-point of 9.3%. We are using the mid-point estimate to calculate some of the costs in our model.
- We have derived the network management costs from a confidential survey that showed that network management accounts for 23% of overall operational costs.
- We have used our own estimates for the POH sales and marketing costs.

LRIC/Price ratios

A6.7 Where our bottom-up model uses BT's charges as inputs, we are using LRIC/Price ratios (rather than LRIC/FAC ratios), to calculate LRIC from prices and so convert our model to a 'pure' LRIC model. We have used the LRIC/Price ratio for services in the WLA market as reported in BT's RFSs in 2009/10, as these are most similar to the activities we want to cost. As discussed in section 4, we have used data on LLU co-mingling services (i.e. LLU Plan and Build charges) which are reported in BT's

[91] http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPriceDetails.do?data=ZdqG%2Fxv%2FjSuBEEITnogh5uNOEwQ2%2FKws5WBAVcIlcholMnGHsqdC0vzO163bJmh34D91D7M0q8u%2F%0AIlSgtIFAKw%3D%3D

[92] http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPrices.do?data=%2Bs55xT91%2FPruY0Pxlyi4HVnqs1m6OcKz301sgolk8P2FdiaKKPEfrCsJCb3sZkzJ

[93] http://stakeholders.ofcom.org.uk/binaries/consultations/823069/summary/condoc.pdf

RFS along with data for other services in the Wholesale Local Access ('WLA') market.

A6.8 Not all services in the WLA market are suitable for using as a LRIC/Price benchmark. From the six services reported in the WLA market, we have excluded MPF and SMPF connection and rental services, as the underlying costs of these services are mostly copper and therefore very different from the POH service, which mainly comprises accommodation costs. We have also excluded MPF Room Build from our calculations as the accounting of this service is such that costs are not necessarily recognised in the year when they were incurred. We have therefore used the LRIC/Price ratios for the two remaining services in the WLA market: MPF Hostels Rentals and Tie Cables. This seems reasonable on the basis that the majority of the additional POH costs we need to estimate relate to accommodation.

Table 23 LRIC/Price and LRIC/FAC ratios for WLA services as reported in BT's RFSs.

Type of cost	LRIC/Price 2009/10	LRIC/Price 2008/09	LRIC/FAC 2009/10	LRIC/FAC 2008/09
External MPF Room build	3%	1%	90%	10%
External MPF Hostel rentals	70%	76%	86%	87%
External MPF Tie Cables	66%	143%	94%	46%
External SMPF rentals	73%	81%	85%	87%
External MPF connections	87%	154%	92%	95%
External MPF rentals	61%	85%	61%	58%
External SMPF connections	88%	124%	92%	92%

A6.9 The revenue-weighted average LRIC/Price ratio for MPF Hostel Rentals and Tie Cables in BT's RFSs in 2009/10 is 69.6%.

A6.10 The services we have used are not precisely equivalent to the ones included in our bottom-up model, but reasonable proxies. In addition LRIC values can show significant volatility year-on-year. We have therefore considered whether our LRIC estimates could significantly over or understate the true LRIC values.

A6.11 In order to inform our view, we have also looked at the 2008/09 LRIC/Price ratios for all other services in the WLA market. Table 23 shows that the resulting LRIC/Price ratios in 2008/09 were in all cases higher than those reported in 2009/10 (with the exception of MPF room build which we disregard).[94] It can also be seen that the 2009/10 LRIC/Price ratios for Hostel Rentals and Tie Cables are lower than those for MPF and SMPF connection and SMPF rental services but higher than that for MPF rental services (and, again, MPF Room Build). This indicates that the LRIC/Price ratios we have used for MPF Hostels Rentals and Tie Cables are likely to be reasonable, in that they are not out of line with those for other WLA services.

A6.12 We have also sense checked the proposed LRIC/Price ratio of 70% by comparing it to the LRIC/Price ratio for POH services in BT's RFSs in 2009/10. As shown in Table 24, the weighted average LRIC/Price ratio for POH services in BT's RFSs in 2009/10 is 76%, which is above our estimate. A LRIC/Price ratio of 70% would certainly not be out of line with the LRIC/Price ratios for either WLA or POH services and, in particular, appears unlikely to be an overestimate.

[94] As noted above, MPF room build costs are distorted because they are not recognised in the year in which they are incurred.

Table 24 LRIC/Price and LRIC/FAC ratios for POH services in BT's RFSs in 2009/10.

Type of cost	LRIC/Price	LRIC/FAC
External 3rd party POH rental 64 Kb	72%	90%
External 3rd party POH rental 2Mb non CLZ	77%	59%
External 3rd party POH rental 2Mb CLZ	74%	55%
External 3rd party POH rental 34/45Mb	95%	49%
External 3rd party POH rental 155Mb	133%	68%
Weighted average	**76%**	**65%**

A6.13 In the light of the above we think that our estimates of LRIC/Price ratios are likely to be usable approximations for the true LRIC/Price ratios for the services we have actually used as inputs in our model.

A6.14 Finally, given the inevitable approximation in these calculations, it is appropriate to round our estimates of LRIC to avoid "spurious accuracy". We believe it is appropriate to round the LRIC/Price ratio to the nearest five percentage points, i.e. 70%.

Outputs

A6.15 In this worksheet we have summarised the additional POH charges under the three pricing options we have discussed in section 4.

Summary

A6.16 In this worksheet we have summarised the outputs from the following worksheets: *Duct and Fibre Costs*, *Operational Costs*, *Maintenance Costs* and *Support Costs*. We have then combined the outputs to derive the unit annual and maintenance costs for each type of POH.

A6.17 We have estimated the total POH annual, bearer and maintenance costs (including network management) by multiplying the relevant unit POH costs with volumes of POHs. These are shown on the 'Total POH Costs' table.

A6.18 We have added the appropriate costs for each type of POH in the column 'Additional POH costs'.

- As BT levies a separate charge for the maintenance of Type II POHs we have not provided our own estimate for these costs.[95]

Duct and fibre costs

A6.19 We have estimated bearer costs as follows:

- We have used Openreach prices for footway duct, sub-duct and fibre (adjusted by our proposed LRIC/Price ratio of 70%) to calculate a cost of duct and a fibre pair per meter. We have then multiplied this figure by the distance between the

[95] See BT prices at B8.03. http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

BT and OCP nodes to calculate the total up-front cost of duct and fibre used in the provision of a POH. Based on information we have received from BT we have assumed this distance is 980m.

We have assumed 240 fibres per duct. Information we have received from BT shows an average of 86 fibres per duct based on the entire BT core network. However, we assume that POH related duct is situated in dense, urban areas and we therefore think our assumption is reasonable. In addition another OCP agreed with our 240 fibre assessment when asked.

- We have then converted the up-front duct and fibre total costs we have calculated above into an annual rental charge by calculating an annuity using the 'rest of BT' rate of 9.3%. The time periods we have assumed in the annuity calculations are 40 years for duct and 15 years for fibre consistent with BT's accounting policies.

A6.20 We have estimated the annual charge for the duct and fibre costs to be around £401 for a typical POH, as set out in Table 25. Our estimate is slightly higher than BT's current charge of £338.07 and we are therefore of the view that the assumptions we have used are reasonable.

Table 25 Duct and fibre unit costs by type of POH as per Ofcom model.

Duct and fibre annual costs					
	SMA-1	SMA-4	SMA-16	4x2	16x2
CSH	£400.61	£400.61	£400.61	£400.61	£400.61
ISH ext	£400.61	£400.61	£400.61		
ISH	£0.00	£0.00	£0.00		

Operational costs

Accommodation related costs

A6.21 We have used Openreach's published prices for LLU Plan and Build (adjusted by our proposed LRIC/Price ratio of 70%) to estimate the operational costs.[96] We have separately estimated the costs of housing, powering, cooling and securing a POH multiplexer.

A6.22 In its CPL, Openreach provides seven different charges for racks and eight different DC power options. We have used the average of Openreach's published prices for rack and DC power.

A6.23 Whilst Type I CSH POHs use two sets of equipment, BT is only responsible for the cost of housing, powering, cooling and securing one set of equipment at its exchange.

96 http://www.openreach.co.uk/orpg/home/products/pricing/loadProductPrices.do?data=%2Bs55xT91%2FPruY0Pxlyi4HVnqs1m6OcKz301sgolk8P2FdiaKKPEfrCsJCb3sZkzJ

Table 26 Unit accommodation costs by type of POH as per Ofcom model.

	SMA-1	SMA-4	SMA-16	4x2	16x2
Actual (m2)	0.231	0.231	0.693	0.02772	0.1386
by power (m2)	0.21	0.31	1	0.02	0.046
Accommodation	£42	£56	£180	£5	£25
Rack	£311	£311	£933	£37	£187
Cooling	£114	£168	£541	£11	£25
DC power	£15	£23	£73	£1	£3
Power rental	£1	£1	£5	£0	£0
Power usage	£52	£77	£249	£5	£11
Security/service	£12	£17	£54	£1	£7
Total	£547	£652	£2,034	£61	£259

Maintenance costs

A6.24 We have estimated the maintenance costs separately for the equipment and duct/fibre used in providing a POH. We describe our approach in more detail below.

Equipment maintenance

A6.25 We have estimated separately the costs associated with repairing failed POH equipment and the costs that BT incurs to store the incremental spares to enable rapid repair.

A6.26 We have used our own industry experience to estimate the mean time between failure ('MTBF') for each constituent part of a POH multiplexer to calculate the probability of a part failing in one year. Based on this probability, we have calculated the replacement and the engineering call-out costs associated with replacing a failed part. We have calculated the engineering call-out costs by assuming a time to repair of 4 hours and an average engineer's rate of £50/hour (based on our internal industry expertise).

A6.27 In addition, we have also calculated the costs associated with BT holding a selection of spares available for use. We have assumed that a minimum of three spares is required in each spares location. Based on the proportion of equipment associated with POH, volume of parts in use, and their failure rate, we have estimated the number of failures per week. We have then assumed a four week replacement time for spares that have been consumed. Based on this, the spares store needs to maintain a stock that does not fall below three despite a given weekly consumption rate. Finally, we have determined the incremental number of spares in a store based on the number of stores required to service the national distribution of POHs.

A6.28 BT has 42 spares locations in the UK and the POH equipment is only a small fraction of the total equipment in the network. We have estimated the additional spares, and their storage charges, required to maintain the POH equipment, above those already required to support the rest of the network equipment.

A6.29 We have used a 9.3% return on capital employed for the cost of these spares to calculate a perpetuity. Table 27 shows the equipment maintenance costs by type of POH.

A6.30 For CSH we have doubled the maintenance costs to reflect the two sets of equipment BT provides at its and the OCP's node.

Table 27 Equipment maintenance costs by type of POH as per Ofcom model.

POH maintenance costs by POH type					
	SMA-1	SMA-4	SMA-16	4x2	16x2
CSH	£501	£691	£2,115	£107	£339
ISH ext	£250	£345	£1,057		
ISH	£250	£3485	£1,057		

Duct maintenance

A6.31 We have used our own internal industry expertise to estimate the duct faults per year per 100km, time to repair and labour costs in order to calculate the annual cost to repair a POH bearer. These charges only apply to the CSH and ISH ext POHs.

A6.32 We have calculated the costs of fixing a POH duct as £0.23/per annum based on assumptions of fault rates and repair costs.

Network management

A6.33 We have derived the network management costs from a confidential survey that showed that network management accounts for 23% of operational costs. We have maintained the link between operational and network management costs to spread the cost proportionally across the multiplexers in scope of our model.

Table 28 Unit network management costs by POH as per Ofcom model.

Network management costs					
	SMA-1	SMA-4	SMA-16	4x2	16x2
CSH	£599	£714	£2,227	£67	£283
ISH ext	£300	£357	£1,114		
ISH	£300	£357	£1,114		

Support costs

A6.34 We have estimated the annual support costs of a POH to be a team of three, full-time, people to handle marketing, sales and customer support.

A6.35 There are 18 OCPs which buy POHs from BT, which in our view, have a high level of experience and technical knowledge of the service. We believe that the there is only a limited need for resource for marketing and sales of POHs, especially if one also takes into account that this is a declining market. We have therefore estimated that a dedicated team of three people should be able to cover POH marketing and sales activities. Based on this, we have estimated the annual support cost to be £101/POH.

Total unit POH costs by type

We have calculated the total unit costs by type of POH

A6.36 In the Summary sheet of our model we have shown the total annual rental unit costs by type of POH, which we have also reproduced in the table below. The unit costs shown are the sum of the annual, maintenance, network management and bearer rental costs we have estimated for each type of POH box (based on the Ofcom model). For comparison purposes, we have calculated the unit rental costs using our estimate of the annual maintenance charge for each POH box, rather than on the charge that BT levies separately for Type I SDH POHs.[97]

Table 29 Total unit annual rental costs by type of POH box as per the Ofcom model.

	SMA-1	SMA-4	SMA-16	4x2	16x2
CSH	£2,148	£2,559	£6,877	£736	£1,382
ISH Ext	£1,599	£1,856	£4,706		
ISH Ext	£1,198	£1,456	£4,306		

A6.37 In order to allow OCPs to compare the costs of the various types of POHs, we have put the above unit costs on a comparable basis by calculating the costs on a 2 Mbit/s circuit basis. We have also assumed that each type of POH carries the maximum amount of 2 Mbit/s PPC circuits. In addition we have indicated the number of 2 Mbit/s circuits above which a Type I POH is more cost effective than retail circuits.[98] The results in the table below show that it is much cheaper to use a Type I SDH POH to carry a 2 Mbit/s PPC circuit when compared to a Type II PDH POH.

Table 30 Total unit annual rental costs for a 2 Mbit/s PPC circuit as per the Ofcom model.

	SMA-1	SMA-4	SMA-16	4x2	16x2
CSH	£34.10	£10.15	£6.82	£184.06	£86.40
ISH ext	£25.37	£7.37	£4.67		
ISH	£19.01	£5.78	£4.27		

We have calculated the breakeven point for our preferred charging option (i.e. Option C1)

A6.38 In section 4 we have proposed to implement the additional POH charges we have calculated under our preferred charging option which is Option C (Table 15), where proposed price increases for Type II POHs are introduced in two phases (Option C1, Table 16).

[97] For the purposes of the break-even analysis shown in Table 32 we have used the maintenance charge BT levies for Type I POHs.
[98] See the 'Outputs' worksheet of the Ofcom model.

Table 31 Type I and Type II POH charges under our proposed Option C1.

Option C1: Type I POH charges reduced to LRIC and Type II POH charges increased to LRIC in two phases (Phase I and II)				
Type I POH (£ per POH)	**SMA-1**	**SMA-4**	**SMA-16**	**Bearer charge**
	£648	£753	£2,135	£401
	Sub 2M	**2M**	**34M/45M**	**155M**
Type II POH (£ per circuit)				
Phase I	£125	£212	£1,074	£1,998
Phase II	£146	£249	£1,259	£2,343

A6.39 For Option C, we have also calculated the break-even point which would make it economical for an OCP to re-designate a Type II SDH POH as a Type I SDH POH. We have calculated the break-even point by comparing the total annual rental charge for a Type I SDH POH to the per circuit rental charge for a Type II POH. We have calculated the total annual rental charge for a Type I SDH POH as the sum of the additional POH charges we have proposed under our Option A and the annual rental maintenance charge that BT levies on these POHs. We have expressed the break-even point as the minimum number of 2 Mbit/s PPC circuits that an OCP would require. For example, an OCP would require at least 18 x 2 Mbit/s PPC circuits to make it economical for it to re-designate a Type II SDH POH (SMA 16 and CSH configuration) as a Type I.

A6.40 Table 32 below also shows the annual rental cost for each type of POH which we have expressed with reference to the cost of a 2 Mbit/s PPC circuit. We have calculated the annual rental cost as the sum of the Type I POH charges we have proposed under Option C and to BT's own maintenance charges for these POHs. For the purposes of these calculations we have also assumed each POH is fully loaded.

Table 32 Break-even point for Ofcom's charging structure under Option C.

	ISH			ISH ext			CSH		
	SMA-1	**SMA-4**	**SMA-16**	**SMA-1**	**SMA-4**	**SMA-16**	**SMA-1**	**SMA-4**	**SMA-16**
Annual rental cost per 2M circuit	£13.25	£4.92	£3.15	£19.61	£6.50	£3.54	£23.62	£8.86	£4.49
Number of 2M circuits to break even	3	5	13	5	7	14	6	9	18

Sensitivity analysis

A6.41 We have checked the sensitivity of the Ofcom bottom-up model outputs to changes in input parameters. We have varied each input parameter by a factor of two and noted the change in output. We would not expect such big variations in the input parameters we have used. However, this approach helped us identify the material input assumptions and parameters we have used.

Table 33 Key parameters used in the Ofcom model.

Parameter	*Change*	*Output change*	*Notes*
Bearer distance	Double	+31%	Based on information from BT
BT duct and fibre costs	Double	+30%	Based on BT published charges
BT LLU accommodation charge	Double	+4%	Input not material, based on BT published charge
BT LLU rack charge	Double	+23%	Based on BT published charge
BT LLU air conditioning charge	Double	+8%	Based on BT published charge
BT LLU DC power charge	Double	+1%	Input not material, BT published charge
BT LLU power rental charge	Double	none	Input not material, BT published charge
BT LLU power usage charge	Double	+3%	Input not material, BT published charge
BT LLU security & service charge	Double	+1%	Input not material, BT published charge
Network management cost	Double	+26%	Derived from operational costs
Equipment capital costs	Double	+1%	Input not material, based on Ofcom estimate
Equipment power consumptions	Double	+15%	Inputs verified with OCPs
Equipment size	Double	+22%	Inputs verified with OCPs
Equipment MTBFs	Halve	+21%	Based on Ofcom estimate
Cost of spares	Double	+18%	Based on Ofcom estimate
Cost of duct maintenance	Double	none	Input not material
Cost of marketing and sales	Double	+9%	Input not material, based on Ofcom estimate
Labour charge	Double	+1%	Input not material

A6.42 Of the parameters varied, eight give rise to output changes greater than 10% and could be considered material. However, we have a high level of confidence in most of the assumptions we have made:

- We have based the bearer distance of 980m on information we have received from BT.
- Duct/fibre costs and rack charges are based on BT's published charges.
- We have verified the assumptions in relation to equipment size and power consumption against information we have received from OCPs in response to our S135 information request.

A6.43 We believe the approach we have used to estimate network management costs to be reasonable, but would welcome stakeholder views on this aspect of our calculations.

A6.44 We have also run a sensitivity to see the impact of three key assumptions on the total additional POH costs (see Table 34) and the individual POH charges (see Table 35). The three assumptions we have tested are network management costs, BT's WACC and POH mux/retail circuit volumes.

A6.45 Table 34 shows that total additional POH costs are most sensitive to changes in volumes (Scenario a). The biggest impact on the level of additional POH costs is obtained when each of the three key assumptions are set at either their maximum or minimum value (Scenario d). Under Scenario d total additional POH costs change by around ±8% compared to the Ofcom base case.

Table 34 Sensitivity analysis for total additional POH costs (impact of each change measured separately).

Assumptions	Value for sensitivity analysis	Additional POH costs as per Ofcom model (£m)*
Ofcom base case		**3.77**
a. POH volumes and number of retail circuits	Increased by 5% Reduced by 5%	3.94 (+4.6%) 3.60 (-4.5%)
b. Network management costs	Increased by 10% Reduced by 10%	3.84 (+1.9%) 3.70 (-1.8%)
c. WACC	10% 8.5%	3.82 (+1.5%) 3.71 (-1.3%)
d. a + b + c	a (+5%) + b (+10%) + c (10%) a (-5%) + b (-10%) + c (8.5%)	4.06 (+8.0%) 3.48 (-7.6%)
e. a + b + c	a (+5%) + b (-10%) + c (8.5%) a (-5%) + b (+10%) + c (10%)	3.81 (+1.2%) 3.72 (-1.4%)

* percentages shown in parenthesis show variation from the Ofcom base case.

A6.46 Table 35 below shows the individual Type I and Type II POH charges under some of the sensitivity scenarios we have run. Whilst total additional POH costs are most sensitive to changes in volumes, additional POH charges are much less sensitive. In fact for a ±5% change in volumes, total additional POH costs change by around ±5% (Scenario a, Table 34), whilst individual POH charges change only by around ±0.8% (Sensitivity 1, Table 35).

A6.47 The outer bounds of our sensitivity analysis are produced by changing network management costs by ±10%, volumes of POHs and retail circuits by ± 5% and the value of BT's WACC is set at either 8.5% or 10%. Using these assumptions total additional POH costs change by around ±8% (Scenario d, Table 34). On the other hand, Type I charges change by around ±0.8% and Type II POH charges change by around ±4% (Sensitivity 4, Table 35). The impact on Type II POH charges is greater because they include maintenance costs, which are excluded from Type I POH charges (this is because BT charges separately for these).

A6.48 The biggest change in the additional Type I and Type II POH charges is observed when changes in volumes are in the opposite direction to changes in the level of costs for network management and WACC (Sensitivity 5, Table 35). For example, for a 5% increase in volumes, coupled with a 10% decrease in network management costs and a WACC of 8.5%, Type I POH charges change by around -0.7%, whilst Type II POH charges change by around -5%.

Table 35 Sensitivity analysis for additional Type I and Type II POH charges.

	Type I POH charge (£/POH)				Type II POH charges (£/circuit)			
	SMA-1	**SMA-4**	**SMA-16**	**Bearer**	**Sub 2M**	**2M**	**34M/45M**	**155M**
Option C	£648	£753	£2,135	£401	£146	£249	£1,259	£2,343
Sensitivity 1	**Volumes**							
+5%	£643	£748	£2,130	£401	£146	£248	£1,254	£2,333
change	*-0.7%*	*-0.6%*	*-0.2%*	*0.0%*	*-0.4%*	*-0.4%*	*-0.4%*	*-0.4%*
-5%	£653	£759	£2,140	£401	£147	£250	£1,266	£2,356
change	*0.8%*	*0.7%*	*0.2%*	*0.0%*	*0.6%*	*0.6%*	*0.6%*	*0.6%*
Sensitivity 2	**Network management costs**							
+10%	£648	£753	£2,135	£401	£150	£256	£1,293	£2,405
change	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*2.7%*	*2.7%*	*2.7%*	*2.7%*
-10%	£648	£753	£2,135	£401	£143	£243	£1,228	£2,284
change	*0.0%*	*0.0%*	*0.0%*	*0.0%*	*-2.5%*	*-2.5%*	*-2.5%*	*-2.5%*
Sensitivity 3	**WACC**							
10%	£648	£753	£2,135	£417	£149	£253	£1,279	£2,380
change	*0.0%*	*0.0%*	*0.0%*	*4.0%*	*1.6%*	*1.6%*	*1.6%*	*1.6%*
8.5%	£648	£753	£2,135	£382	£144	£245	£1,237	£2,301
change	*0.0%*	*0.0%*	*0.0%*	*-4.6%*	*-1.8%*	*-1.8%*	*-1.8%*	*-1.8%*
Sensitivity 4	**Volumes, WACC and network management costs**							
a)*	£643	£748	£2,130	£417	£152	£258	£1,307	£2,433
change	*-0.7%*	*-0.6%*	*-0.2%*	*4.0%*	*3.8%*	*3.8%*	*3.8%*	*3.8%*
b)*	£653	£759	£2,140	£382	£141	£240	£1,213	£2,256
change	*0.8%*	*0.7%*	*0.2%*	*-4.6%*	*-3.7%*	*-3.7%*	*-3.7%*	*-3.7%*
Sensitivity 5	**Volumes, WACC and network management costs**							
a)**	£643	£748	£2,130	£382	£140	£237	£1,201	£2,234
change	*-0.7%*	*-0.6%*	*-0.2%*	*-4.6%*	*-4.7%*	*-4.7%*	*-4.7%*	*-4.7%*
b)**	£653	£759	£2,140	£417	£153	£261	£1,320	£2,456
change	*0.8%*	*0.7%*	*0.2%*	*4.0%*	*4.8%*	*4.8%*	*4.8%*	*4.8%*

* 4 a) volumes +5%, network management costs +10%, WACC 10%, 4 b) volumes -5%, network management costs -10%, WACC 8.5%.
** 5 a) volumes +5%, network management costs -10%, WACC 8.5%, 5 b) volumes -5%, network management costs +10%, WACC 10%.

Annex 7

Proposal for the modification of SMP price control condition

NOTIFICATION UNDER SECTION 48(2) OF THE COMMUNICATIONS ACT 2003

Draft decision with regards to the modification of SMP price control conditions in relation to BT under section 45 of the Communications Act 2003.

Background

1. On 8 December 2008, the Office of Communications ("Ofcom") published 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**").[99]

2. At Annex 8 to the BCMR Statement, Ofcom published a notification (the "**BCMR Notification**") identifying, in accordance with section 79 of the Communications Act 2003 (the "**Act**"), a number of services markets in each of which Ofcom determined that, for the purpose of making market power determinations under the Act, BT[100] has Significant Market Power ("SMP"). Specifically, those services markets are:

(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[101];

(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[102];

(c) 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;

[99] http://stakeholders.ofcom.org.uk/binaries/consultations/bcmr08/summary/bcmr08.pdf

[100] "**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 (see paragraph 21(a) of the BCMR Notification).

[101] "**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 (see paragraph 21(b) of the BCMR Notification).

[102] "**Central and East London Area**" means the area in London consisting of the postal sectors set out in the Appendix to the BCMR Notification (see paragraph 21(d) of the BCMR Notification).

(d) 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;

(e) the provision of wholesale trunk segments at all bandwidths within the United Kingdom; and

(f) 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.

3. As a result of those market power determinations, in accordance with section 48(1) of the Act, Ofcom set on BT pursuant to section 45 of the Act the SMP conditions set out in Schedules 1 to 6 to the BCMR Notification, each Schedule of which containing SMP conditions that correspond to the respective services markets mentioned in paragraph 2 above (such that SMP conditions applying on BT to TISBO up to and including 8 Mbit/s being set out in Schedule 1 to the BCMR Notification, and so on). Those SMP conditions did not include any price controls, although Ofcom concluded that, in principle, BT should be subject to charge controls in the markets for low bandwidth, high bandwidth and very high bandwidth 155 Mbit/s TISBOs, TI trunk segments and low bandwidth AISBOs. Ofcom considered that such controls would be necessary to address the nature of the problems identified in the above-mentioned market power determinations (except for the retail leased lines), but that the details and design of such controls would be subject to a separate statement and separate notification.

4. On 2 July 2009, Ofcom published a statement entitled '*Leased Lines Charge Control – A new charge control framework for wholesale traditional interface and alternative interface products and services*' (the **"LLCC Statement**"), which included a publication at Annex 9 to that document of a notification under section 48(1) of the Act setting out Ofcom's new SMP conditions for the purpose of imposing on BT charge controls to address the above-mentioned problems (the "**LLCC Notification**").[103]

5. On 2 September 2009, Cable & Wireless UK ("**C&W**") brought an appeal against the LLCC Statement (the "**LLCC Appeal**") to the Competition Appeal Tribunal (the "**CAT**") under section 192 of the Act.

6. On 20 September 2010 the CAT disposed of the entire appeal (the "Ruling") and remitted the decision under appeal to Ofcom with the below directions in relation to POHs (the "CAT Order"). These are as follows:

> *"...*
>
> *4. In relation to the error found in Reference Question 4(a)(i), the Tribunal directs OFCOM to assess the reasonableness of the revised BT estimated costs and the determination of the appropriate figure for the new POH charges.*
>
> *5. In relation to the error found in Reference Question 4(a)(iii), the Tribunal directs OFCOM to assess the various regulatory options for implementing new POH charges in the light of the matters set out in the Commission's assessment of*

[103] http://stakeholders.ofcom.org.uk/consultations/llcc/statement/

Reference Questions 4(a)(ii), (iii) and (iv) and in a manner which puts OFCOM in a position to satisfy its relevant statutory obligations.

6. In relation to the error found in Reference Question 4(b)(i), the Tribunal directs OFCOM to decide how POH costs should be recovered in the light of the matters set out in the Commission's assessment of Reference Question 4(b)(i).

…"

7. In this Notification, Ofcom is now proposing to modify the SMP price control conditions on BT, as set out in the Schedules to this Notification.

8. Ofcom hereby, in accordance with section 48(2) of the Act and in relation to the services markets referred to in paragraph 2 above (except for the services market in sub-paragraph (f)) in each of which Ofcom has determined BT to be a person having significant market power, proposes to modify SMP conditions imposing the price controls specified in the Schedules to this Notification (the "**SMP Charge Control Conditions**"), such that:

(a) **Condition G4** (Charge control) in **Schedule 1** to this Notification is modified by amending Part 2c of Annex A and Part 1 of Annex D;

(b) **Condition GG4** (Charge control) in **Schedule 2** to this Notification modified by amending Part 2c of Annex A and Part 1 of Annex D;

(c) **Condition GH4** (Charge control) in **Schedule 3** to this Notification is modified by amending Part 2c of Annex A and Part 1 of Annex D; and

(d) **Condition H4** (Charge control) in **Schedule 5** to this Notification is modified by amending Part 2c of Annex A and Part 1 of Annex D.

9. The effect of, and Ofcom's reasons for making, the proposals to amend the SMP price control conditions set out in the Schedules to this Notification are contained in the consultation accompanying this Notification.

10. The proposals set out in this Notification shall become effective with the publication of the final statement on the leased lines charge controls.

11. 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.

12. Moreover in making the proposals set out in this Notification, Ofcom has considered the exercise of its general duties and the modification of the charge control condition in the light of the tests under section 47(1), 87 and 88 of the Act.

13. Representations may be made to Ofcom about the proposals set out in this Notification and the accompanying explanatory statement by no later than 23 March 2011.

14. Copies of this Notification have been sent to the Secretary of State in accordance with section 50(1)(a) of the Act, as well as to the European Commission and to the regulatory authorities of every other Member State in accordance with sections 50(3) and 81 of the Act.

Interpretation

15. Except for references made to proposed identified services markets in paragraph 2 above (and expect as otherwise defined in paragraph 14 below) of this Notification, words or expressions used in this Notification shall have the same meaning as they have been ascribed in the Act.

16. In this Notification—

(a) "**Act**" means the Communications Act 2003 (c.21);

(b) "**BCMR Notification**" has the meaning given to it in paragraph 2 of this Notification;

(c) "**BCMR Statement**" has the meaning given to it in paragraph 1 of this Notification;

(d) "**BT**" has the meaning given to it in paragraph 2 of this Notification;

(e) "**CAT**" means the Competition Appeal Tribunal;

(f) "**C&W**" means Cable & Wireless UK;

(g) "**Central and East London Area**" has the meaning given to it in paragraph 2(c) of this Notification;

(h) "**Hull Area**" has the meaning given to it in paragraph 2(c) of this Notification;

(i) "**LLCC Appeal**" means the appeal C&W brought to the CAT on 2 September 2010 in relation to the LLCC Statement;

(j) "**LLCC Statement**" means the statement Ofcom published on 2 July 2009 entitled '*Leased Lines Charge Control – A new charge control framework for wholesale traditional interface and alternative interface products and services*';

(k) "**LLCC Notification**" has the meaning given to it in paragraph 4 of this Notification; and

(l) "**Ofcom**" means the Office of Communications.

17. 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.

18. The Schedules to this Notification shall form part of this Notification.

19. Unless otherwise stated in the Schedules to this Notification, the decisions set out above shall take effect on the day this Notification is published.

GARETH DAVIES

Competition Policy Director, Ofcom

[Signature]

A person duly authorised in accordance with paragraph 18 of the Schedule to the Office of Communications Act 2002

[Date]

Schedule 1

(TISBO up to and including 8 Mbit/s)

SMP services condition G4

Modification of 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 megabits per second within the United Kingdom but not including the Hull Area

1. The following new paragraph G4.1(a) shall be set by inserting it after paragraph G4.1 of Condition G4 in Part 2 of Schedule 1 to the BCMR Notification:

"**G4.1(a)** The Dominant Provider shall not charge more than:

(a) for each of the Type I POH services, the maximum amount prescribed by Table 1 of Annex E for the corresponding Type I POH service during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011;

(b) for each of the Type II POH services, the maximum amount prescribed by:

(i) Column A of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on [see Consultation Document for start date] and ending on 31st March 2012;

(ii) (ii) Column B of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on 1st April 2012 and ending on 30th September 2012."

2. Paragraph G4.10 of Condition G4 in Part 2 of Schedule 1 to the BCMR Notification shall be modified by inserting the following words at the beginning of that Condition:

"**G4.10** ...Subject to paragraph G4.10(a), […]."

3. The following new paragraph G4.10(a) shall be set by inserting it after paragraph G4.10 of Condition G4 in Part 2 of Schedule 1 to the BCMR Notification:

"G4.10(a) Paragraph G4.10 shall not apply to:

(a) Type I POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011 for which period the prescribed maximum amounts pursuant to paragraph G4.1(a) shall apply. For the avoidance of doubt, paragraph G4.10 shall thereafter apply to any charges by the Dominant Provider for such services during the Third Relevant Year.

(b) Type II POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2012. For the avoidance of doubt, during that period only the prescribed maximum amounts pursuant to paragraph G4.1(a) shall apply."

4. The following new definitions shall be set by inserting them in paragraph G4.17 of Condition G4 in Part 2 of Schedule 1 to the BCMR Notification:

(d(i)) **"Third Relevant Year"** means the period of 12 months beginning on 1st October 2011 and ending on 30th September 2012. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the Third Relevant Year unless the context otherwise requires;"

(n) **"Type I POH services"** means the services listed in Section B8, Part 8.01, Sub-Section 1.6 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

(o) **"Type II POH services"** means the services listed in the column entitled "3rd party POH rental fixed charge p.a." in Section 8, Part 8.03, Sub-section 1.1 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

5. Part 2(c) of Annex A shall be deleted and replaced in its entirety as follows:

Annex A to Condition G4

Products and services subject to charge control pursuant to Condition G4.1(a)

"...

Part 2c: Rental and maintenance services in respect of the provision of Partial Private Circuits Points of Handover in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area (in relation to 34/45 Mbit/s and 140/155 Mbit/s products below) and the Hull Area (for all products below) as specified in Part 1 of Annex D to this Condition.

- 64 kbit/s
- 2 Mbit/s
- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s
- SMA-1
- SMA-2
- SMA-16
- Bearer

…"

6. The following new Annex shall be inserted after Annex D in Part 2 of Schedule 1 to the BCMR Notification:

Annex E to Condition G4

Maximum Charges pursuant to paragraph G4.1(a)

Part 1

Table 1

Type I POHs	Maximum Price (£) [statement date to 30th September 2011]
SMA-1	648
SMA-4	753
SMA-16	2,135
Bearer	401

Table 2

	A	B
Type II POHs	**Maximum Price (£) [statement date to 31st March 2012]**	**Maximum Price (£) [1st April 2012 to 30th September 2012]**
64 kbit/s	125	146
2 Mbit/s	212	249
34/45 Mbit/s	1,074	1,259
140/155 Mbit/s	1,998	2,343

Schedule 2

(TISBO above 8 Mbit/s up to and including 45 Mbit/s)

SMP services condition GG4

Modification of 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 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

1. The following new paragraph GG4.1(a) shall be set by inserting it after paragraph GG4.1 of Condition GG4 in Part 2 of Schedule 2 to the BCMR Notification:

"**GG4.1(a)** The Dominant Provider shall not charge more than:

(a) for each of the Type I POH services, the maximum amount prescribed by Table 1 of Annex E for the corresponding Type I POH service during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011;

(b) for each of the Type II POH services, the maximum amount prescribed by:

(i) Column A of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on [see Consultation Document for start date] and ending on 31st March 2012;

(ii) Column B of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on 1st April 2012 and ending on 30th September 2012."

2. Paragraph GG4.10 of Condition GG4 in Part 2 of Schedule 2 to the BCMR Notification shall be modified by inserting the following words at the beginning of that Condition:

"**GG4.10** ...Subject to paragraph GG4.10(a), […]."

3. The following new paragraph GG4.10(a) shall be set by inserting it after paragraph GG4.10 of Condition GG4 in Part 2 of Schedule 2 to the BCMR Notification:

"GG4.10(a) Paragraph GG4.10 shall not apply to:

(a) Type I POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011 for which period the prescribed maximum amounts pursuant to paragraph GG4.1(a) shall apply. For the avoidance of doubt, paragraph GG4.10 shall thereafter apply to any charges by the Dominant Provider for such services during the Third Relevant Year.

(b) Type II POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2012. For the avoidance of doubt, during that period only the prescribed maximum amounts pursuant to paragraph GG4.1(a) shall apply."

4. The following new definitions shall be set by inserting them in paragraph GG4.17 of Condition GG4 in Part 2 of Schedule 2 to the BCMR Notification:

(d(i)) **"Third Relevant Year"** means the period of 12 months beginning on 1st October 2011 and ending on 30th September 2012. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the Third Relevant Year unless the context otherwise requires;"

(n) **"Type I POH services"** means the services listed in Section B8, Part 8.01, Sub-Section 1.6 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

(o) **"Type II POH services"** means the services listed in the column entitled "3rd party POH rental fixed charge p.a." in Section 8, Part 8.03, Sub-section 1.1 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

5. Part 2(c) of Annex A shall be deleted and replaced in its entirety as follows:

Annex A to Condition GG4

Products and services subject to charge control pursuant to Condition GG4.1(a)

"...

Part 2c: Rental and maintenance services in respect of the provision of Partial Private Circuits Points of Handover in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area (in relation to 34/45 Mbit/s and 140/155 Mbit/s products below) and the Hull Area (for all products below) as specified in Part 1 of Annex D to this Condition.

- 64 kbit/s
- 2 Mbit/s
- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s
- SMA-1
- SMA-2
- SMA-16
- Bearer

…"

6. The following new Annex shall be inserted after Annex D in Part 2 of Schedule 2 to the BCMR Notification:

Annex E to Condition GG4

Maximum Charges pursuant to paragraph GG4.1(a)

Part 1

Table 1

Type I POHs	Maximum Price (£) [statement date to 30th September 2011]
SMA-1	648
SMA-4	753
SMA-16	2,135
Bearer	401

Table 2

	A	B
Type II POHs	**Maximum Price (£) [statement date to 31st March 2012]**	**Maximum Price (£) [1st April 2012 to 30th September 2012]**
64 kbit/s	125	146
2 Mbit/s	212	249
34/45 Mbit/s	1,074	1,259
140/155 Mbit/s	1,998	2,343

Schedule 3

(TISBO above 45 Mbit/s up to and including 155 Mbit/s)

SMP services condition GH4

Modification of 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 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

1. The following new paragraph GH4.1(a) shall be set by inserting it after paragraph GH4.1 of Condition GH4 in Part 2 of Schedule 3 to the BCMR Notification:

"**GH4.1(a)** The Dominant Provider shall not charge more than:

(a) for each of the Type I POH services, the maximum amount prescribed by Table 1 of Annex E for the corresponding Type I POH service during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011;

(b) for each of the Type II POH services, the maximum amount prescribed by:

(i) Column A of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on [see Consultation Document for start date] and ending on 31st March 2012;

(ii) (ii) Column B of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on 1st April 2012 and ending on 30th September 2012."

2. Paragraph GH4.10 of Condition GH4 in Part 2 of Schedule 3 to the BCMR Notification shall be modified by inserting the following words at the beginning of that Condition:

"**GH4.10** ...Subject to paragraph GH4.10(a), […]."

3. The following new paragraph GH4.10(a) shall be set by inserting it after paragraph GH4.10 of Condition GH4 in Part 2 of Schedule 3 to the BCMR Notification:

"GH4.10(a) Paragraph GH4.10 shall not apply to:

(a) Type I POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011 for which period the prescribed maximum amounts pursuant to paragraph GH4.1(a) shall apply. For the avoidance of doubt, paragraph GH4.10 shall thereafter apply to any charges by the Dominant Provider for such services during the Third Relevant Year.

(b) Type II POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2012. For the avoidance of doubt, during that period only the prescribed maximum amounts pursuant to paragraph GH4.1(a) shall apply."

4. The following new definitions shall be set by inserting them in paragraph GH4.17 of Condition GH4 in Part 2 of Schedule 3 to the BCMR Notification:

(d(i)) **"Third Relevant Year"** means the period of 12 months beginning on 1st October 2011 and ending on 30th September 2012. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the Third Relevant Year unless the context otherwise requires;"

(n) **"Type I POH services"** means the services listed in Section B8, Part 8.01, Sub-Section 1.6 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

(o) **"Type II POH services"** means the services listed in the column entitled "3rd party POH rental fixed charge p.a." in Section 8, Part 8.03, Sub-section 1.1 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

5. Part 2(c) of Annex A shall be deleted and replaced in its entirety as follows:

Annex A to Condition GH4

Products and services subject to charge control pursuant to Condition GH4.1(a)

"...

Part 2c: Rental and maintenance services in respect of the provision of Partial Private Circuits Points of Handover in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area (in relation to 34/45 Mbit/s and 140/155 Mbit/s products below) and the Hull Area (for all products below) as specified in Part 1 of Annex D to this Condition.

- 64 kbit/s
- 2 Mbit/s
- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s
- SMA-1
- SMA-2
- SMA-16
- Bearer

…"

6. The following new Annex shall be inserted after Annex D in Part 2 of Schedule 3 to the BCMR Notification:

Annex E to Condition GH4

Maximum Charges pursuant to paragraph GH4.1(a)

Part 1

Table 1

Type I POHs	Maximum Price (£) [statement date to 30th September 2011]
SMA-1	648
SMA-4	753
SMA-16	2,135
Bearer	401

Table 2

	A	B
Type II POHs	**Maximum Price (£) [statement date to 31st March 2012]**	**Maximum Price (£) [1st April 2012 to 30th September 2012]**
64 kbit/s	125	146
2 Mbit/s	212	249
34/45 Mbit/s	1,074	1,259
140/155 Mbit/s	1,998	2,343

Schedule 5

(Trunk)

SMP services condition H4

Modification of 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. The following new paragraph H4.1(a) shall be set by inserting it after paragraph H4.1 of Condition H4 in Part 2 of Schedule 5 to the BCMR Notification:

"**H4.1(a)** The Dominant Provider shall not charge more than:

(a) for each of the Type I POH services, the maximum amount prescribed by Table 1 of Annex E for the corresponding Type I POH service during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011;

(b) for each of the Type II POH services, the maximum amount prescribed by:

(i) Column A of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on [see Consultation Document for start date] and ending on 31st March 2012;

(ii) (ii) Column B of Table 2 of Annex E for the corresponding Type POH II service during the period beginning on 1st April 2012 and ending on 30th September 2012."

2. Paragraph H4.10 of Condition H4 in Part 2 of Schedule 5 to the BCMR Notification shall be modified by inserting the following words at the beginning of that Condition:

"**H4.10** ...Subject to paragraph H4.10(a), […]."

3. The following new paragraph H4.10(a) shall be set by inserting it after paragraph H4.10 of Condition H4 in Part 2 of Schedule 5 to the BCMR Notification:

"H4.10(a) Paragraph H4.10 shall not apply to:

(c) Type I POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2011 for which period the prescribed maximum amounts pursuant to paragraph H4.1(a) shall apply. For the avoidance of doubt, paragraph H4.10 shall thereafter apply to any charges by the Dominant Provider for such services during the Third Relevant Year.

(d) Type II POH services during the period beginning on [see Consultation Document for start date] and ending on 30th September 2012. For the avoidance of doubt, during that period only the prescribed maximum amounts pursuant to paragraph H4.1(a) shall apply."

4. The following new definitions shall be set by inserting them in paragraph H4.17 of Condition H4 in Part 2 of Schedule 5 to the BCMR Notification:

(d(i)) **"Third Relevant Year"** means the period of 12 months beginning on 1st October 2011 and ending on 30th September 2012. For the avoidance of doubt, any reference in this

Condition to a Relevant Year includes the Third Relevant Year unless the context otherwise requires;"

(n) **"Type I POH services"** means the services listed in Section B8, Part 8.01, Sub-Section 1.6 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

(o) **"Type II POH services"** means the services listed in the column entitled "3rd party POH rental fixed charge p.a." in Section 8, Part 8.03, Sub-section 1.1 of BT's Carrier Price List:

http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

5. Part 2(c) of Annex A shall be deleted and replaced in its entirety as follows:

Annex A to Condition H4

Products and services subject to charge control pursuant to Condition H4.1(a)

"...

Part 2c: Rental and maintenance services in respect of the provision of Partial Private Circuits Points of Handover in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area (in relation to 34/45 Mbit/s and 140/155 Mbit/s products below) and the Hull Area (for all products below) as specified in Part 1 of Annex D to this Condition.

- 64 kbit/s
- 2 Mbit/s
- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s
- SMA-1
- SMA-2
- SMA-16
- Bearer

…"

6. The following new Annex shall be inserted after Annex D in Part 2 of Schedule 5 to the BCMR Notification:

Annex E to Condition H4

Maximum Charges pursuant to paragraph H4.1(a)

Part 1

Table 1

Type I POHs	Maximum Price (£) [statement date to 30th September 2011]
SMA-1	648
SMA-4	753
SMA-16	2,135
Bearer	401

Table 2

	A	B
Type II POHs	**Maximum Price (£) [statement date to 31st March 2012]**	**Maximum Price (£) [1st April 2012 to 30th September 2012]**
64 kbit/s	125	146
2 Mbit/s	212	249
34/45 Mbit/s	1,074	1,259
140/155 Mbit/s	1,998	2,343

Annex 8

Glossary

Add Drop Multiplexer (ADM)
An ADM is an important element of an optical fiber network. A multiplexer combines, or multiplexes, several lower-bandwidth streams of data into a single beam of light. An add-drop multiplexer also has the capability to add one or more lower-bandwidth signals to an existing high-bandwidth data stream, and at the same time can extract or drop other low-bandwidth signals, removing them from the stream and redirecting them to some other network path.

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).

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.

Distributed long run incremental cost (DLRIC)
DLRIC is the LRIC of the individual service with a share of costs which are common to other services over BT's "core" 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.

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.

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.

Leased line
A permanently connected communications link between two premises dedicated to the customers' exclusive use.

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.

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.

Pleisynchronous 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 Handover (POH)
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.

Short Run Marginal Cost (SRMC)
The cost caused by the provision of a defined increment of output, where the increment of providing a service is equal to one unit of output and where in the short run some costs are fixed i.e. they do not vary with output over the specified period.

SubMiniature Type A (SMA)
The SMA connector is a type of radio frequency connector developed in the 1960s to make it easier to connect coaxial cables.

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.

Synchronous Transport Mode (STM)
An ITU-T defined standard (G.783) for a multiplexing hierarchy supported by the BT SMA multiplexers.

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.

Type I POH charges
Type I POH charges include the services listed in Section B8, Part 8.01, Sub-Section 1.6 of BT's Carrie Price List:
http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

Type II POH charges
Type II POH charges include the services listed in the column entitled "3rd party POH rental fixed charge p.a." in Section 8, Part 8.03, Sub-section 1.1 of BT's Carrier Price List:
http://www.btwholesale.com/pages/cmsjsps/service_and_support/service_support_hub/online_pricing_hub/cpl_hub/cpl_pricing_hub/cpl_browsable_sections/cpl_browsable_sectionb_8.jsp

Virtual Private Network (VPN)
A VPN is a computer network that uses a public telecommunication infrastructure such as the Internet to provide remote offices or individual users with secure access to their organisation's network.