



Leased Lines Charge Control

Annexes

Statement

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Annex 1

Responses to this consultation

Responses to our December Consultation

A1.1 The following is a list of respondents to our December Consultation:

- BT
- Cable and Wireless
- Talk Talk
- Colt
- European Commission
- Global Crossing
- Kingston Communications
- MBNL
- SKY
- UKCTA
- Verizon Business
- Virgin Media

A1.2 Non-confidential responses can be found at:
<http://www.ofcom.org.uk/consult/condocs/llcc/>

Annex 2

Migration credit under AI basket

Introduction

- A2.1 In this Annex we set out the methodology we used to determine the “migration credit” to apply for the AI basket.
- A2.2 As discussed in Sections 3 and 5 of this document, customers migrating to networked Ethernet services (referred to as Orchid-based services) are, on average, expected to obtain price savings relative to those remaining on the legacy products¹. We have concluded in Section 3, that it would be disproportionately difficult to devise a charge control formula that takes this into account and we decided to adopt a simpler formula design. The chosen charge control formula is able to reflect price changes Openreach makes on individual services or items. However, the price savings from migration between services (resulting from differences in price *levels*) would not be captured. If we ignored these price savings, this could result in a tougher charge control being set than if the formula took those price savings into account and this could reduce the incentive to introduce new lower cost technologies at lower prices.
- A2.3 Therefore, we concluded in Section 3 that it is appropriate to calculate a credit under the charge control that reflects the fact that we would anticipate customers paying a lower price on average for new Orchid-based services. However, reflecting our concerns over creating a complex charge control formula, we have done this in a simple way by adjusting the required reduction in the value of X for the AI basket.
- A2.4 Broadly speaking, there were three main aspects of our modelling required to calculate this credit. First, using forecasts of the volume of demand for legacy and new products, we made assumptions over the rate of migration between services. Second, we calculated the savings that customers, on average, would be expected to achieve due to migration. Finally, we combined this information to calculate the overall savings associated with migration over the charge control reference period. We then translated this total saving into an implied annual percentage saving arising from migration. This annual average saving represents the AI migration credit that we applied to the (unadjusted) value of X.
- A2.5 In summary, reflecting our AI migration credit calculation, we consider that the value of X should be reduced by 2.26% percentage points. We therefore adjusted the unadjusted value of ‘X’ of RPI-9.35% to an adjusted value of RPI – 7.09% (before rounding it to the nearest quarter).

Our approach to calculating the migration credit

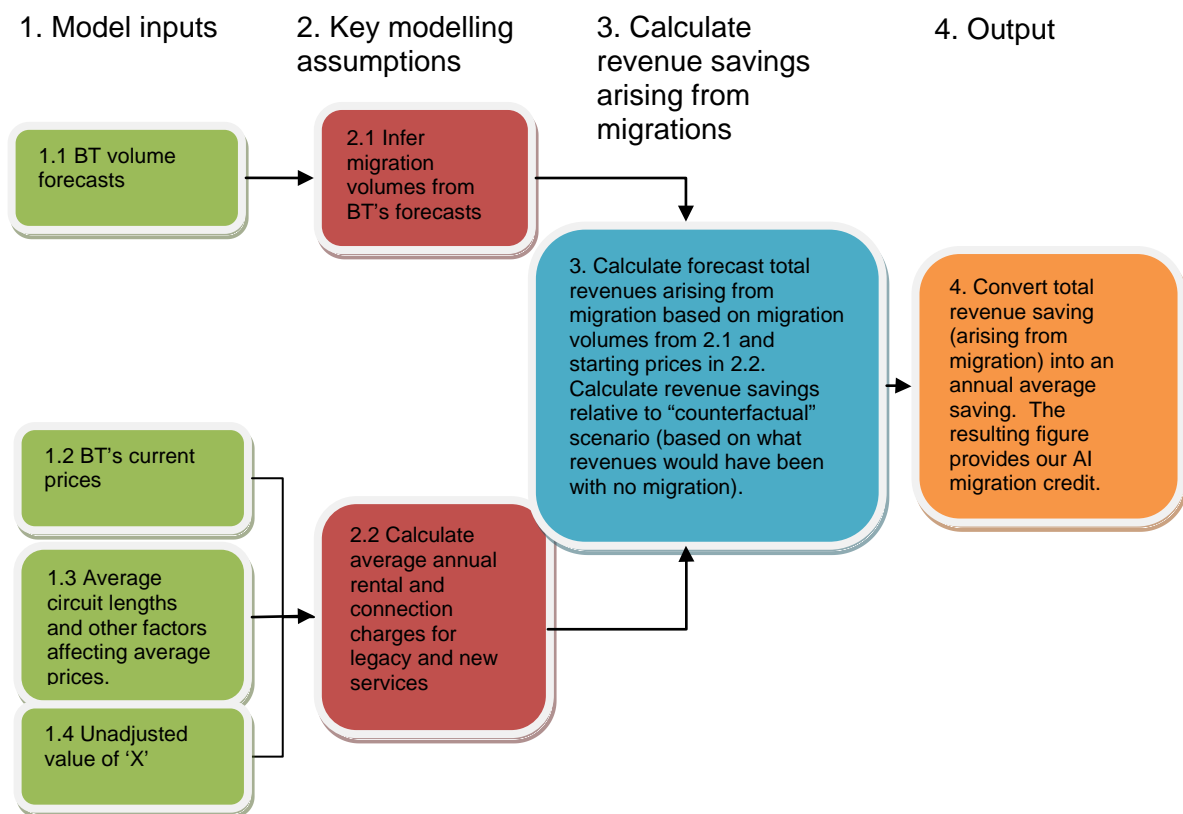
- A2.6 To calculate the migration credit we sought to find out how much of a saving Openreach’s customers could achieve due to migration. Using as the starting point Openreach’s current price lists, we calculated the average expected savings from moving from Openreach’s point to point “legacy” Ethernet services to “equivalent” networked services on the Orchid platform over the charge control period. We also had to estimate the extent of likely migration of legacy services to new products

¹ The proposed formula would only credit BT for further reductions on the individual prices of either the legacy product or the new services (but not for migration between legacy and new services).

over the charge control period. We then combined these modelling assumptions to model, for the AI basket as a whole, the likely reduction in basket revenues that would arise from migrations.

A2.7 The structure of the model we used to estimate the expected average price savings is set out in Figure A2.1 below.

Figure A2.1 Model structure



A2.8 In the rest of this Annex, we describe the methodology that we followed under each of the above steps. We then explain under the final step the outputs of our model.

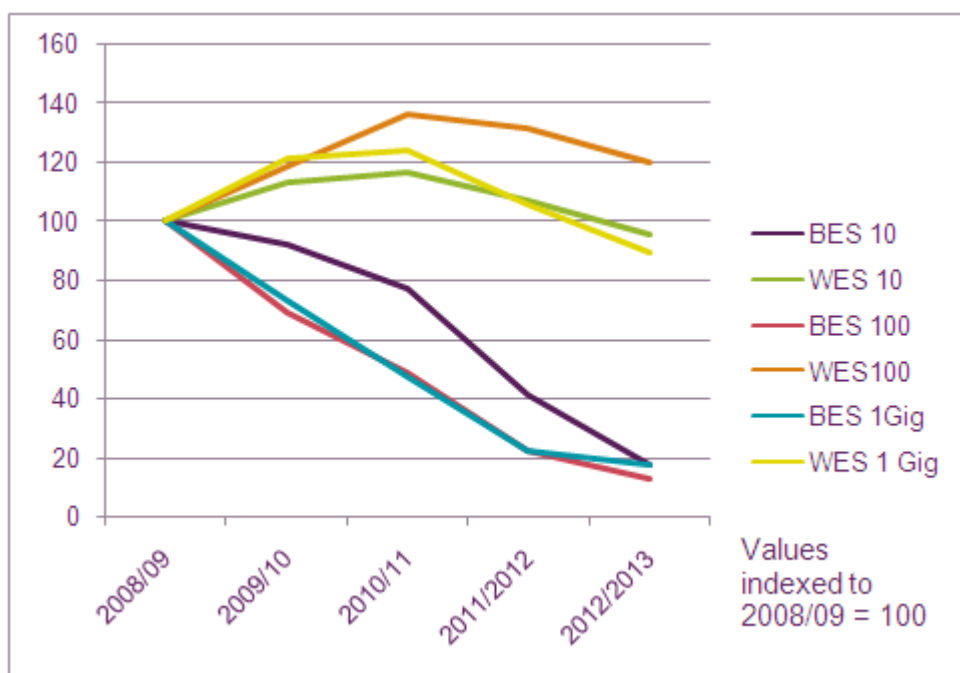
Model inputs

A2.9 The first step in the modelling process was to collect appropriate data on volumes, prices and further detail on circuit demand (for example, on average circuit lengths).

Volume forecasts

A2.10 One of the key inputs to the model was the volume of circuits Openreach forecasted for its legacy WES and BES services and its new Orchid –based services such as Ethernet Backhaul Direct. Figure A2.2 below shows the predicted changes in the rental volumes for the main legacy services in the Ethernet basket over the charge control period.

Figure A2.2 Openreach's forecasts for the main AISBO products



Source: Ofcom June 2008, based on Openreach's volume forecasts

- A2.11 The forecasts suggest a decline in all of the main BES services. Openreach forecasted that WES circuits at most bandwidths will not see a very large overall net decline over the charge control period and WES 100 Mbit/s circuits would see a net increase.
- A2.12 Although not represented in the Figure A2.2, it is worth noting that WES services currently represent a large proportion of the AI basket. It follows that with minor net changes in these services over the period as a whole, these services are likely to continue to represent a significant component of the AI basket by the end of the charge control period. This means that migration volumes and the savings offered on other services would have to be fairly significant to have a large impact on average prices.

Openreach's current prices

A2.13 We used Openreach's current price lists for its main WES, BES and Orchid-based services to calculate the typical charges for legacy and Orchid-based services. We have listed the main starting prices in Table A2.1 below.

Table A2.1 Rental prices of main legacy and new services

Service and bandwidth	Rental elements	
	Fixed charges*	Distance related (per metre)
BES - 10 Mbit/s	3,660	0.4
WES - 10 Mbit/s	4,200	0.4
EADLA - 10 Mbit/s	2,500	0.4
EAD - 10 Mbit/s	4,400	0.4
BES - 100 Mbit/s	3,660	0.4
WES - 100 Mbit/s	4,600	0.4
EADLA - 100 Mbit/s	2,500	n/a
EAD - 100 Mbit/s	4,400	0.4
BES - 1 Gbit/s	4,150	0.4
WES - 1 Gbit/s	5,000	0.4
EBD - 1 Gbit/s	7,782 to 13,450**	n/a
EADLA - 1 Gbit/s	4,800	n/a
EAD - 1 Gbit/s	9,500	0.4

*WES and BES fixed charges for two ends (WES unmanaged)

**Charges vary by location (Band A to Band C)

Circuit lengths

A2.14 As legacy services have a distance-related element to charges we had to make assumptions over the average circuit lengths in order to calculate an average annual charge. We used information from Openreach on average circuit lengths in line with the values we have also used to inform our main charge control model.

Table A2.2 Average circuit lengths for main legacy services

Product	Average link length (m)
WES 10 Mbit/s	6,456
WES 100 Mbit/s	6,758
WES 1 Gbit/s	8,775
BES 10 Mbit/s	8,282
BES 100 Mbit/s	9,396
BES 1 Gbit/s	10,023
BTL mainlink	10,000

A2.15 EBD services do not have a distance related element. Instead, the annual rental charge for these services is split into three charging Bands depending on the location of the circuits. The charge for an EBD circuit sold in an area with more concentrated demand (typically in urban areas) would be lower than for an equivalent circuit in semi-urban and rural locations. We asked Openreach to provide its forecasts of the likely distribution of circuits sold in each of these areas and weighted the different prices by this distribution to determine a typical average charge.

Key modelling assumptions

- A2.16 Based on the above key inputs, we made a number of modelling assumptions to derive likely migration volumes (from each legacy product to a new service). In addition, we calculated the expected average annual charge in each year for each individual service (i.e. WES 100, BES 100, EBD 100, EAD 100) based on Openreach's starting prices and the average circuit lengths.
- A2.17 We followed three stages:
- We first inferred migration to the newer products based on the forecast reduction in demand for legacy products;
 - We then calculate the average annual charges for legacy and new services; and
 - We finally calculated the total revenues associated with migrations over the charge control period.

Inferring migration volumes from Openreach's forecasts

- A2.18 In Stage 1, we set out information on the main Openreach volume forecasts, which it provided to us for the legacy services (e.g. WES, BES) and new services (e.g. EBD, EAD, BTL). We then used these volume forecasts - also used in our main charge control model - to infer migration volumes. In discussions with Openreach, it had provided us with some estimates breaking down by each legacy service the potential migration volumes and the services that legacy customers were likely to migrate to. However, we were not able to reconcile these migration forecasts to the Openreach volumes used in our main charge control model. To ensure consistency with our overall charge control model, we inferred migration volumes using as our starting point the overall forecasts we used in our charge control model. We discuss below the steps we took to estimate the likely rate of migration implied by these forecasts.

We inferred migration based on the forecast reductions in demand for legacy products

- A2.19 We decided to infer the potential rates of migration using the overall forecasts for the main Openreach services. To do this, we assumed that any decline in legacy circuits (i.e. a reduction in the volume of rentals) would correspond to migration to an Orchid-based product. So, for example, if Openreach's forecast demand for BES circuits was 100 circuits in Year 1 and 75 in Year 2, we would assume the decline in legacy circuits volumes (i.e. 25 circuits) would migrate to an "equivalent" volume of Orchid-based services.
- A2.20 For those services where there was not an overall net decline (i.e. demand for the legacy services continued to increase) we did not apply a migration credit. As shown in Figure A2.2 above, if we compare the volumes of installed legacy circuits at the start of the charge control with the installed base at the end of our reference period, only for certain services is there an implied net decline. For example, for WES 100 circuits, although rental volumes start to decline towards the end of the period, our charge control forecasts suggested that the installed base of WES 100 Mbit/s circuits is higher than at the start of the period. Therefore, we did not include any migrations from WES 100 services.

Given the decline in legacy products we had to decide how this would translate into demand for new services

- A2.21 As discussed in paragraphs A2.18 to A2.20 above, our first step was to calculate the forecast decline in legacy circuits, which we assumed would then migrate to Orchid-based services. However, to come to a view on actual products that the legacy services might move to, we had to decide how to translate the volumes (associated with the decline in legacy volumes) into demand for “equivalent” services on the Orchid-platform.
- A2.22 In the December Consultation, we published a matrix showing the mapping of existing legacy products to their Orchid equivalents as shown in Table A2.3 below.

Table A2.3 Mapping matrix for legacy and new services (Table 6.1 from our December Consultation)

“Relevant existing product”		“Relevant new product” used in the delivery of existing products				
		For the avoidance of doubt one unit of relevant existing product (i) is equivalent to the weighted sum of one unit of each of the relevant new products used in the delivery of existing products where the weights are shown in the table below in row (i).				
		EBD 100	EBD 1000	BTL 1000	EAD 10	EAD 100 EAD 1000
i = 1	BES 10	No equivalent product				
	BES 100	1		x		
	BES 1000		1	1		
	WES 10	No equivalent product				
	WES 100	1		x		1
	WES 1000		1	1		1
	WESLA 10				1	
	WESLA 100					1
	WESLA 1000					1
	ONBS 10	No equivalent product				
	ONBS 100	1		x		
	ONBS 1000		1	1		
i = n	BNS		1	1		

- A2.23 In practice the potential migration of products is not straightforward and this matrix therefore reflects some necessary simplifying assumptions. Subject to a few

refinements discussed below, we used this mapping to determine the “destination” of a service migrating from an existing WES or BES product. For example, the above table shows that migration of a WES 1000 service would entail use of one EBD 1000 (for the backhaul element), one EAD 1000 (for the access element) and a share of BTL.

- A2.24 In using this table we made a few refinements as some mapping issues were not fully resolved in the analysis for the consultation document. One factor we had to consider was the potential consumption of Bulk Transport Link (“BTL”) circuits by migrating products². To estimate the demand for BTL circuits generated by migration of circuits of different bandwidths, we looked at BT’s forecasts of BTL demand relative to the overall demand for EBD circuits. We estimated that on average over the charge control period demand for BTL bandwidth was 3% of the total demand for EBD bandwidth (i.e. the total demand for EBD 1 Gbit/s circuits). Therefore, as we had inferred migration of each legacy service to a relevant EBD product at a particular bandwidth, we could then calculate the likely BTL demand that migration would generate.³
- A2.25 We also calibrated our inferred levels of migration to Openreach’s forecasts of the demand for Orchid-based services. For example, the decline in legacy services implied a higher level of migration demand for EBD 1Gbit/s than our charge control forecasts suggested (i.e. in terms of overall EBD 1Gbit/s demand). As the demand for EBD1Gbit/s (implied by the decline in legacy demand) exceeded Openreach’s forecasts we pro-rated the inferred migration volumes to be consistent with the forecasts for EBD 1Gbit/s in the charge control. This approach is justified as the decline in legacy services could be due to a loss of market share (e.g. due to Openreach’s wholesale customer beginning to self-supplying or cessations) or migration to higher bandwidths outside of the market. We therefore re-calibrated our model so that the implied rates of migration did not exceed Openreach’s forecast demand for Orchid-based services at particular bandwidths.
- A2.26 Another issue not reflected in the above mapping matrix was the difference between EAD product variants. Openreach informed us that it offers two different EAD services, with one (EAD Local Access (“EADLA”)) providing access only services similar to legacy WESLA services. The other EAD variant is an end-to-end service that provides similar service to WES and BES services but using single fibre working and cheaper electronics. In the mapping matrix presented in the December consultation, we had not separated EAD into its EADLA and EAD end-to-end variants and instead assumed that WES services migrating to Orchid-based services would combine EADLA with EBD to replace legacy services. We therefore asked Openreach to provide estimates of the proportions of migrating circuits likely to go to EAD or EADLA variants at different bandwidths. This information suggested that for WES services overall the majority would move to EAD services (90%) and a lower proportion to EADLA variants.

²BTL is an interconnection product that allows OCPs that are not co-located at an Openreach Handover Point (the point where an EBD circuit would terminate) to use a BTL circuit to reach their own handover points. Not all OCPs will use BTL’s, for example if they pick up EBD traffic at the OHP using its own interconnection circuits. In addition, as BTL is only available at 1 Gbit/s, we had to determine the likely utilisation of BTL generated by a WES 100 circuit moving to EBD 100 plus a share of BTL.

³ Note that using this methodology implied that the migration of a WES 1000 or BES 1000 would not necessarily generate demand for one BTL 1000 (as was suggested by the “mapping matrix” in our December Consultation). This may be reflective of the fact that, among other things, on average, not all CPs will necessarily require a BTL interconnection product. Our average rate was 3%.

A2.27 Taking all of the above information together we were able to derive an overall view of the proportion of WES and BES services at each bandwidth likely to migrate to new services over our reference period. We also had sufficient information from Openreach to come to a view of the services on the Orchid platform that migrating WES and BES customers at different bandwidths.

Calculating average annual charges for legacy and new services

A2.28 The next stage was to calculate the expected average prices. We calculated the expected average annual charge in each year of the charge control for each individual service (i.e. WES, BES, WESLA, EBD, EAD, BTL at each bandwidth) based on Openreach's starting prices, average circuit lengths and assumptions on the overall reductions in prices required by the charge control.

We calculated initial average annual charges based on Openreach's price lists and average circuit lengths

A2.29 As we explained in paragraphs A2.13 to A2.15 above we gathered together information from Openreach's price lists (as of February 2009) and average circuit lengths. We then used this information to calculate average annual rental and connection charges.

A2.30 Figures A2.3 and A2.4 compare the annual rental charge for 1 Gbit/s WES and BES service of different circuit lengths to the same bandwidth Orchid-based products. In these figures it is possible to see the prospective savings currently available (for Openreach's main rental elements) by moving from a legacy 1 Gbit/s circuits to an equivalent 1Gbit/s Orchid-based services.

Figure A2.3 Comparison of legacy BES 1 Gbit/s services and "equivalent" new services for the main rental charges (excludes BTL)

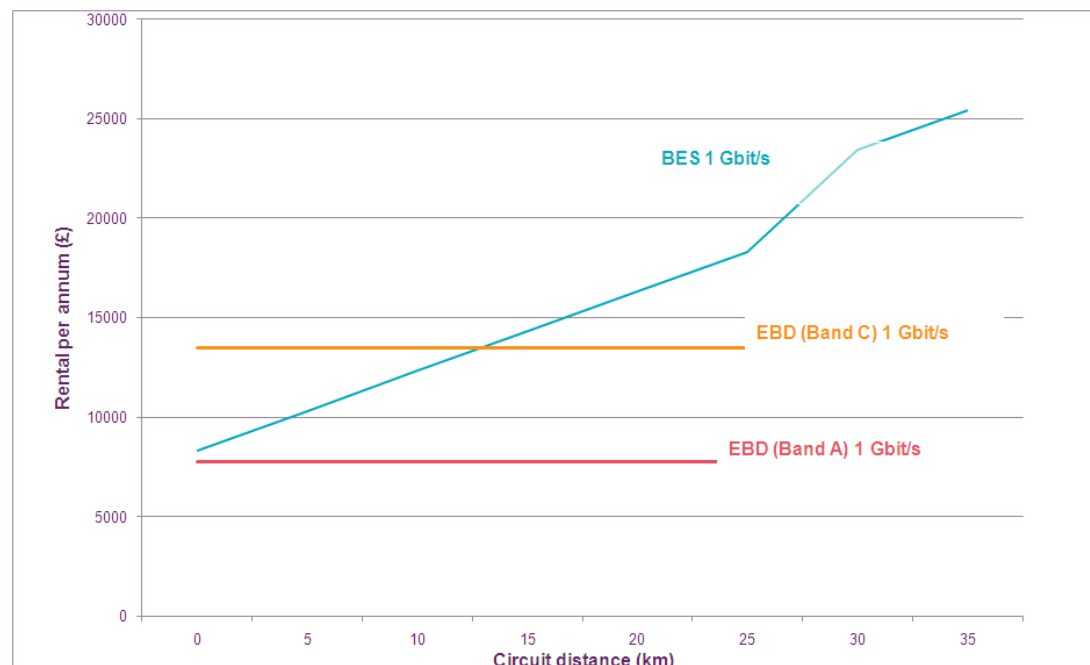
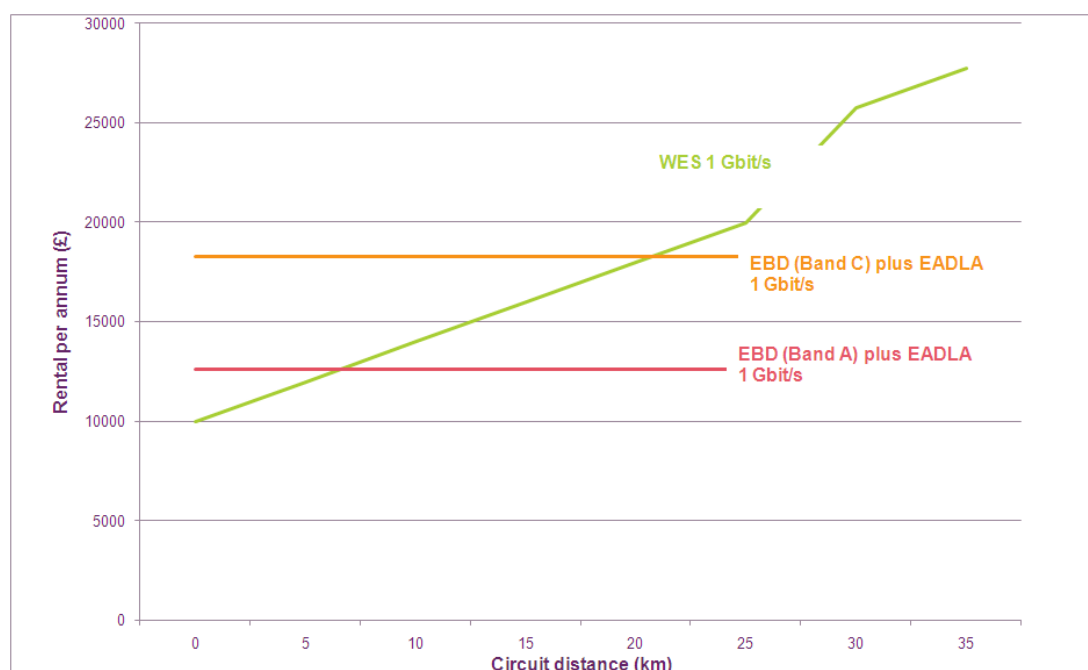


Figure A2.4 Comparison of legacy WES 1 Gbit/s services and “equivalent” new services for main rental charges (excludes BTL)



A2.31 Figures A2.3 and A2.4 show that the prospective savings available from moving from Orchid-based products are not always clear-cut. Depending on the location and distances of the circuits, a CP may or may not find the “equivalent” Orchid products more attractive. We note, however, that on average there should be savings available in rental services. Based on Openreach’s roll-out plans, most Orchid-based services will initially be available from the more densely populated exchanges where the lower Band A prices will apply. For an average distance WES and BES circuit (both 10km), there appear to be prospective savings (although this is less clear cut for WES services).

A2.32 The above comparisons only show potential savings in terms of rental prices. Thus the prospective savings could be smaller if a customer faces charges for new connections and interconnection links. The connection charge for an EBD 1 Gbit/s service is higher than respective WES/BES 1Gbit/s connections. In addition, we have not included BTL pricing in the above comparison, which further reduces potential savings. OCPs that are not co-located would have to face the additional cost of interconnecting circuits. As the charging structure for BTL is relatively complex, we have not gone into the detail here, but the costs are likely to be significant. A customer migrating circuits to EBD that also requires a BTL would need to be able to spread the costs of the BTL over a sufficient number of circuits to make migration to Orchid-based products worthwhile.⁴

Calculation of total savings associated with migration

A2.33 Following Stages 1 and 2 of our modelling process, we then calculated the total revenues associated with migrations over our reference period (i.e. the charge

⁴ For example, the annual rental charge for a single 1 Gigabit/s BTL circuit is a minimum of £30,000 per annum (or higher for longer distance interconnection circuits). Once a customer has a single BTL circuit in place, the cost of adding subsequent circuits is lower. But, the initial rental fee will continue to apply, so a BT wholesale customer requiring a BTL circuit will have to generate sufficient economies of scale and scope to make migrations worthwhile.

control period). The calculation of these revenues was relatively straightforward as we simply added:

- Openreach's forecasts of the volume of customers remaining on legacy products multiplied by the relevant current price (as shown in Table A2.1 above); and
- Our assumed (cumulative) volume of migrated users from the legacy product to the relevant new service multiplied by the relevant price (as shown in Table A2.1 above).

A2.34 We show in Table A2.4 below an illustrative calculation of total revenues for BES 1 Gbit/s services. The absolute levels used for our volumes in our modelling are not shown, but we have indexed the numbers to the volume of BES circuits to show the relative proportions of migrated and non migrated circuits used in our model.

Table A2.4 Example of total revenue calculation

	BES 1 Gbit/s rental	EBD 1 Gbit/s rental	BTL 1 Gbit/s rental	Total
Volumes	100	470	14	-
Average annual charge	12,309	7,969	37,396	-
Revenues	1,230,920	3,748,240	523,920	5,503,080

A2.35 We combined the revenues from circuits remaining on the legacy products and those migrating to new services, which, in our illustrative example, would suggest total revenues of £5.5 million. We repeated this process for each of the main services that we considered in our credit calculation (namely WES and BES services at 10, 100 and 1000 Mbit/s) and summed the resulting revenues calculated for each service to derive a total revenue figure.

A2.36 To calculate the total revenue saving, we then compared the above total revenues against a relevant counterfactual. We based our counterfactual on the total revenues assuming that no migration occurred (i.e. all migrated volumes had stayed on legacy products). So, in the example above, we would assume that the 470 EBD plus 14 BTL circuits would have instead remained on BES 1Gbit/s. Our total revenues under the counterfactual scenario would therefore be 100 plus 470⁵ multiplied by the average price for BES 1 Gbit/s of £12,310⁶.

⁵ Although our forecasts volumes suggest 470 EBD circuits and 14 BTL circuits, the equivalent end-to-end legacy volumes would only be 470, as we would assume that each BES migration would require an EBD circuit as well as a share of BTL.

⁶ For services such as BES 100 Mbit/s migrating to EBD 1 Gbit/s we had to take a view of the appropriate counterfactual product would have been (had the service not migrated to the Orchid platform over the charge control period). We made the assumption that under the counterfactual scenario, there could have still been migration between bandwidths (i.e. from BES 100 Mbit/s to BES 1Gbit/s). On this basis, our counterfactual scenario calculated total revenues assuming migrated EBD 1Gbit/s circuits would have otherwise used BES (or WES) 1 Gbit/s had those circuits remained on the legacy platform. This had the effect of potentially increasing the AI credit.

A2.37 Having followed the steps in paragraphs A2.33 to A2.36 we then had estimates of total revenues under two scenarios, one using forecast migrations and legacy demand reflecting our charge control model and the other a counterfactual scenario assuming that our inferred migration had not occurred. Comparing these total revenues figures allowed us to calculate the saving associated with migration. This suggested that Openreach's customers would pay around 6.8% less for AI rental services in the final year of the control than they otherwise would.

Final model outputs

A2.38 We calculated the total revenue savings of associated with migrations of the main rental services in the in the AI basket. As a final step, we then translated this total saving into an annual figure. This step was necessary as we needed to express the total saving into an annual amount as the value of 'X' in our RPI-X control relates to required annual price changes.

A2.39 Translating the overall saving into an annual figure suggested that the annual average savings associated with migration would be -2.26%⁷. This is the value that we used for AI migration credit and shows (in percentage points) the amount by which we should adjust the value of X.

A2.40 Therefore, our modelling suggests an AI credit of -2.26%, which would have the effect reducing the unadjusted value of 'X' = 9.35% (i.e. Openreach would be subject to a control of RPI-7.00% control on its AI basket).

⁷ We therefore spread our estimated total revenue saving of -7.00% over the 3 year duration that the RPI-X charge control is in effect

Annex 3

TISBO and AISBO service charges and cost recovery

Costs recovered via the different AISBO and TISBO service charges

A3.1 The below table summarises the capital and operating costs recovered via key TISBO and AISBO service charges.

Figure A3.1 Costs recovered via the key TISBO and AISBO service charges

Physical elements of service	Traditional interface								Alternative interface ₁					
	Circuit charges			Conns	Equipment & infrastructure charges				Circuit charges					
	Rentals				Third party link		Point of handover		(Local) ends		Per metre			
	Local end	Link	Per km		Conns	Rentals	Conns	Rentals	Conns	Rentals		Rentals		
Third party customer access link														
<i>Customer specific</i>														
Transmission equipment					x				x					
Blown fibre					x					x				
Copper drop wire					x				na					
<i>Non-customer specific</i>														
Transmission equipment	x									na				
Spine fibre	x									x				
All other elements of copper pair	x									na				
Duct	x									x				
<i>Customer and non-customer specific</i>														
Maintenance costs (all elements)	x									x				
Indirect costs (all elements)	x									x				
Core transmission														
Equipment located at terminating exchanges		x									na			
All other transmission equipment			x								na			
Fibre & duct			x								x			
Circuit set up														
				x					x					
PPC point of handover link (not migrated links)														
<i>Customer specific</i>														
Transmission equipment							x		not applicable to AI					
Blown fibre							x							
Equipment maintenance								x						
<i>Non-customer specific</i>														
Spine fibre	x													
Duct	x													
<i>Elements both customer and non-customer specific</i>														
Maintenance costs (save equipment)	x													
Indirect costs (all elements)	x													

Note 1: current (point-to-point fibre) services only

Annex 4

Follow up – Analysys-Mason Report “A study of BT’s regulatory financial statements for business connectivity markets”

Introduction

- A4.1 In our December Consultation we attached an independent report by Analysys-Mason commissioned to review the volumes and revenues of TISBO and AISBO services following the discovery of significant errors in BT’s calculation of volumes that underpin its calculation of internal revenues (the “AM Report”). The correction of these errors led to a material restatement of the TISBO service revenues in BT’s 2006/07 RFS.
- A4.2 The main findings of Analysys-Mason were that:
- the approach taken by BT in making its 2006/07 restatement for TISBO services, wholesale trunk segments and technical areas appears to be reasonable, given the limited historical data available;
 - the volumes reported in the RFS are reasonably well aligned with the revenue measure appropriate for the LLCC model;
 - the current systems and processes, although complex, are potentially capable of delivering reliable volume data for TISBO and related services, provided care is taken at each stage and;
 - Analysys-Mason has not been able to conduct a review of Openreach’s systems and processes which deliver volume data for AISBO services.
- A4.3 The AM Report identified 17 action points suggesting Ofcom may wish to follow these up with BT.
- A4.4 We set out below the 17 action points as identified by Analysys-Mason together with our commentary. BT cooperated fully and constructively in dealing with each point providing additional analysis and data as necessary. A few minor errors in the data were found and appropriate corrections made in financial analysis. The following are examples of where our follow-up of the action points resulted in further corrections or further developments to BT’s methodologies:
- Each leased line in BT’s source operational system is marked with its operational status (such as “CURR” – currently in use). These markers have been examined more deeply and improvements made to the interpretation of this data for internal revenue calculations. A small number of internal circuits previously excluded from the revenue calculation are now included.

- Analysys-Mason identified an error in the calculation of 64kbit/s transmission lengths. These were discussed and accepted by BT who subsequently amended the data used in our modelling.
- BT supplied additional information on the breakdown of the £46m 2006/07 restatement and a revised breakdown on AI service revenues (and main link volumes) for 2007/08. We have reviewed and applied the 2007/08 data in our analysis. We intend to examine this matter in more detail once the 2008/09 data is available because it is unclear if service level information is sufficiently robust for reporting purposes.

A4.5 Although the AM report provided some assurance that BT's corrected data provided a reasonable basis for setting charge controls, we believe that our ongoing review process of BT's RFS should focus on improving the reliability of leased line data (financial and non-financial). BT's 2008/09 RFS due for publication in late July will provide a valuable source of information to test the recent changes made by BT to improve the reliability of its reporting processes.

A4.6 We are also aware that in addition to our examination of BT's regulatory financial information, the findings of the AM report and comments from CP's, BT has commissioned an independent review of its methods and processes for calculating revenues disclosed in the RFS. The findings of all of this work will inform the areas we wish to examine with the benefit of 2008/09 outturn information. If the results of this work indicate that further changes are needed then these will be included in our 2009/10 RFS update consultation which we aim to publish before the end of the financial year.

Table A4.1 Impact of BT's re-statement on individual services within the TI basket

Issue #	Analysys-Mason remark	Link to issue	Purpose	Ofcom follow up comment
	Assessment of the accuracy of the revised turnover calculation and supporting volume data			
1	Request BT to provide an analysis of the nature of the circuits in COSMOSS without a 'CURR' status.	11	To ensure that circuits are not being removed inappropriately.	BT provided additional analysis and explanatory material on the status records captured in its "COSMOSS" system. A minor error was identified in the interpretation of this data and subsequently corrected in BT's costing processes. The interpretation of volume data from source systems now seems reasonable. However, a key assumption is that the operational systems used by BT are reliable and we may require a more detailed view of the checks and controls applied to these systems after analysing the latest 2008/09 data.
2	Request BT to provide a reconciliation of the restatement with the original statement for 2Mbit/s volumes, accounting explicitly for the impact of Site Connect and RBS volumes.		To identify whether this is the remaining source of the discrepancy between the original and restated 2Mbit/s external connection and link volumes.	BT provided a reconciliation to Ofcom and explanation of treatment of Site Connect and RBS volumes.
3	Request BT to provide an analysis of how each of the different input changes to the DPCN model affected the volumes of 64kbit/s link reported. If possible BT should also cross reference its restated external 64Kbit/s link volumes with the appropriate volumes produced using the same source as for internal 64Kbit/s links.	4 / 7	To build confidence in the 64kbit/s internal link volumes.	Further analysis was provided by BT and reviewed.

Issue #	Analysys-Mason remark	Link to issue	Purpose	Ofcom follow up comment
4	Request BT to update on an RSS basis the factor of 5.07 used to convert from nx64kbit/s to 64kbit/s links, or to provide evidence that such an update would not have a material impact on the restated volumes.	3 / 7	To ensure 64kbit/s volumes are as reliable as possible.	BT is putting in place for 2008/09 RFS a substantially more granular methodology for calculating sub 2 mb/s revenues based on the price of individual services by bandwidth. We intend to review the implementation of this new methodology as part of the regulatory reporting work we undertake.
5	Request BT to provide details of the clean-up conducted on archived Powerhouse data in order to provide volumes of 64kbit/s local ends.		To build confidence in the revised 64kbit/s local end volumes.	Additional explanatory information was provided by BT.
6	Review with BT the local end calculations carried out on data from COSMOSS and CTCS, and in particular the count and type of circuits with 2, 1 or 0 local ends in each case.		To build confidence in the revised local end volumes.	BT's methodology was reviewed and discussed.
7	Request BT to calculate separate average lengths for internal and external 64kbit/s circuits and apply those to the associated link volumes in order to obtain the transmission volumes.	3 / 7	To improve the accuracy of relative lengths for internal and external 64kbit/s circuits.	The new methodology referred to in #3 will also reflect the actual length of individual circuits.
8	Revise 64kbit/s transmission lengths downwards by 194 614 (internal) and 67 295 (external).		To reflect an error identified in BT's DPCN model.	BT confirmed and corrected error.
9	Work with BT to conduct a more detailed analysis of missing AISBO circuit volumes in Powerhouse in 2006/07 and 2007/08, and identify the extent to which they explain the additional revenues.		To identify whether the additional revenues reported by Openreach have been allocated to appropriate AISBO services.	BT supplied additional information on the breakdown of the £46m 2006/07 restatement. These additional revenues contained very significant levels of high value but low volume resilient circuits. We believe there is weakness in this analysis. However we have applied the revised 2007/08 revenue analysis in this charge control. We intend to examine this matter in more detail once the 2008/09 data is available because it is unclear if

Issue #	Analysys-Mason remark	Link to issue	Purpose	Ofcom follow up comment
10	Review the systems and processes used by Openreach. Opinion on whether or not the recognition and measurement basis on which turnover is calculated for price control calculations and the RFSs is relevant, reliable and fit for purpose		To ensure that these systems are delivering reliable volume and revenue data.	service level information is sufficiently robust for reporting purposes. Ad-hoc assessment of relevant Openreach systems to be considered as part of ongoing evaluation of regulatory accounting processes.
11	Verify with BT whether circuits that have more than one associated job status in COSMOSS, including 'CURR', are included in RSS.	3	To ensure that circuits with both 'CURR' and 'ICRE' status are included in the RSS, since both of these categories are potentially revenue-generating.	Included in #1.
12	Further investigate the source of the proportion used by BT to differentiate between network and retail own-use.	1	To establish whether or not the approach taken is reasonable .	BT provided further information supporting its approach based on the network/retail use of BT's computing services (an important consumer of internal leased lines). Although based on a proxy assumption, we believe this approach is reasonable.
13	Clarify with BT whether circuits with resilience are counted once or twice. Appraisal of the capability of BT's source data systems and processes together to deliver reliable		To ensure appropriate treatment of these circuits in Ofcom's analysis	BT explained how revenues (and their associated volumes) from resilience services are reflected in revenues. BT will be reporting both the costs and the revenues for resilience separately in 2008/09 RFS. We intend to review this in more detail to ensure matching between costs, revenues and volumes.

Issue #	Analysys-Mason remark	Link to issue	Purpose	Ofcom follow up comment
	volume data and recommendations for further quality improvements to the data used in setting leased-line charge controls, and changes to the regulatory financial reporting of the relevant markets.			
14	Encourage BT to establish a greater dialogue between the Powerhouse designers and the RFS team. (cross reference 9.1.3 in the AM Report)		To build confidence in the reliability of the data feeds.	BT acknowledged the importance of source system data being applied appropriately. We will discuss with BT what level of dialogue took place in preparing 2008/09 data and any relevant outcomes. We will then consider if further actions are required to ensure the reliability of the source data.
15	Request BT to review the sources to the DPCN model, including the conversion factor of 5.07, to ensure that they are all on an RSS basis.	4	To build confidence in the 64kbit/s link and transmission volumes.	Included in #3.
16	Request further information from BT concerning the selection of D-codes that represent bearers, and the nature of these bearers.		To build confidence that all bearer codes have been captured.	Bearer code analysis was provided and explained by BT.
17	Request BT to make a technical review of its CTCS procedures.		To build confidence in the reliability of these procedures.	BT acknowledged importance of reliable source system data.

Annex 5

PoH related costs

Purpose

- A5.1 In Section 4 we set out our conclusions in relation to the recovery of point of handover (“POH”) costs. The purpose of this annex is to set out in more detail the history of this cost recovery, what it precisely comprises of, the two recovery mechanisms and the resulting implications that shaped our policy making as explained in paragraphs 4.145 to 4.165 in Section 4. Finally we also explain how we have calculated the point of handover charges to be in force at the outset of the charge control.

Background

- A5.1 In the 2002 PPC Pricing Direction⁸ (the “2002 PPC Direction”) Of tel directed that BT should recover certain point of handover costs via a surcharge on external third party local end rental charges. Of tel described these costs as “network overheads” in the direction.
- A5.2 Of tel increased the price it would otherwise have determined for third party local end charges by 31% (sub 2 mb/s) and 38% (above 2 mb/s) to recover these costs. This adjustment has been called the “local end adjustment” since.
- A5.3 In the regulatory financial statements BT deflated the external price by 23%, equivalent to inflating the internal price by 30%, to arrive at the internal price. Therefore in the published statements local end rentals shows two different prices for ostensibly the same services.
- A5.4 As part of our work in relation to replicability⁹, we flagged up the local end adjustment as a difference between the level of local end charges BT charges communication providers and the level it charges itself. Such a difference in charges could indicate that there was not a level playing field between BT and CPs in providing services into markets downstream of PPCs.

What does a point of handover link comprise of?

- A5.5 Each and every PPC circuit a CP purchases from BT requires a POH link. This link comprises the physical infrastructure (fibre & duct) as well as two boxes at either end of the link.
- A5.6 Figure A5.1 highlights the elements of a PPC POH link. It also shows how a number of PPC circuits purchased by a single communication provider can be aggregated through to the CP’s over a single bearer. In addition to the equipment and infrastructure elements shown in this figure, BT will also incur maintenance costs for the link.

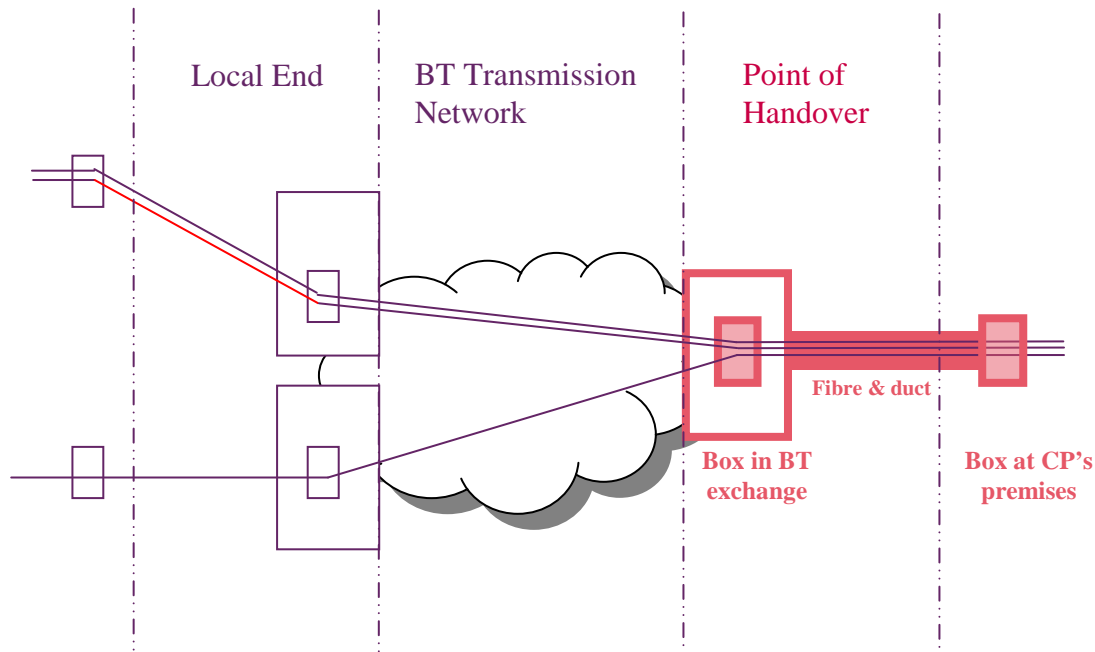
⁸

http://www.ofcom.org.uk/static/archive/oftel/publications/broadband/leased_lines/ppc1202/direction.htm In particular, paragraphs 3.31 to 3.48

⁹ <http://www.ofcom.org.uk/consult/condocs/draftconsent/>

- A5.7 Once set up, BT can handover as many individual circuits as the capacity of the link will allow at no further cost. The costs involved therefore are driven by the link itself (i.e. the bearer) rather than the individual circuits delivered over it.

Figure A5.1 Elements of a PPC point of handover¹⁰ (Type I)



Source: BT

¹⁰ The diagram above depicts customer sited handover i.e. where BT delivers the PPC circuits right into a communication provider's premises deploying a box located in one of its exchange buildings. The other option is in-span handover which involves BT providing the fibre up to a footway box located near its exchange. Here the communication provider connects its fibre to BT's fibre with itself, rather than BT, providing the box in its exchange building.

How does BT currently recover these costs?

Type I: PPC point of handover links

A5.8 The table below summarises which charges are intended to recover precisely which cost elements. We further explain below how the various elements of map onto the charges through which BT recovers these costs. Note the table only relates to the situation where a CP has purchased POH infrastructure.

Table A5.1 Recovery of different cost elements for PPC point of handover links

		Wholesale charges		
		Point of handover link		Surcharge on
		Connection	Rental	LE rental
Point of handover links				
Capital	Equipment	✓		
	Blown fibre	✓		
	Spine fibre			✓
	Duct			✓
Mtce	Equipment		✓	
	Blown fibre			✓
	Spine fibre			✓
	Duct			✓
Other	Accommodation ₁			✓
	Selling ₂			✓
	Other ₃			✓

Notes

1 Exchange operating costs i.e. accommodation, security and the like

2 Wholesale selling costs

3 Other indirect costs attributable to these services

- A5.9 BT recovers the cost of these links through a combination of PPC POH connection and rental charges as well as through a surcharge on all circuits delivered over this link i.e. the local end adjustment. As this absolute value of this surcharge varies by bandwidth, the extent of this cost recovery depends on both the number and bandwidth of the circuits delivered.
- A5.10 BT's policy is to recover customer-specific capital costs through connection charges and all other costs through rental charges. The capital costs BT considers to be customer-specific include any equipment it deploys at either end of the link and that element of the fibre pair between BT's exchange building and the CP's premises that it cannot re-use (i.e. the blown fibre element). We illustrate this blown fibre element in Figure A6.2 in annex 6.
- A5.11 There are about 50 different connection charges on the PPC price list to cover all the different permutations of handover offered. The minimum bandwidth BT offers is, however, 155 Mbit/s.
- A5.12 BT has told us that the POH rental charges are designed to recover contractual maintenance charges from its equipment suppliers. This means that the surcharge recovers all other costs, both operational and capital.
- A5.13 We note that the same surcharge applies whether there is a distance-related element (customer-sited handover) or not (in span handover). Hence, there are no

distance related charges for Point of Handover (with the exception of the MSH product¹¹).

- A5.14 The analysis provided by BT suggests that only 300 out of a total 21,000 equipment boxes used to handover PPC circuits to CPs are used exclusively to handover over PPC circuits. In other words it appears that only a minority of PPC circuits are delivered to CPs using this Type I cost recovery mechanism.

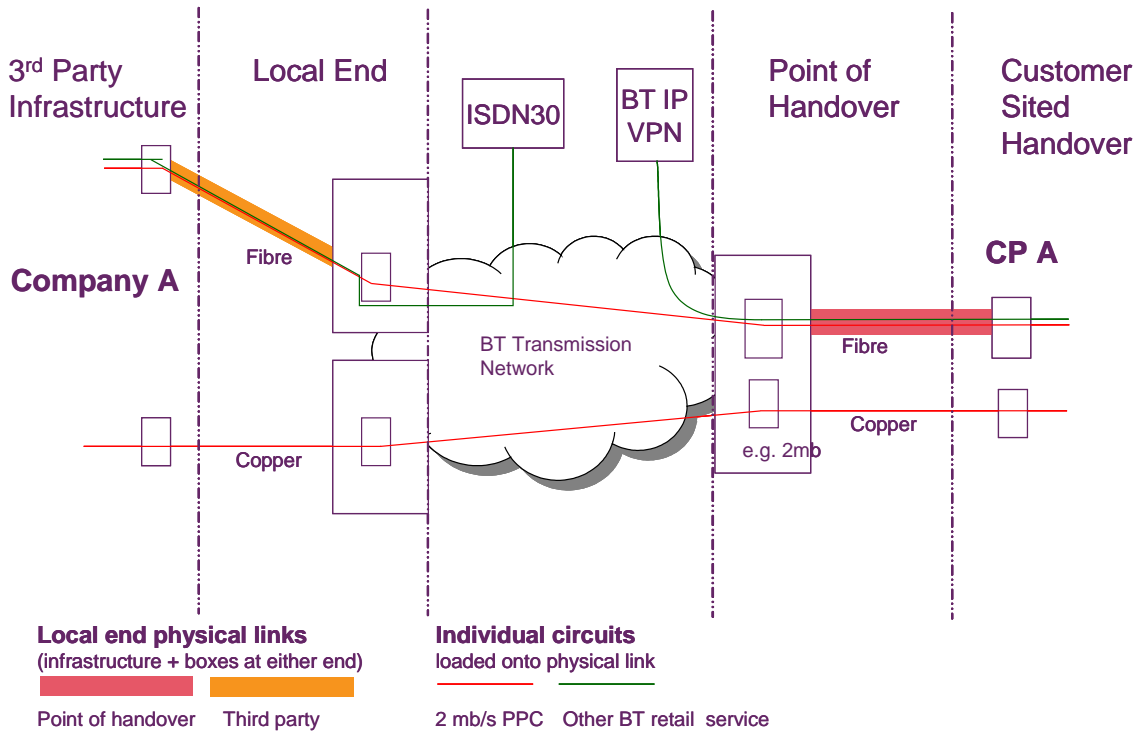
The different cost recovery mechanism for handover for migrated PPCs

Type II: new point of handover links

- A5.15 In the above paragraphs, we explained the structure for PoH charges envisaged by Oftel's in the 2002 PPC Direction to be applied going forwards. In practice, however, there has been alternative way in which BT charges communication providers to recovery PPC handover costs. The other charging approach, which we now understand to be by far the most common, applies to circuits originally purchased on retail terms that CPs have subsequently reclassified as wholesale PPCs.
- A5.16 The only charge BT makes for delivering these migrated PPC circuits to a communication provider is the previously explained surcharge on third party local ends. This contrasts, for example, with the charges faced by PPC services that have not been migrated discussed in paragraphs at 5.10 above, where the CP finances the cost of the boxes at either end of the handover as well as any customer specific fibre and duct.
- A5.17 BT delivers migrated PPCs to a communication provider on the pre-existing local end equipment & infrastructure. The bandwidth of this infrastructure ranges from a 64 Kbit/s copper link to a 2.5 Gbit/s fibre link and on every bandwidth in-between. BT uses this pre-existing equipment and infrastructure to deliver other leased line services to the communication provider.
- A5.18 The significance of the shared use of this equipment & infrastructure is that some circuits are regulated wholesale leased line services whereas other leased line circuits fall in markets downstream of PPCs. We therefore have certain cost types which need to be attributed across wholesale and retail markets. As a result the model of having bearer circuits dedicated to handing over PPC circuits to CPs breaks down.
- A5.19 In other words the physical handover link is often not unique to PPCs, and therefore the proportion of the links costs attributable to the PPC depends on what else is delivered over the link.
- A5.20 Figure A5.2 shows one example of a migrated POH where the link delivers not only the migrated PPC sold on wholesale terms but also the VPN tail sold by BT to the same communication provider on retail terms.

¹¹ The MSH network is a high capacity overlay of BT's SDH network. Connection to the MSH network allows the customer to bypass much of the SDH Tiers but access to this network is available at far fewer nodes than SDH. In these cases the point of handover link length would be typically much longer. BT informs us that it has not sold this service.

Figure A5.2 PPC circuits handed over on links shared with non-PPC service (Type II) (migrated PPCs)



Source: BT

Cost recovery between the two types of PoHs

A5.21 Table A5.2 contrasts how BT seeks to recover the different cost elements firstly over a PPC POH link (Type I) and secondly over a migrated link (Type II). We further explain below how the two types differ.

Table A5.2 Comparing & contrasting cost recovery between PPC (Type 1) and migrated (Type 2) POH links

		Wholesale charges		Retail ₄
		Point of handover link		PPC chargesCircuit charges
		Connection	Rental	LE rentalRental & conn
PPC point of handover links (=> 155mb/s)				
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			
Migrated POH links (=> 2 mb/s)				
Capital	Equipment			✓
	Blown fibre			✓
	Spine fibre			
	Copper			✓
	Duct			
Mtce	Equipment			✓
	Blown fibre			✓
	Spine fibre			✓
	Copper			✓
	Duct			✓
Other	Accommodation ₁			✓
	Selling ₂			✓
	Other ₃			✓

Notes

1 Exchange operating costs i.e. accommodation, security and the like

2 Wholesale selling costs

3 Other indirect costs attributable to these services

4 Retail charges relate to prior periods when CP bought circuits on retail terms

Items where the recovery differs highlighted in colour as follows

Equipment and blown fibre capital

Equipment maintenance

Copper

A5.22 As noted in 5.17 BT uses different equipment & infrastructure for the different arrangements. PPC POH links are always over fibre and have a minimum bandwidth of 155 mb/s. In contrast migrated links can be over copper (indicated in blue).

A5.23 Although equipment maintenance costs (indicated by purple) are recovered through specific charges for PPC POH links, exactly the same surcharge on local end rentals applies to the two different handover arrangements.

A5.24 For migrated PPCs it is assumed that any customer-specific capital expenditure (indicated in pink) has already been recovered through retail charges. BT has however pointed out that, as communication providers can, and do, migrate a circuit

onto wholesale PPC terms after one year on retail terms, it does not always fully recover these costs.

- A5.25 Finally, as noted in paragraph 5.17 but not directly shown in this table, all migrated POH links (type II) involve *BT*-provided fibre and duct beyond the immediately vicinity of *BT*'s serving exchange. In contrast CPs can and do self-provide fibre & duct just outside *BT*'s exchanges for PPC in span point of handover.

Implications of the differential treatment

- A5.26 One consequence is that CPs who invest in new PPC POHs pay twice for equipment maintenance costs, once through equipment rental charges and again through the (averaged) surcharge on local end rentals. This surcharge is designed to recover that equipment maintenance cost attributable to migrated POH links.
- A5.27 The second consequence is that there may be an incentive for CPs to choose the migration route to avoid incurring the POH equipment & infrastructure charges. In these cases *BT* may well supply these circuits over a low bandwidth link. This may well result in a higher than average unit cost for each circuit handover. This contrasts with the average unit costs obtainable with the use of a high capacity PPC handover link.
- A5.28 The third consequence is that there is an element of averaging in the cost recovery for duct & spine fibre between type I and type II handovers, for type I handovers, between in span and customer-sited handovers. This averaging penalises those CPs who build out their networks to outside *BT*'s exchange premises. We note however that the fibre/copper/duct element of this recovery comprises a minor part of the total cost.

BT estimate of "local end adjustment" costs and revenues

- A5.29 Since we published our December Consultation document we have obtained from *BT* a more detailed estimate of the costs currently recovery through the surcharge on external local end rentals. *BT* needs to produce an estimate for this cost because it does not currently separately identify these costs in its regulatory financial statements.
- A5.30 In summary *BT* has estimated the total cost to be recovered by identifying the volume of POHs and using the cost of the associated equipment as a means to estimating all costs except for the fibre/copper & duct. *BT* estimated the cost of fibre/ copper & duct using a similar approach to that used to estimate the unit costs of the services in the equipment and infrastructure basket.
- A5.31 The table below summarises *BT*'s estimate of the POH costs not otherwise recovered through other charges. It reflects 2006/07 circuit volumes & information for indirect costs drawn from its regulatory accounting system for 2006/07. The cost of the equipment it drew from its supplier price lists.
- A5.32 We discussed our evaluation of the policy choices open to us and our final decision regarding this recovery in Section 4, paragraphs 4.145 and 4.165.
- A5.33 The table below summarises *BT*'s latest cost estimate for these costs for 2006/7. This £11.7m reflects an increase of £0.6m over the £11.1m we reflected in our December Consultation. This reflects the inclusion of selling, general &

administrations costs in the total as well as a more systematic & granular methodology than the previous estimate.

Table A5.3 BT's updated estimate of costs to be recovered through point of handover charges

All in £m	Cost estimate
Exchange indirects	6.3
Access fibre/copper/duct	2.3
<i>Equipment maintenance & indirects</i>	
Customer sited	1.0
Exchange located	0.8
<i>Subtotal</i>	1.8
Selling, general & admin on POH	1.3
	<u>11.7</u>

How we have calculated our starting point of handover charges to be in force at the outset of the charge control

A5.34 As set out at paragraph 4.164 in Section 4 we decided to implement the methodology we consulted on. In terms of the total sum to be recovered this decision is equivalent to updating the current local end adjustment to reflect the latest costs for POH and third party local end rentals. Using BT's latest 2007/08 volumes and FAC cost estimate we recalibrated the individual charges we set out in the December Consultation to limit BT total recovery to this estimate.

A5.35 This approach results in the following charges:

Per external circuit £ per year

64 Kbit/s £100

2 Mbit/s £170

34/45 Mbit/s £860

140/155 Mbit/s £1,600.

Annex 6

Financial analysis for 2006/07 and 2007/08 costs, revenues and volumes

Introduction

- A6.1 BT published its 2007/08 regulatory financial statements (“RFS”) in September 2008. In this Annex we update our financial analysis to reflect this new information and cross check the results of our analysis as discussed in our December Consultation.
- A6.2 We made significant adjustments to the source information in respect of 2006/07 as set out in our December Consultation for two main reasons:
- to reflect a more reliable & consistent accounting view e.g. correcting for errors and matching costs to revenues
 - to reflect our policy position on a variety of methodological issues e.g. technological neutrality
- A6.3 It has been necessary for us to apply similar adjustments for 2007/08 and these are set out in this annex.

Objective of this annex

- A6.4 The objective of this Annex is to describe and explain our adjusted 2007/08 costs, revenues and volumes for services in scope of the leased line charge control. We then compare these with our analysis of 2006/07 RFS data that we discussed in our December Consultation. We also summarise the quantitative results of this analysis.

Purpose of the 2007/08 analysis

- A6.5 The purpose of this analysis is to:
- cross check the analysis we presented in our December Consultation based on 2006/07 RFS data; and
 - provide the financial evidence on which we assessed the case for one-off price adjustments at the outset of the control.

Main finding

- A6.6 We have found that the underlying level of adjusted profitability is broadly unchanged from 2006/07 at overall basket level, both for TI and AI.

Our analytical approach to calculating 2007/08 costs, revenues & volumes

- A6.7 As with 2006/07, we undertook three different sets of analysis, one for each of the following charge control baskets:

- Traditional interface (TI) services;
- Alternative interface (AI) services; and
- Equipment and infrastructure services.

A6.8 The first two baskets comprise circuit connection and rental services for the two different interfaces. The latter basket in contrast primarily consists of connection charges in relation to equipment and infrastructure deployed at the ends of traditional interface circuits, including point of handover (“POH”) ends. These charges typically support a number of circuits.

A6.9 Below we explain the types of adjustment we made, the outputs we produced and the inputs we used across all three types of analyses.

Table A6.1 Types of adjustments

#	Question	Type of adjustment	Examples
1	Do BT's reported figures provide a relevant & reliable accounting view of BT's service costs and profitability for 2007/08?	Corrections to source data	Mismatch between costs and revenues e.g. PPC local ends AI connection charges
		Greater granularity	BT didn't identify backhaul per metre charges within its AI services in 2006/07, but did so for 2007/08.
2	Does our adjusted accounting view provide a suitable basis for price controls in terms of:		
a	reflecting one-off events or abnormal levels of cost or revenue?	Smoothing of costs & revenues i.e. adjusting to reflect expected levels of future costs or revenues	Normalisation of current cost holding gains/losses Smoothing of peaky reported costs identified from trend analysis
b	how we expect BT to recover particular items of cost in future?	Implementing our cost recovery methodologies through adjustments to cost, revenues and volumes	Cost recovery profile for certain assets to be consistent with BT's regulatory asset value (RAV) Change in the way in which costs are recovered for certain point of handover costs (previously referred to as “the local end adjustment”)

A6.10 We recognise that there are some interdependencies between the adjustments we have made. In this annex we list the adjustments in the order we have processed them. We do not believe that any re-sorting of this order would result in a materially different result.

Outputs

2007/08 profitability

- A6.11 We prepared two different types of profitability analysis, both drawn from the same underlying adjusted base year information:
- individual service profitability based on comparing unit costs (including the cost of capital) to prices or average unit revenues; and
 - basket & group service profitability based on return on capital employed ("ROCE") in the case of the two main baskets (where the capital employed is significant) and a return on sales ("ROS") for the equipment and infrastructure charges basket (where capital employed is insignificant and ROCE is therefore a poor measure of profitability).
- A6.12 Mean capital employed ("MCE") values reflect the extent to which BT had already depreciated its assets over their estimated useful economic life. We did not attempt to adjust MCE values to reflect "steady state" investment on an asset-by-asset basis in this analysis.
- A6.13 In our individual service and basket profitability analysis we use a fully attributed cost ("FAC") approach. This is the same costing method that BT uses to prepare its Regulatory Financial Statements ("RFSs").

Adjusting 2007/08 profitability for latest prices

- A6.14 In order to consider the need for further one off price changes we took into account price changes already implemented or proposed by BT. We did this by suitably adjusting 2007/08 revenue for these latest prices.

Information to incorporate within our RPI-X model for 2007/08

- A6.15 We calculated the value of each adjustment (with the exception of the CCA normalisation and RAV adjustments which are modelled in our charge control model) across all the services within scope of the traditional and alternative interface baskets. We then ensure that these values are appropriately reflected within the 2007/08 costs & volumes generated by this model. We explain this further in paragraph A7.14 in Annex 7.
- A6.16 The RPI-x model is not used for our price control decisions in respect of the the Equipment and Infrastructure basket. Therefore we did not need 2007/08 accounting information for this purpose.

Comparison with 2006/07

- A6.17 We presented the adjusted 2007/08 basket level information in a form that allowed us to compare and contrast it with the information we prepared for 2006/07.

Inputs

- A6.18 The starting point for our analysis was BT's regulatory accounting information. This information is designed to provide costs and revenues at a granular level prepared on a basis suitable to be the starting point for regulatory decision making such as these charge control proposals. For example costs are prepared on a current basis,

the basis most relevant to give a view of the long run economic costs of providing these services. The information published in the regulatory statements is also subject to an independent audit.

A6.19 We took regulatory accounting information for 2007/08 from BT's:

- audited published regulatory financial statements (RFSs);
- unaudited additional financial statements (AFSs) provided to Ofcom; and
- responses to our supplementary information requests.

A6.20 For 2007/08 we used information drawn directly from BT's regulatory accounting systems for both main charge control baskets, the traditional and alternative interface baskets. For the equipment and infrastructure basket, we were not able to follow this approach as BT does not expense this equipment and infrastructure in its regulatory costing system. Instead we used bottom-up unit costs provided by BT as our source information. BT incorporated contractual prices for equipment in its unit cost calculations.

The rest of the Annex

A6.21 In the following sections we describe in detail for each basket separately:

- the services involved;
- the inputs we use / their granularity;
- the adjustments we make; and
- the results.

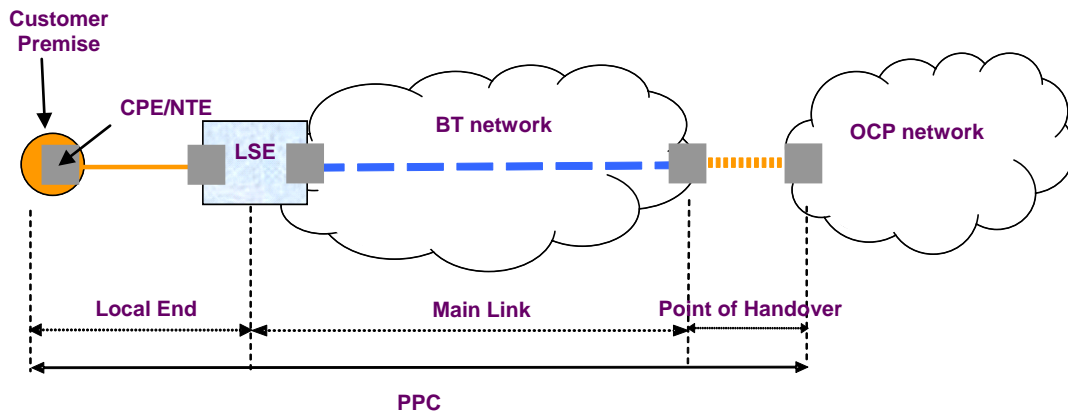
TI basket services

Description of services

A6.22 This basket comprises PPC circuit rental and circuit connection charges. We illustrate the rental elements of a PPC circuit in the Figure A6.1 below i.e. local ends and main link. Main link charges comprise the fixed ('per link') charges and variable per kilometre charges for distribution and trunk transmission.

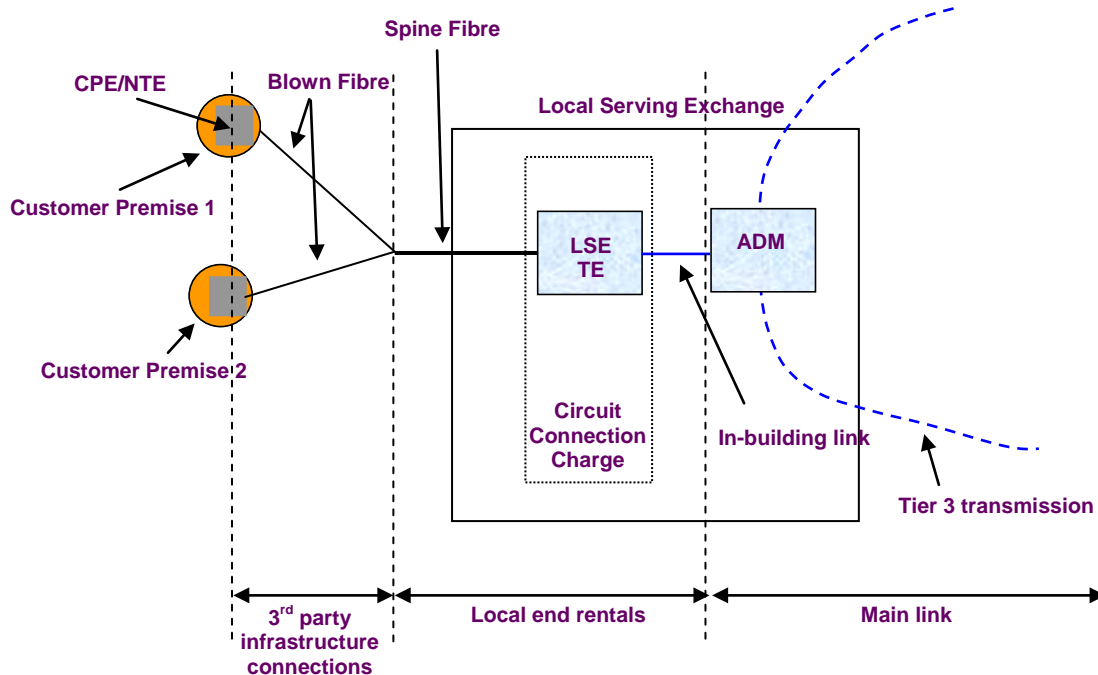
A6.23 There are also rental charges designed to recover certain point of handover (POH) costs, which also fall within this basket. POH refers to the bearer link across which BT delivers individual PPC circuits to CPs. We describe these costs more fully in Annex 5, Point of Handover Costs and Charges.

A6.24 There is one category of costs, local end fibre and copper, whose recovery depends on which side of the final flexibility point before the end user they fall. BT considers blown fibre and dropwire copper to be specific to a particular customer and recovers these costs within its third party infrastructure connection charges which fall outside this basket.

Figure A6.1 The different rental charging elements for a partial private circuit

Key

CPE/NTE Customer Premise Equipment/Network Termination Equipment
 CU
 ADM Add Drop Multiplexor

Figure A6.2 Cut-off between elements recovered in connection & rental charges

Key

CPE/NTE Customer Premise Equipment/Network Termination Equipment
 LSE TE Local serving exchange transmission equipment
 ADM Add Drop Multiplexor

A6.25 BT's regulatory costing system separately identifies many of the services within the scope of our traditional interface baskets. We list out these services at paragraph A6.30. There are however two sets of exceptions, enhanced maintenance and sub 2 mb/s circuits, which we discuss below.

Enhanced maintenance

- A6.26 Enhanced maintenance charges relate to the premium repair service that communication providers can opt to purchase to top up the service level associated with standard circuit rental charges. BT levies further fixed and variable distance charges for each PPC. For 2 mb/s circuits enhanced maintenance costs approximately add a further 10% on the basic charges. In 2007/08 BT sold all PPC circuits with enhanced maintenance according to the RFSs except for trunk. For all rental services falling in origination markets reported in the RFSs BT identified this revenue separately and included in these services' cost base an attribution of this cost. We therefore assess the level of circuit charges reflecting BT's attribution of enhanced maintenance.

Sub 2 mb/s circuits

- A6.27 BT offers sub 2 mb/s circuits in multiplies of 64 kb/s up to 1,024 kb/s for link and per kilometre charges. Prices for these services do not reflect a straight bandwidth gradient. In the RFSs, BT identifies 64kb channels rather than circuits for these link and per kilometre services. We therefore assess the profitability of these services by comparing average unit revenue for a 64 kb/s channel with the corresponding average unit cost.
- A6.28 Furthermore, BT does not separately identify per kilometre volumes for trunk and distribution services. Instead it presents these two services together. We therefore assess profitability of distribution and trunk charges on a combined basis.

Inputs / granularity

- A6.29 Our main financial data source for costs & revenues is contained in BT's AFSs for 2007/08. These AFSs provide profit & loss and mean capital employed statements for all the services BT reports within its published RFSs in the same format as these published statements. The AFSs are not audited, but reconcile in aggregate to the costs and revenues appearing for each market reported in the audited RFSs.
- A6.30 We used the AFSs for 2007/08 for the following TI basket services:

64 kb/s

Connection

Link

Transmission

Local end

2 mb/s, 34/45 and 140/155 mb/s

Connection

Link

Distribution

Local end

Trunk

622 mb/s

Trunk

Adjustments

A6.31 In the table below, we set out the adjustments we made to 2007/08 in the order in which we made them.

Table A6.2 Adjustments to reported 2007/08 costs, revenues & volumes for traditional interface (TI) basket services

#	Adjustment	Mechanics / source data used
1	<p>Third party customer local end (LE) equipment & infrastructure costs</p> <p><i>Issue & treatment</i> The costs for local end rental services include third party customer local end equipment & infrastructure. BT however recovers these costs through its equipment & infrastructure connection charges which are not in the scope of the TI basket.</p> <p>We eliminate the following costs from local end rentals</p> <ul style="list-style-type: none"> • blown fibre • 'dropwire' copper • transmission equipment at customer premises <p>We illustrate the cut-off point between those elements BT recovers through connections and rentals in the Figure 6.2 above.</p>	<p>Within its local end reporting BT aggregates the costs for blown fibre, "dropwire" copper and transmission equipment at customer premises with spine fibre, non-dropwire copper and transmission equipment located at the exchange.</p> <p>For our 2006/07 analysis BT had supplied us with estimates of the proportion of these cost types which are recovered in its connection charges as follows:</p> <ul style="list-style-type: none"> • fibre (47%) • copper (30%) • transmission (34% P&L / 25% MCE) <p>Whilst the AFS MCE statements identify each of these categories separately, the profit & loss AFS statement does not separately identify fibre access depreciation from copper access depreciation. For 2007/08 we retained the assumption used in 2006/07 that BT delivers the vast majority of all sub 2 mb/s circuits over copper, and virtually all 2 mb/s and above circuits over fibre.</p> <p>We therefore applied the percentages quoted above to the relevant HCA depreciation and CCA MCE values reported in the AFS for PPC local ends to calculate the costs to eliminate.</p>
2	<p>Point of handover (POH) link costs</p> <p><i>Issue & treatment</i> The reported costs for local end rental services also include most of the costs for point of handover links. Point of handover links relate to the technical area market rather than third party local end rentals.</p> <p>We eliminate these costs from local end rentals.</p>	<p>BT supplied us with an estimate of the POH costs it recovers through the surcharge on external local end rentals i.e. the POH costs it does not recover through specific POH charges. We explain this further in Annex 5 between paragraphs A5.29 & A5.33.</p> <p>We eliminated this estimate across the bandwidths identified by BT.</p>
3	<p>Current cost normalisation</p> <p><i>Issue & treatment</i> BT prepares its statements under current cost accounting (CCA) principles. These costs reflect the actual level of asset prices changes</p>	<p>We eliminated the amounts identified in the AFS profit & loss statement against:</p> <ul style="list-style-type: none"> • holding (gain)/loss • other CCA adjustments

#	Adjustment	Mechanics / source data used
	<p>experienced and the impact of any changes to the methodologies used to value assets. Therefore, one period's CCA adjustments are unlikely to provide a robust forecast for future years.</p> <p>We therefore substituted our own estimate of future asset price changes and eliminate the impact of any methodology changes</p>	<p>We calculated our forecast holding gain by multiplying asset values as per the MCE statement by the geometric mean of the past 5 years' asset price change figures as supplied by BT.</p> <p>We explained the source of our asset inflation assumptions under 'Asset price changes' within paragraphs A7.138 to A7.151 in Annex 7.</p>
4	Regulatory asset value (RAV)	
	<p><i>Issue & treatment</i></p> <p>As set out in Section 4 we believe it appropriate to adjust BT's current cost depreciation and asset values for pre-1997 access copper & access duct. This is to ensure full and fair cost recovery over the life of these assets across all the services (including voice) that use these assets.</p>	<p>We attributed the total value of the RAV adjustment (duct & copper separately) for 2007/08 across all relevant BT access service components based on depreciation (P&L adjustment) and net replacement costs (MCE adjustment).</p> <p>We then identified the overall impact of this adjustment on the services in the scope of the TI basket in 2007/08 and applied it accordingly, depreciation & MCE elements separately. On the assumption that only local end rental services would consume pre-97 access copper and duct, we only applied this adjustment to these services.</p>
5	Technological neutrality (21CN)	
	<p><i>Issue & treatment</i></p> <p>TI basket services include an element of the cost BT is investing in its 21CN network. As set out in Section 4 we concluded that these costs should be recovered against services delivered over the 21CN network, and not against current services which do not use this network.</p> <p>We therefore eliminated an estimate of 21CN costs reflected in TI services.</p> <p>We note for 2007/08 that BT has attributed its 21CN costs to a different range of services to that for 2006/07. In 2007/08 BT identified separate network components for 21CN whereas in 2006/07 BT identified a 21CN costs at plant group level. Plant group costs relate to the immediately previous stage of BT's cost attribution process.</p> <p>Because of this change in accounting treatment the precise mechanics of how we calculated the adjustment differs from 2006/07.</p> <p>BT's use of the term '21CN' in its RFS includes its next generation backhaul network as well as its core.</p>	<p>For 2007/08 we used the information published in the 2007/08 regulatory financial statements to identify the level of 21CN costs (including ROCE) which BT had attributed to TI services at the unit level.</p> <p>We disaggregated the cost including ROCE between the profit & loss cost and MCE by applying relevant percentages to the unit total. We obtained these percentages by constructing the total cost including return on capital employed from the total profit & loss cost and total MCE for each of the 21CN components as revealed on the 2007/08 additional financial information (AFI) schedule 13. BT provides this AFI to us under its regulatory reporting obligations.</p> <p>In 2007/08 BT identified the following components (pages 79, 81 & 82 of the regulatory financial statements) which it attributed to certain services in the TI basket:</p> <ul style="list-style-type: none"> • Access Cards (other services) • MSAN-Metro connectivity (dense) • MSAN-Metro connectivity (non dense) <p>Components, in the same way as BT's plant groups, comprise not just direct costs such as</p>

#	Adjustment	Mechanics / source data used
		<p>for equipment but also indirect costs such as accommodation & security as well as corporate costs.</p> <p><i>Avoidable versus unavoidable element</i> We asked BT to provide us with an analysis for 2007/08 of the 21CN costs which identified which costs were truly specific to 21CN (e.g. equipment and software) equivalent to what it had previously provided us for 2006/07.</p> <p>Based on this 2007/08 analysis we eliminated</p> <ul style="list-style-type: none"> • 22% of profit & loss costs • 93% of MCE <p>to reflect our objective of only eliminating avoidable 21CN costs.</p>
6	Payment terms	<p><i>Issue & treatment</i> Part of the relevant capital employed includes the cost to BT of financing the payment terms it offers. BT reflects this cost as notional debtors.</p> <p>We calculate its value using the number of days between when BT (on average) provides the service and when it expects to be paid. We then multiplied this number of days over 365 days by its annual revenues to arrive at the value to include in MCE.</p> <p>BT's value for notional debtors reflects the same 43 days (2007/08) (59 days in (2006/07) of revenues across all services, which differs from the terms actually offered on individual services.</p> <p>We therefore adjusted notional debtors to reflect BT's actual payment terms for each service.</p> <p>We substituted the internal and external debtor figures reflected in the Additional Financial Statements, which reflect 43/365ths of internal and external revenues, with a revised calculation based on 16/365 days and 46/365 days for rental and connection services respectively.</p> <p><i>Rentals</i> 16 days represents the average interval for services billed monthly in advance. This includes a day for bill preparation.</p> <p><i>Connections</i> 46 days represents the average interval between a new connection and when payment falls due. BT invoices connections on its monthly billing cycle, rather than billing for the service the day after connection, adding an average of 15 days to the 31 days gap between service and payment assumed for 2006/07 in our December Consultation. This period includes a day for bill preparation.</p>
7	Ancillary services (e.g. excess construction charges (ECCs))	<p><i>Issue & treatment</i> BT includes the cost of providing ancillary services within the base data for TI basket services. Ancillary services do not however fall within the TI basket and we therefore eliminated an estimate of the cost of these services.</p> <p>In 2007/08 BT identified ancillary service revenues for the first time in its regulatory financial statements as excess construction charges. We expect these costs, which BT does not recognise separately, to be primarily reflected in the local end service cost base. We therefore calculated the % of local end costs these revenues represented and eliminated this percentage.</p>
8	Site Connect circuit revenues, costs & volumes	<p><i>Issue & treatment</i></p>

#	Adjustment	Mechanics / source data used
	In 2007/08 BT included the revenues, costs and volumes for Site Connect, a mobile connectivity service, within its PPC services. We therefore excluded these revenues, costs and volumes from our analysis	In the context of the PPC Disputed BT submitted an analysis which identified the relevant revenues, costs and volumes by service for 2007/08. We used this information to make this adjustment.
9	Resilient circuit costs <i>Issue & treatment</i> BT's statements separately identify the revenues, but not the costs, for resilient & protected path variants circuits. As these services do not fall within our TI basket we have eliminated an estimate of the costs. We also assumed that the volumes for TI basket services do not reflect resilient & protected path variant circuit volumes.	We estimated the cost of these services to equal the revenues as identified in the regulatory financial statements. We eliminated our estimates of resilient circuits' costs in proportion to the costs of the affected services. We processed these adjustments market by market i.e. our estimate of low bandwidth resilient circuit costs against low bandwidth services.
10	Third party customer LE equipment & infrastructure selling costs <i>Issue & treatment</i> BT incurs costs in selling third party customer LE equipment & infrastructure. As explained in adjustment 1 these services do not fall within the TI basket. As BT does not account for these services separately from local end rentals we assumed that these selling costs are also reflected in the local end rental cost base. We therefore eliminate an estimate of these costs from the local end rental cost base.	BT provided us with an estimate of its selling costs (£6m) for equipment & infrastructure it provided both to external parties and to itself in 2006/07. We eliminated this same sum for 2007/08 from local end services in proportion to local end service P&L costs.
11	Revised internal revenues <i>Issue & treatment</i> In 2007/08 BT accounted for those sub 2 mb/s local end services transported on 2 mb/s bearers within 2 mb/s services. (BT told us that it adopted this approach to align the accounting of these revenues with that for the costs.) This approach resulted in BT recognising too much revenue against 2 mb/s local ends for each and every sub 2 mb/s local end affected. BT adjusted (approximately) for this extra revenue by pricing all sub 2 mb/s transmission (i.e. distribution & trunk) revenues as though they were priced at the cheaper distribution rates. As our focus was primarily at the basket level, we did not adjust external revenues as, according to BT, aggregate external revenues reconciled to the relevant figures from its general ledger. However as BT had priced its internal volumes in the same way as external volumes, we adjusted internal revenues.	We re-priced sub 2 mb/s internal transmission volumes as though they were a combination of distribution & trunk, rather than wholly relating to the much cheaper distribution service, by multiplying 2007/08 volumes by £3.83 per kilometre, the 2006/07 weighted average charge across the two. This increases internal transmission revenues by £14m. We also re-priced our estimate of internal sub 2 mb/s local ends carried over 2 mb/s bearers at sub 2 mb/s prices (i.e. at £248.23, rather than at 2 mb/s prices (= £595.94)). We estimated these volumes by assuming that the same proportion of internal total sub 2 mb/s local ends was affected as external local ends (11%). This reduces internal revenues by £8m. The net effect of these adjustments was to increase internal TI basket revenues by £6m.

#	Adjustment	Mechanics / source data used
12	Reduction in price of (external) local ends (formerly the local end adjustment)	
	<p><i>Issue & treatment</i></p> <p>As set out in Section 4 we require BT in future to recover POH costs not recovered in POH link connection or rental charges through a separate charge which fall in the Technical Areas for TI markets. This will be instead of recovery via a surcharge on the price of external local end rentals.</p> <p>We therefore eliminated from <i>external</i> local end revenues the aggregate value of these new charges based on 2007/08 volumes to reflect the new policy, and reflected this total in a new service category.</p> <p>This adjustment should be seen in combination with adjustment #2 where we seek to remove the related costs.</p>	<p>We set out in paragraphs 4.162 to 4.165 in Section 4, and further explain in paragraph A5.34 to A5.35 in Annex 5, the starting charge values we have determined for these separate charges for each circuit bandwidth. We therefore multiplied these charges by the relevant external 2007/08 local end volumes and deducted these from the reported external local end revenues.</p>
13	POH circuit rental costs & charges	
	<p><i>Issue & treatment</i></p> <p>As set out in Section 4 we require BT in future to recover POH costs not recovered in POH link connection or rental charges through a separate charge which fall in the Technical Areas for TI markets.</p> <p>In two previous adjustments we have already eliminated the costs (#2) and revenues (#11) from local end rental services. With this adjustment we allow BT to recover within this basket its latest 2007/08 estimate of the fully attributed cost for these costs through separate POH rental charges.</p>	<p>BT provided us with an estimate for 2007/08 costs not recovered through other charges. This is more fully explained in Annex 5 in paragraphs A5.29 to A5.33. We set the total recovery to equal this FAC cost total.</p>
14	Adjusting 2007/08 profitability for latest prices	
	<p><i>Issue & treatment</i></p> <p>To consider the need for further one off price changes we took into account the price changes proposed by BT. These prices were reflected in our December Consultation.</p> <p>As for price control purposes we ignore the discounts BT offers for prices in the Central London Zone (CLZ) we first re-priced all 2 mb/s and 34 mb/s local end services as if they sold at non-CLZ prices.</p> <p>We then re-priced all of the services affected to reflect the prices BT had proposed</p>	<p>BT's proposals were articulated in terms of prices on its price list whereas the services which it reports against in its regulatory financial statements include fixed and variable enhanced maintenance charges. We therefore reflected these 'blended' prices in our analysis.</p> <p>We re-priced local end rentals to reflect our new policy of separate charges to recover POH costs.</p>

Results

A6.32 Below we show the results of our analysis aggregated across all services reported in BT's regulated financial statements which comprise our TI basket. The table also reflects the new point of handover charges.

Table A6.3 TI basket: 2007/08 aggregate adjustments step by step

		2007/08				
	Order	TI basket services (£m)			Costs incl. ROCE	ROCE
		Revenues	Costs	MCE		
As reported		816	649	1,571	822	11%
<i>Adjustments</i>						
Third party customer local end (LE) equipment	1	-	(38)	(167)	(56)	
Point of handover (POH) link costs	2	-	(12)	-	(12)	
Current cost normalisation	3	-	41	-	41	
Regulatory asset value (RAV)	4	-	(4)	(19)	(6)	
Technological neutrality (21CN)	5	-	(12)	(157)	(29)	
Payment terms	6	-	-	(34)	(4)	
Ancillary services	7	-	(21)	-	(21)	
Site Connect	8	(45)	(23)	(37)	(27)	
Resilient circuit costs	9	-	(29)	-	(29)	
Third party customer LE equipment selling costs	10	-	(6)	-	(6)	
Internal revenues	11	8	-	-	-	
Reduction in price of (external) local ends	12	(12)	-	-	-	
POH circuit rental costs & charges	13	12	12	-	12	
After adjustments		779	558	1,157	685	19%
CLZ local ends repriced as non-CLZ (net of POH)	14	6	-	-	-	
BT Wholesale price changes: net change	14	(10)	-	-	-	
After proposed BT Wholesale price changes		774	558	1,157	685	

Adjusting 2007/08 profitability for latest prices

A6.33 As shown in the table above we estimated the impact for this to be £10m. This contrast with the £29m BT estimate for 2007/08 that we included in December Consultation. One of the reasons why these two figures differ is that BT figure did not reflect the impact of our proposed change in policy for the recovery of certain point of handover costs. Secondly we calculate the impact assuming that all local ends are priced at non CLZ rates, the prices relevant for price control purposes. Thirdly BT used volume forecasts whereas we use the volumes reported in BT's regulatory financial statements.

Comparability with 2006/07 information

A6.34 At individual service level 2007/08 costs fully reflect 2007/08 volumes whereas BT did not restate its 2006/07 service costs when it restated in 2006/07 revenues. At our request BT prepared and published "represented" unit cost on its website to reflect a cost re-attribution exercise limited to within traditional interface markets. BT notes that it has not restated costs for these other markets as the impact is not material.

A6.35 We had intended to prepare a fresh 2006/07 analysis using the underlying represented service cost information, to provide consistency with our 2007/08 analysis. However the "represented" AFS information provided for 2006/07

comprised merely of total figures for profit & loss costs and mean capital employed, and could not therefore be used for this purpose.

- A6.36 We have made a number of changes to our 2006/07 methodology, primarily to reflect the latest information when calculating our adjustments. We believe these changes do not in aggregate have a material effect on the comparability of the information at basket level.

Table A6.4 TI basket: 2007/08 compared with 2006/07 (aggregate adjustments step by step)

	Order	2007/08					2006/07				
		TI basket services (£m)			Costs incl. ROCE		TI basket services (£m)			Costs incl. ROCE	
		Revenues	Costs	MCE			Revenues	Costs	MCE		
As reported before any restatement		816	649	1,571	822	11%	1,070	807	1,770	1,009	15%
Restatement		-	-	-			(230)	-	-		
After restatement but before adjustments		816	649	1,571	822	11%	840	807	1,770	1,009	2%
<i>Adjustments</i>											
Third party customer local end (LE) equipment	1	-	(38)	(167)	(56)		-	(39)	(185)	(60)	
Point of handover (POH) link costs	2	-	(12)	-	(12)		-	(11)	-	(11)	
Current cost normalisation	3	-	41	-	41		-	(78)	-	(78)	
Regulatory asset value (RAV)	4	-	(4)	(19)	(6)		-	(5)	(33)	(9)	
Technological neutrality (21CN)	5	-	(12)	(157)	(29)		-	(5)	(109)	(17)	
Payment terms	6	-	-	(34)	(4)		-	-	(142)	(16)	
Ancillary services	7	-	(21)	-	(21)		-	(12)	(23)	(15)	
Site Connect	8	(45)	(23)	(37)	(27)		(39)	(23)	(47)	(28)	
Resilient circuit costs	9	-	(29)	-	(29)		-	(34)	-	(34)	
Third party customer LE equipment selling costs	10	-	(6)	-	(6)		-	(6)	-	(6)	
Internal revenues	11	8	-	-	-						
Reduction in price of (external) local ends	12	(12)	-	-	-		(10)	-	-	-	
POH circuit rental costs & charges	13	12	12	-	12		11	11	-	11	
After adjustments		779	558	1,157	685	19%	802	605	1,230	745	16%

- A6.37 The above table indicates that underlying profitability as measured by return on capital employed (ROCE) has not changed materially between 2006/07 and 2007/08.

AI basket services

Description of services

- A6.38 Here we refer to local end rental & connection charges for WES/WEES, end rental & connection charges for BES services, and the per metre backhaul fibre charges which applies to both categories of service. BT currently levies the same per metre charge across both WES/WEES and BES backhaul. WEES/WES and BES services as currently supplied by BT comprise of point-to-point fibre (backhaul as well as access) as well as the electronics located at either end of the circuit.
- A6.39 We illustrate circuit rental charging elements, namely (local) end and backhaul, in the figures below.

Figure A6.3 Wholesale end-to-end service (WEES)

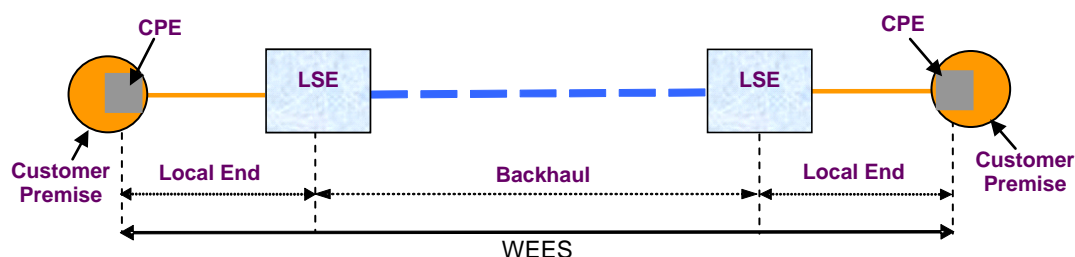


Figure A6.4 Wholesale extension service (WES)

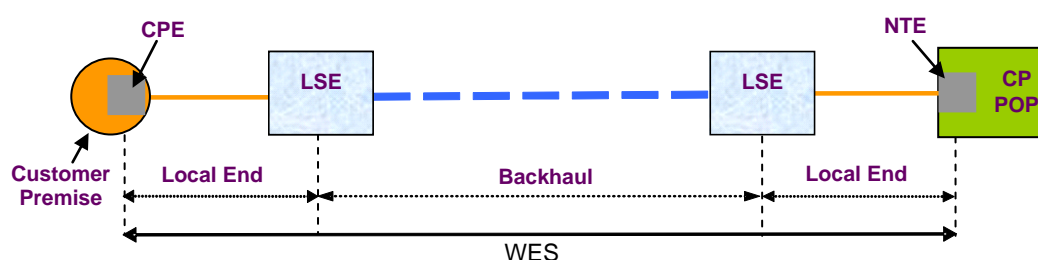
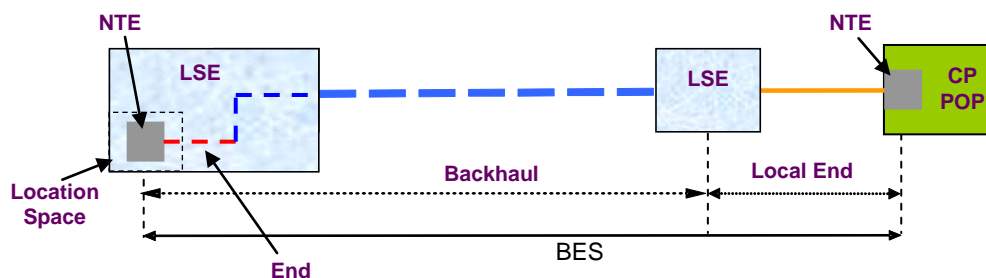


Figure A6.5 Backhaul extension circuit (BES)



Key

CPE	Customer Premises Equipment (located at a business end user's premises)
LSE	Local Serving Exchange
NTE	Network Terminating Equipment (located at communication provider's premises)
CP PoP	Communication Provider's Point of Presence

Inputs / granularity

A6.40 Our main financial input data are the costs & revenues reported within BT's AFSs for 2007/08. These AFSs provide profit & loss and mean capital employed statements for all the services BT reports within its published RFSs in the same format as these published statements. The AFSs are not audited but agree in aggregate to the amounts appearing for each market reported in the audited RFSs.

A6.41 We used the AFSs for 2007/08 for the following A1 basket services:

WEES/WES local end connections & rentals

10 mb/s

100 mb/s

1,000 mb/s

Other (comprising 155 mb/s, 622 mb/s, 2.5 gb/s & 10 gb/s)

BES (local) end connections and rentals

10 mb/s

100 mb/s

1,000 mb/s

Other (comprising 10 mb/s, 155 mb/s, 622 mb/s)

Backhaul

Per metre charges

- A6.42 BT reflected the costs and revenues for daisy chain end connections & rentals within the associated connection and rental charges for the relevant bandwidth.

Adjustments

- A6.43 In the table below we set out the adjustments made for 2007/08 in the order in which we made them. Most of the adjustments are common to BES and WES/WEES services. We indicate any differences between these services in the table.

Table A6.5 Adjustments to reported 2007/08 costs, revenues & volumes for alternative interface (AI) basket services

#	Adjustment	Mechanics / source data used
-	Volumes	
	<i>Issue & treatment</i> For local end connection and rentals BT published circuit information.	We multiplied the circuit figures by two to derive end counts.
1	Equipment costs	
	<i>Issue & treatment</i> BT recovers the cost of the transmission equipment deployed at either end of an AI circuit and which are wholly dedicated to that service, through the local end connection charges.	BT reflects the cost of this equipment within the following lines shown on the face of the AFS <ul style="list-style-type: none"> • (HCA) transmission depreciation • (CCA) transmission MCE within tangible fixed assets.
	However BT capitalises and then depreciates this equipment over its useful economic life.	We therefore eliminated the entirety of this item from our cost base.
	We therefore need to match costs and revenues by eliminating this measure of equipment cost reflected in BT's connection cost base and replace it with a measure based on fully expensing on connection the cost to BT of deploying this equipment based on equipment supplier costs.	In its place we attributed the full cost of the relevant equipment (plus an estimate of the installation costs), one set for each WES/WEES/BES connection service. BT had supplied us with the costs of transmission equipment based on its supplier contract price list as at September 2006. We estimated the cost of installing a piece of equipment at one end of a circuit to be £200.

#	Adjustment	Mechanics / source data used
2	<p>Current cost normalisation</p> <p><i>Issue & treatment</i></p> <p>BT prepares its statements under current cost accounting (CCA) principles. These costs reflect the actual level of asset price changes experienced and the impact of any changes to the methodologies used to value assets. Therefore, one period's CCA adjustments are unlikely to provide a robust forecast for future years.</p> <p>We therefore substituted our own estimate of future asset price changes and eliminate the impact of any methodology changes.</p>	<p>We eliminated the amounts identified in the AFS profit & loss statement for WES/WEES, BES and mainlink services against:</p> <ul style="list-style-type: none"> • holding (gain)/loss • other CCA adjustments <p>as described below.</p> <p>We calculated our forecast holding gain by multiplying asset values as per the MCE statement by the geometric mean of the past 5 years' asset price change figures as supplied by BT.</p> <p>We explain the source of our asset inflation assumptions in paragraphs A7.138 to A7.151 in Annex 7.</p>
3	<p>Technological neutrality (21CN)</p> <p><i>Issue & treatment</i></p> <p>AI basket services include an element of the cost BT is investing in its 21CN network. As set out in Section 4 we believe that these costs should be recovered against services delivered over the 21CN network, and not against current services which do not use this network.</p> <p>We therefore eliminated an estimate of 21CN costs reflected in current AI services.</p> <p>In 2007/08 BT identified separate network components for 21CN whereas in 2006/07 identified a different sets of costs at plant group level. Plant group costs relate to the immediately previous stage in its cost attribution process.</p> <p>Because of this change in accounting treatment the precise mechanics of how we calculated the adjustment differs from 2006/07.</p> <p>BT's use of the term '21CN' includes its next generation backhaul network as well as its core.</p>	<p>For 2007/08 we used the information published in the 2007/08 regulatory financial statements to identify the level of 21CN costs (including ROCE) which BT had attributed to AI services at the unit level.</p> <p>We disaggregated the cost including ROCE between the profit & loss cost and MCE by applying relevant percentages to the unit total. We obtained these percentages by constructing the total cost including return on capital employed from the total profit & loss cost and total MCE for each of the 21CN components as revealed on the 2007/08 additional financial information (AFI) schedule 13. BT provides this AFI to Ofcom under its regulatory reporting obligations.</p> <p>In 2007/08 BT identified the following components (page 82 of the regulatory financial statements) which it attributed to services in the AI basket:</p> <ul style="list-style-type: none"> • Access Cards (other services) • MSAN-Metro connectivity (dense) • MSAN-Metro connectivity (non dense) • Core/Metro connectivity <p>Components, in the same way as BT's plant groups, comprise not just direct costs such as for equipment but also indirect costs such as accommodation & security as well as corporate costs.</p> <p><i>Avoidable versus unavoidable element</i></p> <p>We asked BT to provide us with an analysis for 2007/08 of its 21CN costs which identified which costs were truly specific to 21CN (e.g. equipment and software) equivalent to what it had previously provided us for 2006/07.</p>

# Adjustment	Mechanics / source data used
	<p>Based on this 2007/08 analysis we eliminated</p> <ul style="list-style-type: none"> • 22% of profit & loss costs • 93% of MCE <p>to reflect our objective of only eliminating only avoidable 21CN costs.</p>
<p>4 Payment terms</p> <p><i>Issue & treatment</i> Part of the relevant capital employed includes the cost to BT of financing the payment terms it offers. BT reflects this cost as notional debtors.</p> <p>We calculate its value using the number of days between when BT (on average) provides the service and when it expects to be paid. We then multiple this number of days over 365 days by its annual revenues to arrive at the value to include in MCE.</p> <p>BT's value for notional debtors reflects the same 43 days (2007/08) (59 days in (2006/07) of revenues across all services, which differs from the terms actually offered on individual services.</p> <p>We therefore adjusted notional debtors to reflect BT's actual payment terms for each service.</p>	<p>We substituted the internal and external debtor figures reflected in the Additional Financial Statements, which reflect 43/365'ths of internal and external revenues, with a revised calculation based on 16/365 days and 45/365 days for rental and connection services respectively.</p> <p><i>Rentals</i> 16 days represents the average interval for services billed monthly in advance. This includes a day for bill preparation.</p> <p><i>Connections</i> 46 days represents the average interval between a new connection and when payment falls due. BT invoices connections on its monthly billing cycle, rather than billing for the service the day after connection, adding an average of 15 days to the 31 days gap between service and payment assumed for 2006/07 in our December Consultation. This period includes a day for bill preparation.</p>
<p>5 Ancillary services (e.g. excess construction charges (ECCs))</p> <p><i>Issue & treatment</i> BT includes the cost of providing ancillary services within the base data for AI basket services. Ancillary services do not however fall within the AI basket and we therefore eliminate an estimate of the cost of these services.</p>	<p>In 2007/08 BT identified ancillary service revenues for the first time in its regulatory financial statements as excess construction charges. We expect these costs, which BT does not recognise separately, to be primarily reflected in the local end service cost base. We therefore calculated the % of local end costs these revenue represented and eliminated this percentage.</p>
<p>6 Revised revenues</p> <p><i>Issue & treatment</i> BT provided us with revised revenues figures for 2007/08 for all the WES/WEES, BES and mainlink services it reported in its regulatory financial statements. It also provided us with revised (lower) volumes for main link.</p> <p>We asked for a revised analysis when we discovered BT has wrongly assumed in its revenue calculations that each BES circuit only had one chargeable end rather than two. [A BES circuit only has one 'local' end but both ends incur the same charge.] BT had</p>	<p>We substituted the reported service-level revenues with the relevant totals shown by BT's revised analysis.</p> <p>We substituted the reported main link volumes with the new volume BT provided.</p> <p>Post this adjustment all revenues reflected a granular 'p' x 'q' calculation for services listed on the Openreach price list. For some services BT weighted prices to take into account the fact that up to three different prices were in force during 2007/08. All volumes related to the end of</p>

#	Adjustment	Mechanics / source data used
	made up the shortfall in revenue by overstating mainlink volumes. At the same time as correcting for BES ends, BT also updated the prices used in the 'p' x 'q' (prices times volume) calculation to reflected weighted average prices, rather than the prices in force at the end of September 2008.	September 2008. BT overstated its revised (local) end revenues: it incorrectly weighted the prices for some services using straight months, rather than fractions of 12. We await updated information from BT.
7	Adjusting 2007/08 profitability for latest prices <i>Issue & treatment</i> To consider the need for further one off price changes we took into account the price changes implemented by BT Openreach on 1 February 2009.	We established the percentage against which the current (February 2009) prices for the main WES/WEES and BES services as per Openreach's price list had fallen against those in force at the end of September 2008. We applied these percentages to the revised revenues supplied by BT (see adjustment immediately above) to generate a measure of expected future revenues based on BT's February 2009 prices.

- A6.44 We did not need to make an adjustment for backhaul network services as in its 2007/08 regulatory financial statements BT identified the revenues, costs and volumes for this service separately.

Results

- A6.45 Below we show the results of our analysis aggregated across all services reported in BT's regulated financial statements which comprise our AI basket. We also show these results disaggregated between WES/WEES local ends, BES ends and mainlink.

Table A6.6 AI basket: 2007/08 aggregate adjustments step by step

2007/08 AI basket (£m)						
2007/08 order	Base information			Costs incl. ROCE	ROCE	
	Revs	Costs	MCE			
Reported before adjustments ¹		409	164	841	257	29%
<i>Adjustments</i>						
Equipment costs	1	-	5	(75)	(4)	
Current cost normalisation	2	-	25	-	25	
Technological neutrality (21CN)	3	-	(7)	(94)	(17)	
Payment terms	4	-	-	(3)	(0)	
Ancillary services	5	-	(16)	-	(16)	
Revised revenues	6	5	-	-	-	
Backhaul network services						
After adjustments (in-year)		414	170	668	244	37%
Price reductions (Feb 2009)	7	(96)	-	-	-	
Net		318	170	668	244	22%

Table A6.7 WES/WEES connections & rentals: 2007/08 aggregate adjustments step by step

WES/WEES services (£m)						
		Base information			Costs incl ROCE	ROCE
	Order	Revs	Costs	MCE		
Reported before adjustments		248	106	482	159	29%
<i>Adjustments</i>						
Equipment costs	1	-	3	(64)	(4)	
Current cost normalisation	2	-	19	-	19	
Technological neutrality (21CN)	3	-	(1)	(12)	(3)	
Payment terms	4	-	-	(5)	(1)	
Ancillary services	5	-	(14)	-	(14)	
Revised revenues	6	(1)	-	-	-	
After adjustments (in-year)		247	112	401	156	34%
Price reductions (Feb 2009)	7	(47)	-	-	-	
Net		200	112	401	156	22%

Table A6.8 BES connections & rentals: 2007/08 aggregate adjustments step by step

Order	BES services (£m)				
	Base information			Costs incl ROCE	ROCE
	Revs	Costs	MCE		
Reported before adjustments	38	16	52	22	42%
<i>Adjustments</i>					
Equipment costs	-	2	(11)	1	
Current cost normalisation	-	1	-	1	
Technological neutrality (21CN)	-	(0)	(3)	(1)	
Payment terms	-	-	3	0	
Ancillary services	-	(2)	-	(2)	
Revised revenues	31	-	-	-	
After adjustments (in-year)	69	17	41	22	126%
Price reductions (Feb 2009)	(23)	-	-	-	
Net	45	17	41	22	69%

Table A6.9 AI main link charges: 2007/08 aggregate adjustments step by step

Order	Main link rental (£m)				
	Base information			Costs incl ROCE	ROCE
	Revs	Costs	MCE		
Reported before adjustments	123	42	307	76	26%
<i>Adjustments</i>					
Equipment costs	-	-	-	-	
Current cost normalisation	-	5	-	5	
Technological neutrality (21CN)	-	(6)	(80)	(14)	
Payment terms	-	-	(2)	(0)	
Ancillary services	-	-	-	-	
Revised revenues	(24)	-	-	-	
After adjustments (in-year)	99	41	226	66	26%
Price reductions (Feb 2009)	(26)	-	-	-	
Net	73	41	226	66	14%

A6.46 Approximately 9,000 out of the total volume of 27,000 WES local ends reflects legacy “WES2” circuits, which were formerly provided by BT Global Services to CPs on retail terms. These local end rentals are priced at £500 per end considerably less than its 10 mb/s local reach Equivalence of Input (“Eol”) equivalent. The inclusion of these services lowers overall revenues, and therefore profitability for this group of services, from what it would be if this group wholly comprised Eol services.

A6.47 The value of 2.5 Gbit/s and 10 Gbit/s WES/WEES services reported within ‘other bandwidths’, which fall outside the scope of the TI basket, were immaterial.

Adjusting 2007/08 profitability for latest prices

February 2009 price reductions

- A6.48 In our step by step results we also show our estimate of the impact of these reductions already implemented on our basket results as this influenced our view as to whether we would require further price adjustments.

1 Gbit/s BES price reduction

- A6.49 As set out in Section 5, paragraphs 5.90 to 5.96, we require BT to reduce the price for its BES 1 Gbit/s end rental service. Based on 2007/08 volumes we estimate that will directly reduce BT's revenues by nearly £3m per year, reducing its adjusted return on capital employed based on 2007/08 costs for BES connections & rentals from 69% to 63%. We have not attempted to estimate the impact on profitability of any price changes BT may make in consequence. We calculated the value of this revenue reduction by multiplying the difference between the February 2009 end rental price (£5,000 per year) and the price we require (£4,137 per year) by the BES 1 Gbit/s end volumes.

Comparability with 2006/07 information

- A6.50 We have been unable to prepare a service by service comparison with 2006/07 even though BT did restate both costs and volumes for AI services in 2006/07 at service level, revenue increasing by £46m and notional debtors by £3m. In the 2006/07 regulatory statements BT aggregated main link with (local) end rentals which it separated out for 2008/09. Although we produced our own (adjusted) analysis for 2006/07 it reflects a different attribution methodology for certain costs
- A6.51 For example for 2006/07 we attributed fibre & duct plant group costs for (local) ends on the basis of the volumes of ends. Whereas we observe that BT's reported services exhibit a bandwidth gradient. Another potential example of a difference between the two years analysis is that after excluding transmission equipment costs (adjustment #2) we did not further adjust BT's cost split between connection and rentals.
- A6.52 We have made a number of changes to our 2006/07 methodology for adjustments 2 to 6, primarily to reflect the latest information when calculating our adjustments. We believe collectively these changes do not have a material effect at the basket level.

Table A6.10 AI basket: 2007/08 compared with 2006/07 (aggregate adjustments step by step)

	Order	2007/08 AI basket (£m)					2006/07 AI basket (£m)				
		Base information			Costs incl. ROCE	ROCE	Base information			Costs incl. ROCE	ROCE
		Revs	Costs	MCE			Revs	Costs	MCE		
Reported before adjustments ¹		409	164	841	257	29%	344	171	630	243	27%
<i>Adjustments</i>											
Equipment costs	1	-	5	(75)	(4)			5	(62)	(2)	
Current cost normalisation	2	-	25	-	25			(26)	-	(26)	
Technological neutrality (21CN)	3	-	(7)	(94)	(17)			(1)	(32)	(5)	
Payment terms	4	-	-	(3)	(0)			-	(33)	(4)	
Ancillary services	5	-	(16)	-	(16)			(6)	-	(6)	
Revised revenues	6	5	-	-	-						
Backhaul network services								(4)	(8)	(5)	
After adjustments (in-year)		414	170	668	244	37%	344	139	495	195	41%
Revised pricing (June 2008)							(35)			-	
Net		414	170	668	244	37%	309	139	495	195	34%
Price reductions (Feb 2009)	7	(96)	-	-	-		(59)			-	
Net		318	170	668	244	22%	250	139	495	195	22%

A6.53 The above table indicates that underlying profitability as measured by return on capital employed (ROCE) did not changed materially between 2006/07 and 2007/08.

3rd Party Equipment and Infrastructure basket charges and Point of Handover (“POH”) Equipment Charges

A6.54 This relates to 3rd party link infrastructure connection charges and POH infrastructure and rental charges.

Approach to analysis of equipment basket charges

A6.55 To inform our analysis of the profitability of the equipment basket, for 3rd party equipment and POH, BT supplied us with bottom up unit cost calculations for each externally sold product, together with volumes and costs for external sales in 2007/8. For internal sales, BT only recorded the volumes on a bandwidth basis. With this information, assuming the volumes of individual equipment items sold in each bandwidth followed the same distribution as external sales, BT was able to build up an analysis for Internal 3rd party equipment and infrastructure charges¹².

A6.56 In reviewing the unit cost calculation for 3rd Party Equipment:

- We checked the prices to the relevant Carrier Price List (“CPL”).
- We checked and re-performed the methodology used by BT to calculate the equipment charge, which was calculated as the cost of equipment purchased plus the cost of installation. Installation labour is split on the on the ratio 1:3 between Exchange and Customer site.
- We checked that the unit cost for Copper or Fibre looked reasonable. On average BT incurred the cost of a local end copper pair or four fibres for each connection.

¹² The exception was 64k internal sales where BT calculated an overall average.

This cost basis is consistent with the average local end charges in the restated 2007/8 RFSs.

- We checked and re-performed the methodology used by BT to calculate Selling, General and Administration (“SG&A”) costs. These were set at 13% of price which were based on the ratio of total PPC SG&A costs to revenue in the 2006/7 RFSs. This equated to 14% based on restated 2006/7 revenues and we estimate that for 2007/8 the figure would be around 15%. We have used 13% as the basis of our calculations.
- We checked and re-performed the methodology used by BT to calculate Direct Overheads. These were based on 11% of equipment and copper/fibre cost. The 11% is based on the ratio of overheads to capital cost for the BT assets deployed in providing 3rd party equipment over its average life.

A6.57 In reviewing the unit cost calculation figures for POH we followed the same process with the following exceptions.

- As equipment cost is based on contract price we verified some of the significant items.
- Installation costs amount to 7.7% of equipment cost.
- For direct overheads, a figure of 23% is applied to equipment and copper/fibre costs. The principle was the same as with 3rd party equipment, where the ratio of overheads to capital cost for the BT assets related to 3rd party equipment over its average life but was based on different data.

Analysis of the equipment basket profitability – summary by bandwidth

A6.58 The information provided by BT yielded the following results by bandwidth.

Table A6.11 Estimated returns in the Equipment and Infrastructure basket for 2007/8

	64 kbit/s		2 Mbit/s		34/45 Mbit/s		140/155 Mbit/s		PoH	Total
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Ext	
Revenue (£m)	3.1	1.9	13.3	21.9	4.2	2.9	1.8	0.6	1.9	50.8
Profit (£m)	(1.7)	(0.9)	(0.4)	(1.5)	2.3	1.6	0.0	0.0	(0.4)	0.5
RoS (%)	(53%)		(5%)		55%		0%		(19%)	(1%)

A6.59 2Mbit equipment and infrastructure charges accounted for 69% of the total basket, the majority of it sold externally. This drove the calculated zero return on sales.

A6.60 Excluding POH, in all other baskets internal sales exceeded external sales. These baskets had a high variability of margins. We discuss more in detail below.

A6.61 After BT’s proposed first stage price re-balancing the overall returns change as shown in the Table A6.12. The effect is slightly revenue negative.

Table A6.12 Estimated returns in the Equipment and Infrastructure basket, following BT's price re-balancing for 2007/8

	64 kbit/s		2 Mbit/s		34/45 Mbit/s		140/155 Mbit/s		PoH	Total
	Int	Ext	Int	Ext	Int	Ext	Int	Ext	Ext	
Revenue (£m)	3.9	1.4	13.6	22.3	2.3	1.6	1.8	0.6	1.9	50.3
Profit (£m)	(0.8)	(0.3)	(0.1)	(0.6)	0.7	0.3	0.0	0.1	(0.2)	(0.8)
RoS (%)	(17%)		(2%)		32%		(2%)		(2%)	(1%)

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Annex 7

Ofcom's forecasting model

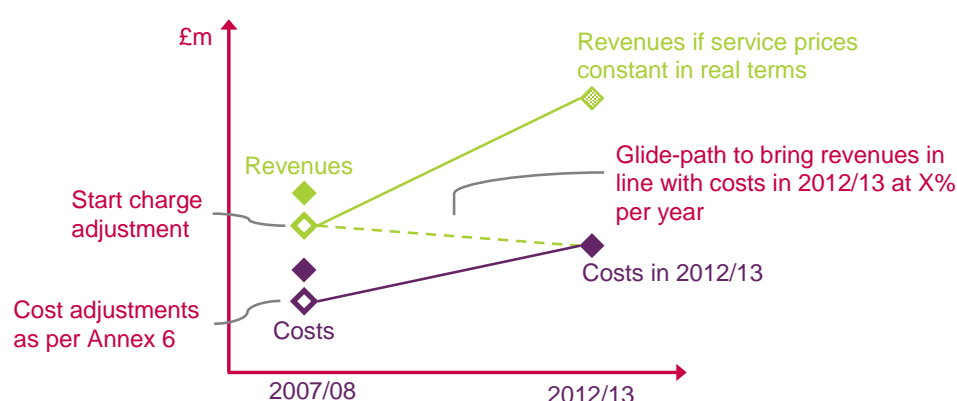
Introduction

- A7.1 As explained in our December Consultation (Annex 9), we have developed a cost forecasting model ("the LLCC model") in order to calculate a value of X for the main TI and AI baskets. For each basket the value of X is the average amount by which BT will be required to reduce charges in real terms in each year of the charge control.
- A7.2 We received no comments from stakeholders on our cost forecasting methodology, and therefore we have not reproduced the modelling formulae here. They can be found in paragraphs A9.42 to A9.55 of our December Consultation.
- A7.3 The purpose of this Annex is to set out the analysis and key assumptions that support the values of X presented in Section 4 on TI terminating and trunk segments and Section 5 on AI services.
- A7.4 This Annex is structured as follows:
- We first set a brief overview of our approach to setting the value of X;
 - We then examine a number of key quantitative issues, including responses by stakeholders to our December Consultation; and
 - We provide the final values of X for the TI and AI basket based on our decisions of key inputs.

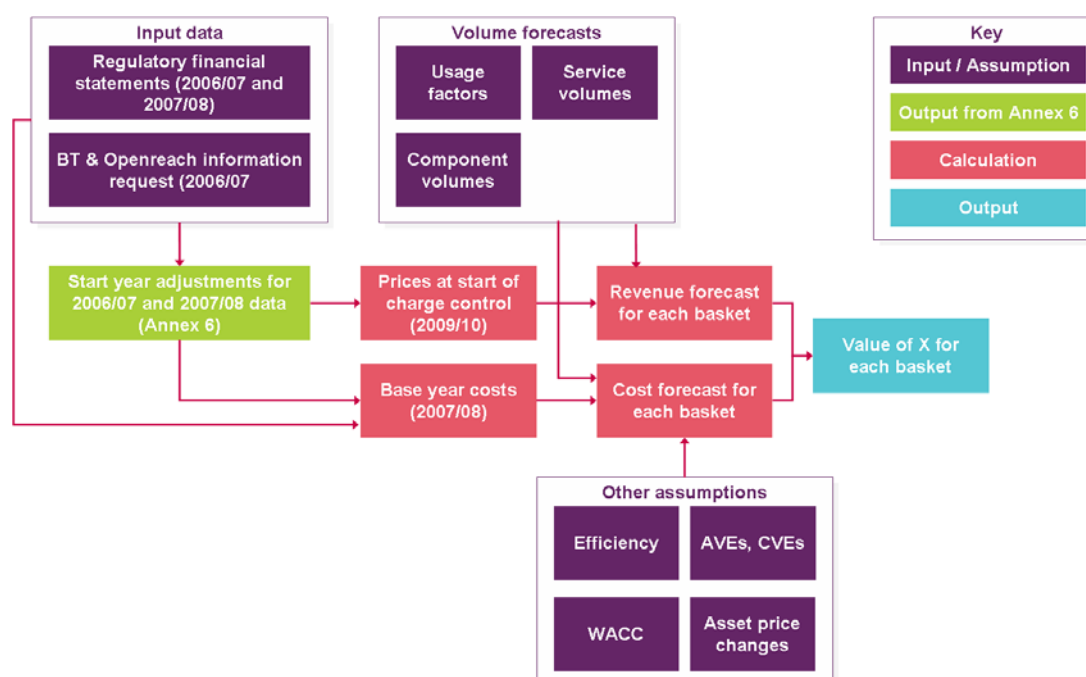
Model structure

- A7.5 The main objective of the LLCC model is to forecast the costs to BT of providing the relevant leased lines services over the period of the charge controls.
- A7.6 As shown in Figure A7.1, we set the value of X such that forecast revenues at the end of the charge control are brought in line with forecast costs gradually over the period (the "glide-path" approach¹³). Adjustments to starting charges affect the slope of the glide path of revenues towards costs. For example, a reduction in service prices at the start of the charge control would reduce the value of X in absolute terms.

¹³ See Paragraphs 3.118 to 3.123 in our December Consultation for a discussion on this approach.

Figure A7.1 Overview of RPI-X modelling approach

A7.7 The LLCC model structure is summarised in Figure A7.2 below. The input data and assumptions are used to determine the cost and revenue forecasts for each service within a basket.

Figure A7.2 The LLCC model structure

A7.8 The basket X is determined by:

- total costs for each of the services included in the basket. This is driven by the costs of the components used by these services, service volume forecasts, and a number of other assumptions such as the rate of change in operating costs at constant volumes (i.e. BT's efficiency) and the cost of capital.
- service prices at the start of the charge controls (re-calculated after the proposed one off adjustments to starting prices as discussed in Sections 4 and 5 of this Statement); and

- revenues for each service in the basket, calculated as the product of service volumes and prices.

Technology neutrality

A7.9 As set out in Section 3 paragraphs 3.64 to 3.112, we have decided to adopt a technology neutral model. In terms of the cost forecasting for TI and AI services we have implemented a number of decisions:

- We exclude direct 21CN costs from our 2007/08 cost base, as described in Annex 6 (Table A6.4 and Table A6.10);
- Ethernet volumes include all services that are within the scope of our charge controls irrespective of the underlying network used to deliver them (e.g. we include Openreach's volume forecasts of their new Ethernet Backhaul Direct ("EBD") and Bulk Transport Link ("BTL") services in our Backhaul Extension Service ("BES") volumes). Similarly for PPCs emulated volumes over 21CN are included in our volume forecasts;
- We assume the costs of delivering services over new technologies are the same as if these were delivered using existing technologies, allowing for reasonable efficiency gains which would be made in normal circumstances; and
- Similarly, we calculate the revenues for new services delivered using new technologies using the unit price of legacy services.

A7.10 A detailed analysis of stakeholder responses and our arguments in support of technology neutrality are included in Section 3 (paragraphs 3.68 to 3.112).

Base year inputs

We have used BT's 2007/08 RFSs as our base year

Our proposals

A7.11 In our December Consultation (paragraphs 3.87 to 3.88) we explained that we had used the 2006/07 BT's RFSs as our base year. As a response to our information request, BT provided disaggregated cost data by component for each of the leased lines services within the scope of the charge controls. As we did not have the same level of detailed cost data for 2007/08, we had reconciled our 2007/08 modelled data at a high level to costs and revenues included in the RFSs in the same year.

Consultation responses

A7.12 A number of respondents (including Sky, Colt, C&W and another respondent) commented that the macroeconomic climate has deteriorated markedly since Ofcom started its work on the leased lines charge control, and as such, we should revisit our base year calculations and cost projections using the latest available data.

Our conclusions

A7.13 We have ensured that our model is cross-checked using the latest information available.

A7.14 We recalibrated the cost forecasting model so that the pre-adjustment (as discussed in Annex 6) basket-level costs reconcile with those reported in the 2007/08 RFSs. We note that this exercise had little effect on the values of X as we had reconciled our 2007/08 modelled data at a high level to costs and revenues included in the RFSs in the same year before publishing our December Consultation.

A7.15 Updates to other input assumptions (such as inflation, efficiency and the cost of capital) are discussed in detail in subsequent sections of this annex.

We have decided to take into account Openreach's proposed adjustments for 2007/08 Ethernet volumes

Our proposals

A7.16 In our December Consultation (paragraphs 5.54 to 5.57) we explained that we used the 2007/08 RFS service volumes as our starting point for both TISBO and AISBO services.

A7.17 BT provided detailed service volume forecasts which were split by internal/external sales and by bandwidth. To derive the volume forecasts used in the LLCC model, we applied the external and internal growth rates implicit in BT's volume forecasts to our starting year 2007/08 volumes.

Consultation responses

A7.18 In its response Openreach noted that our approach resulted in Wholesale Ethernet Services ("WES") volumes that are around 5,500 circuits higher than their original forecasts in 2012/13. This is because our starting volumes were different to what BT had assumed in its own forecasts.

A7.19 In a separate presentation to Ofcom, Openreach provided corrections to the 2007/08 RFS volumes adjusting for:

- Inaccuracies in its classification of internal and external rentals. This is not a material adjustment and total circuit volumes have been reported correctly; and
- Double counting of Option 2 resilient fees as WES other bandwidth circuits.

Table A7.1 Adjustments to Ethernet volumes in 2007/08 RFS

Service	Internal volumes	External volumes	Net impact
WES 10Mbit/s rental	-2,700	2,700	0
WES 100Mbit/s rental	2,700	-2,700	0
WES 1000Mbit/s rental	0	0	0
WES other rental	0	-782	-782
WES 10Mbit/s connection	-1,092	1,092	0
WES 100Mbit/s connection	1,092	-1,092	0

Our conclusions

A7.20 These adjustments do not have a material impact on overall 2007/08 volumes.

- We believe that these adjustments should be made and accept Openreach's proposed adjustments to the 2007/08 RFS volumes as described above.

Input assumptions

A7.21 There are a number of key assumptions that we use to forecast costs. In the paragraphs below we discuss each one of these in turn:

- Volume forecasts;
- Weighted average cost of capital ("WACC");
- Operating cost efficiency (calculated separately for the AI & TI basket);
- Asset and cost volume elasticities (AVEs/CVEs); and
- Asset price changes.

Ofcom volume forecasts

Volume forecasts for TI basket

Our proposals

- A7.22 In our December Consultation (paragraphs 4.101 to 4.109) we proposed using actual volumes for TI terminating and trunk segments as reported in BT's 2007/08 RFS and applying BT Wholesale's growth forecasts from there on. These forecasts are split by internal and external volumes for each service, and we apply these growth rates respectively over the charge control period.
- A7.23 We use as our starting points the 2006/07 (restated) and 2007/08 RFS service volumes. For each of the PPC services, BT has provided forecasts, split between internal versus external volumes. We have applied the growth rates implied in BT's forecasts to our starting point of 2007/08 based on actual RFS volumes.

Consultation responses

- A7.24 Some respondents disagreed with the high rate of decline of TI volumes in our December Consultation, and believed that the migration between TI and AI markets is too high. However, we did not receive alternative forecast assumptions but we considered alternative migration scenarios in our analysis.
- A7.25 Section 4 (paragraphs 4.213 to 4.219) provide a summary of the consultation responses.

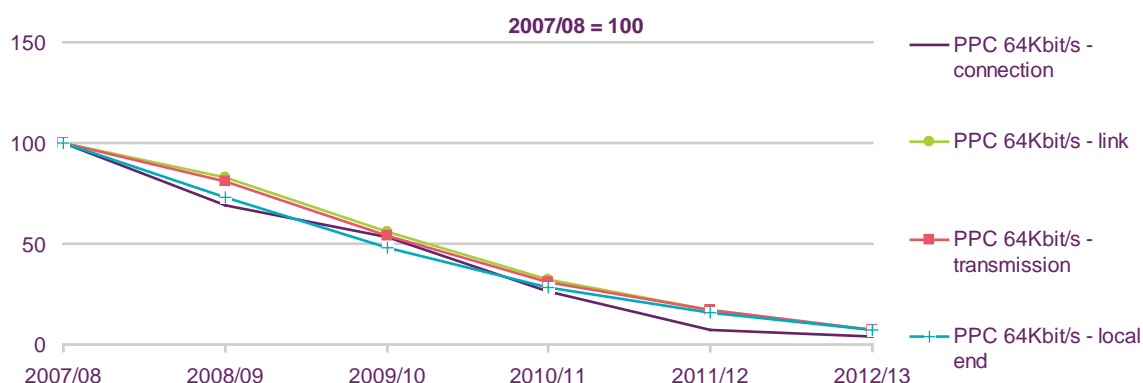
Our response

- A7.26 We have considered respondents' comments and estimated the impact on the values of X under alternative migration scenarios. However, without quantitative evidence to support the alternative views on migration, we have decided to maintain our approach to forecasting PPC volumes.
- A7.27 We summarise the key trends of PPC service volume forecasts:

A7.28 BT are forecasting total (internal and external) TI terminating segments to fall at a rate of 10%-40% per annum (CAGR¹⁴) during the control period (Figure A7.3 to Figure A7.7). Below we summarise the key trends in the volume forecasts:

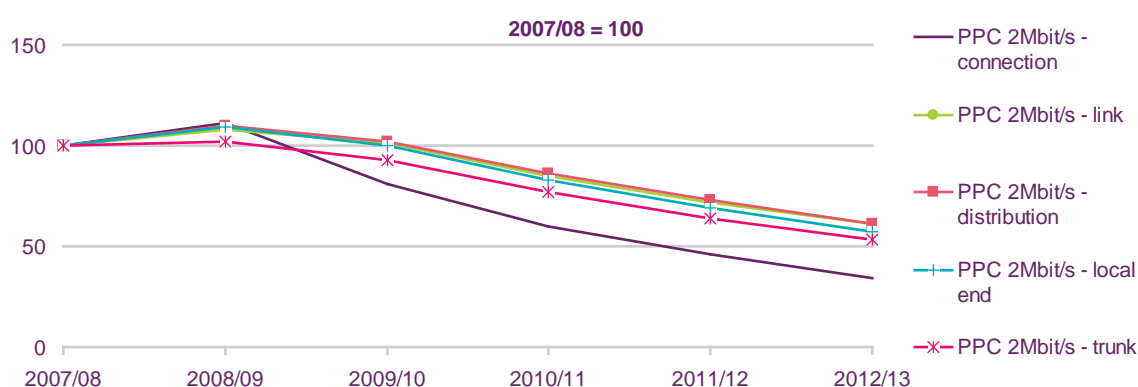
- The biggest fall is expected in the sub-2 Mbit/s circuit numbers (41% year on year decrease between 2007/08 and 2011/12). BT is not expecting any significant volumes to remain on the Digital Private Circuit Network (“DPCN”) platform beyond 2012/13 and expects most customers to have migrated to other products such as Ethernet.

Figure A7.3 Volume forecasts for PPC 64kbit/s services



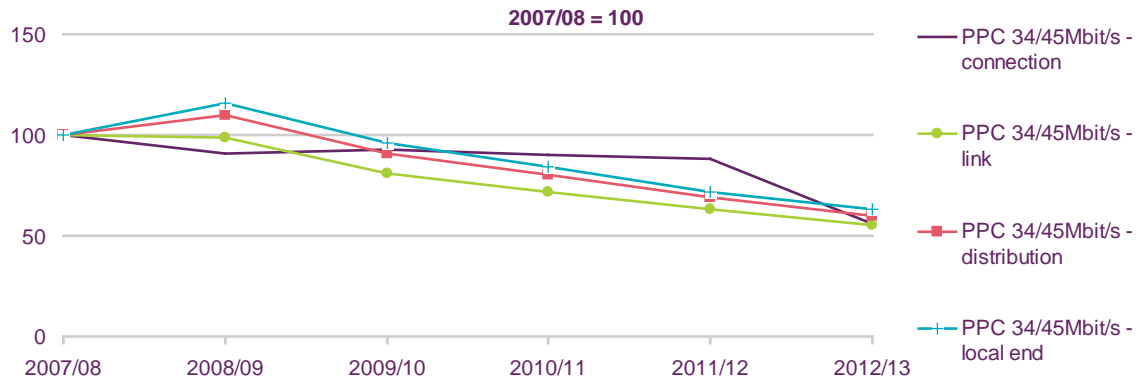
- 2 Mbit/s and 34/45 Mbit/s circuits are also expected to decrease (10% to 15% year on year decrease between 2007/08 and 2011/12). This is despite the inclusion of emulated services over 21 CN. BT expects that as demand for bandwidth increases customers will be switching to the higher bandwidth Ethernet products.

Figure A7.4 Volume forecasts for PPC 2Mbit/s services

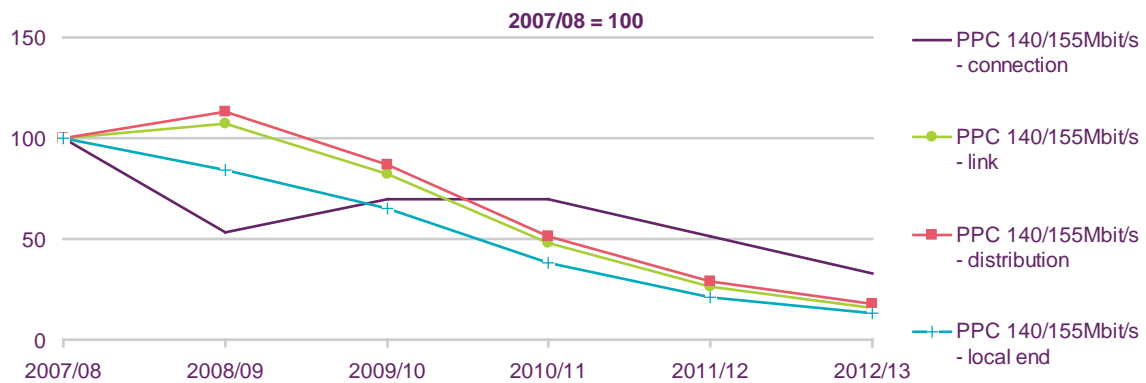


- The decline in 34/45Mbit/s services is around 10% per annum between 2007/08 and 2012/13.

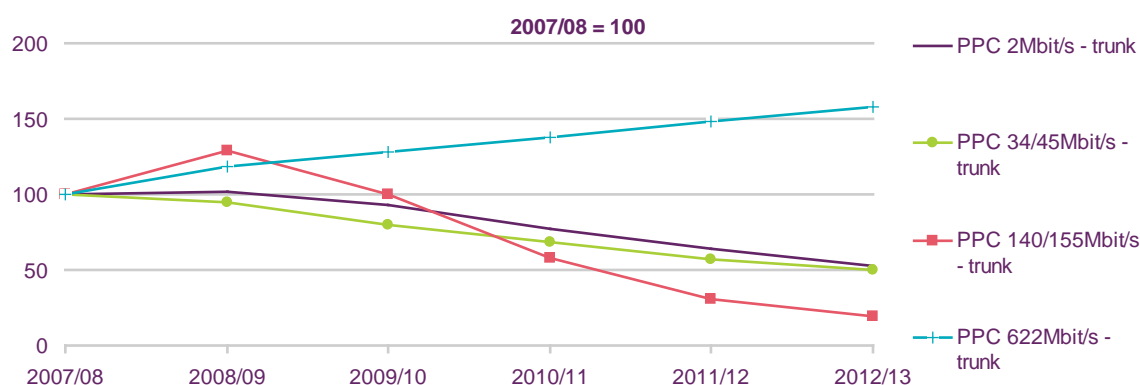
¹⁴ CAGR = Compound Annual Growth Rate

Figure A7.5 Volume forecasts for PPC 34/45Mbit/s services

- Similarly BT is expecting that higher bandwidth customers currently on 140/155Mbit/s circuits to migrate towards Ethernet services (around 30% year on year decrease between 2007/08 and 2011/12).

Figure A7.6 Volume forecasts for PPC 140/155Mbit /s services

- Trunk volumes are also expected to decrease. The rate of decrease is the same as that observed for the local ends discussed above. The exception to this is 622 Mbit/s trunk volumes which is only used internally by BT and is forecast to increase at a rate of 10% per annum.

Figure A7.7 Volume forecasts for PPC trunk services

Volume forecasts for AI basket

Our proposals

- A7.29 In our December consultation (paragraphs 5.54 to 5.64) we proposed applying Openreach's volume growth forecasts to the actual volumes in the 2007/08 RFS.
- A7.30 For Ethernet services, we apply the Openreach's proposed reclassification of internal and external volumes to the 2007/08 RFS data before applying the growth rates implicit in their forecasts.
- A7.31 To implement technological neutrality we have mapped new Ethernet services to the existing set of Wholesale Extension Services ("WES") and Backhaul Extension Services ("BES") on a one-to-one basis:

Table A7.2 Mapping of Ethernet services for cost forecasts

New Ethernet services	Existing Ethernet services
Ethernet Backhaul Direct (EBD) rentals and connections, split by bandwidth	BES rentals and connections, split by bandwidth
Bulk Transport Link (BTL) rentals and connections	BES 1Gbit/s rental and connection
Ethernet Access Device local access (EAD) rentals and connections, split by bandwidth	WES Local Access rentals and connections, split by bandwidth
Ethernet Access Device (EAD) rentals and connections, split by bandwidth	WES rentals and connections, split by bandwidth
Openreach Network Backhaul Services (ONBS) rentals and connections, split by bandwidth	BES rentals and connections, split by bandwidth

- A7.32 These service volumes, multiplied by the usage factors which show how much of each underlying component is used per unit of each service, give the cost component volumes used to drive cost forecasts. Therefore, this approach does not

distinguish between the new and existing Ethernet services in generating the total cost forecasts, consistent with our technological neutrality approach.

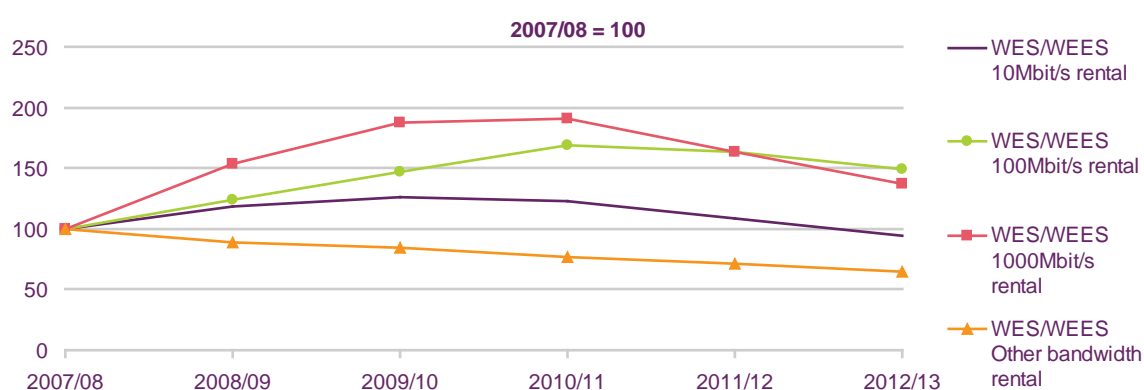
Consultation responses

- A7.33 A high-level response to our consultation question is covered in Section 5, paragraphs 5.100 to 5.107.
- A7.34 Openreach provided Ofcom with their latest forecasts of 2009/10 Ethernet services. Our review shows that compared to our base case December forecasts¹⁵:
- There is little change to overall WES rental forecasts, but new WES connections are down by around 15% compared to our base case in the December Consultation; and
 - Forecasts of BES connections and rentals are down by around 5%.

Our responses

- A7.35 We produce revised forecasts that take into account Openreach's latest view of future volumes. We have cross-checked this against the high-level volume forecasts for WES and BES rentals as assumed in the OFFR Statement to ensure consistency between the two.
- A7.36 Below we summarise in more detail our revised volume forecasts for individual Ethernet services within the scope of the AI basket.
- Total WES/WEES circuits are forecast to increase by 2.4% per annum (CAGR) between 2007/08 and 2012/13. The growth rates are very much driven by 100 Mbit/s and 1000Mbit/s services which are expected to increase at a rate of 8% and 6% per annum respectively during the same period. WES 10 Mbit/s services is expected to decline slightly, at 1% per annum.

Figure A7.8 Volume forecasts for total sales of WES/WEES circuits

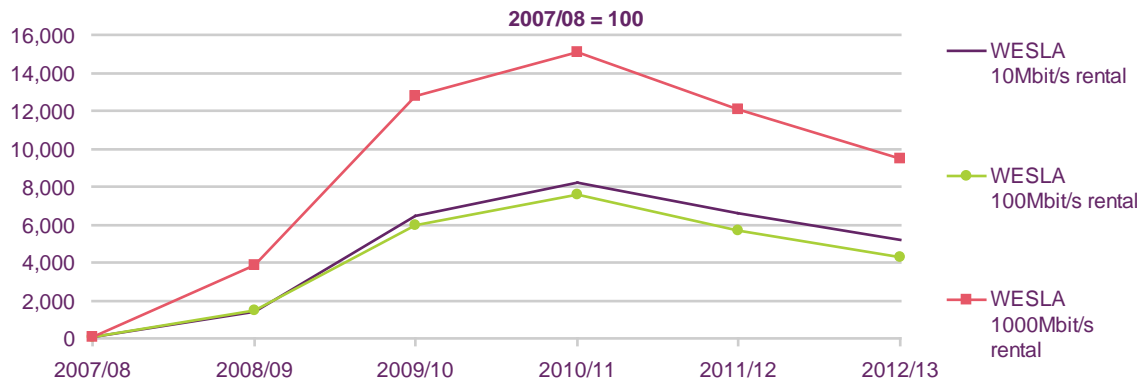


- Total WES local access circuits are forecast to increase significantly between 2007/08 and 2012/13. The decrease observed from 2010/11 onwards is due to

¹⁵ See Figures [5.1 to 5.5] of our December Consultation for the growth profiles of our Ethernet volume forecasts.

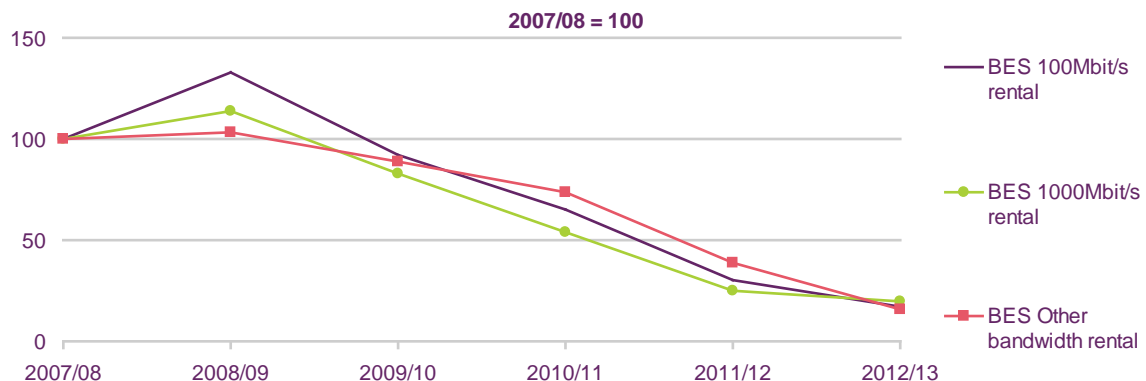
the take up of EAD volumes. Overall the CAGR per annum for the 10Mbit/s, 100Mbit/s and 1000Mbit/s are 121%, 112% and 149% respectively.

Figure A7.9 Volume forecasts for total sales of WES Local Access circuits

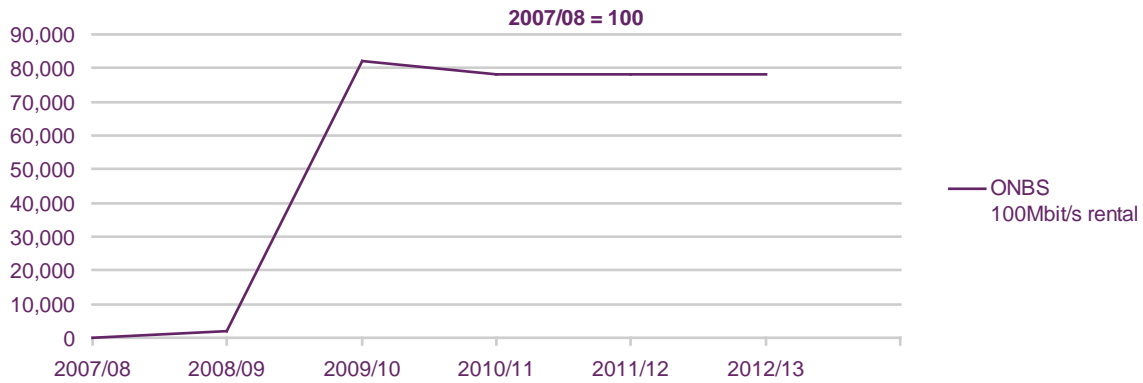


- Overall BES circuits are forecast to decrease between 2007/08 and 2012/13: 100Mbit/s rentals by 30% per annum and 1000Mbit/s services by around 28% per annum. This is mainly driven by migration to the networked EBD/BTL products.

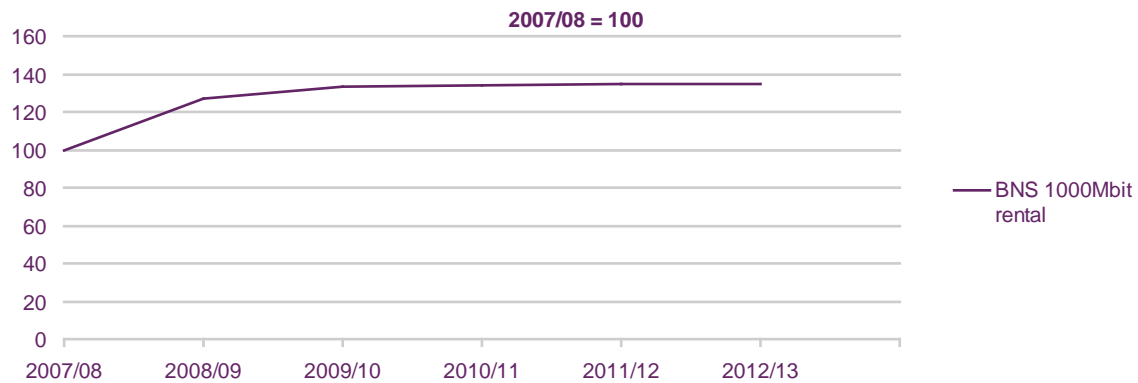
Figure A7.10 Volume forecasts for total sales of BES circuits



- Overall ONBS rentals are forecast to increase significantly over the charge control period, on average 279% per annum.

Figure A7.11 Volume forecasts for total sales of ONBS services

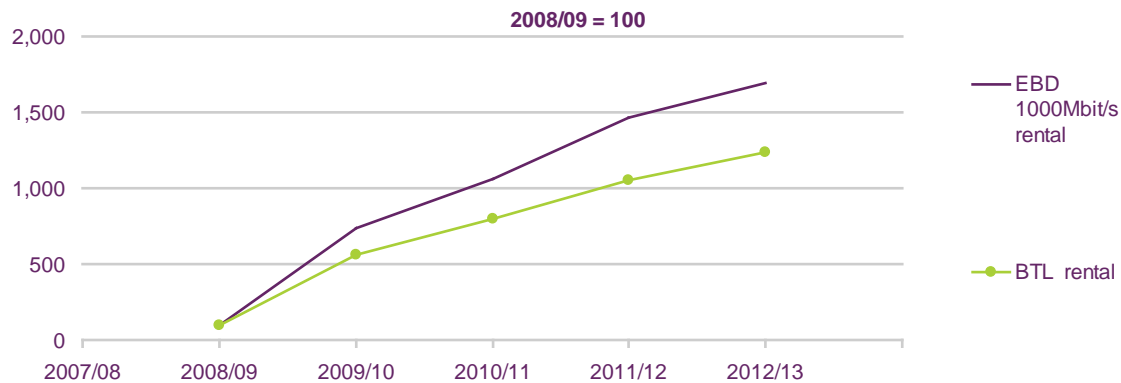
- There is a small increase in BNS rentals between 2008/09 and 2012/13, on average 6% per annum.

Figure A7.12 Volume forecasts for total sales of BNS services

A7.37 The volume forecasts become more aggressive for EBD/BTL products:

- Total EBD 1000 Mbit/s services volumes are forecast to increase by 103% per annum (CAGR between 2009/10 and 2012/13), whilst BTL services are set to increase by 87% per annum (CAGR between 2008/09 and 2012/13).

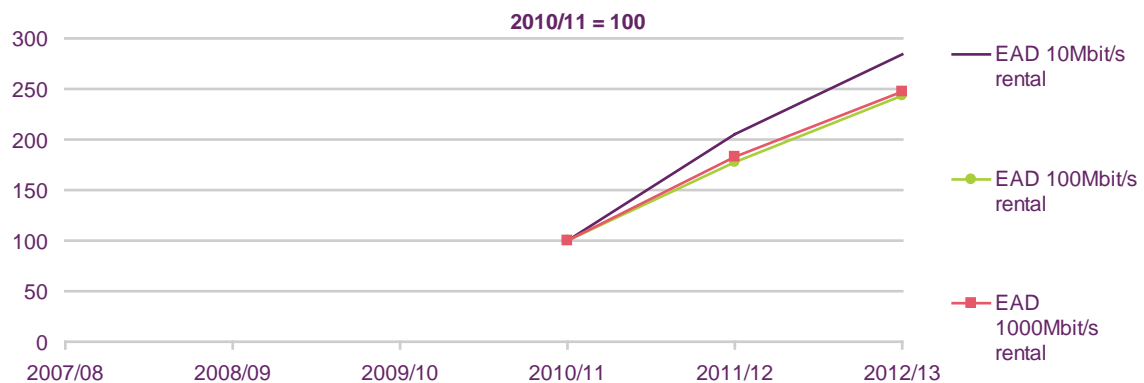
Figure A7.13 Volume forecasts for total sales of EBD and BTL services



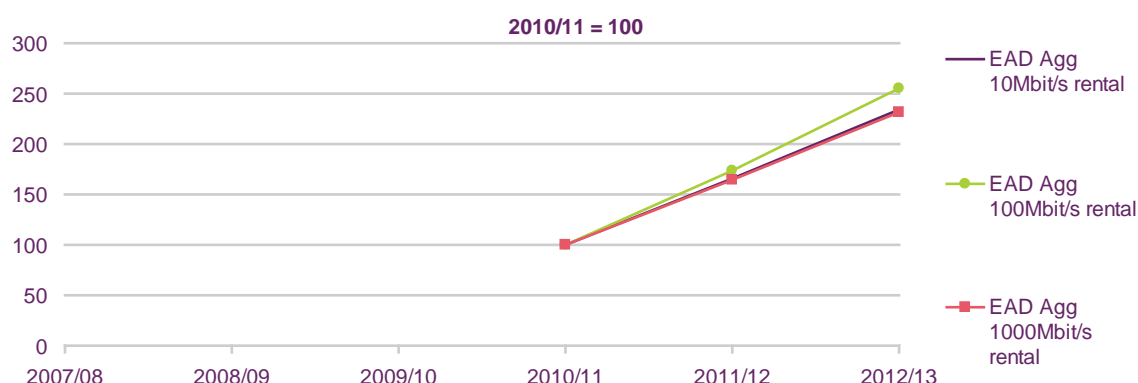
A7.38 The volume forecasts for EAD services:

- Total EAD circuits are forecast to increase between 2010/11 and 2012/13. The largest increase is in EAD 10Mbit/s rentals, at a rate of 69% per annum. EAD 100Mbit/s and 1000Mbit/s rentals also increase at a similar rate of 56% and 58% per annum respectively.

Figure A7.14 Volume forecasts for total sales of EAD services



- The profile of sales for EAD Aggregation services is similar to that of EAD services, with 10Mbit/s increasing at 53% per annum CAGR, 100Mbit/s at 60% per annum and 1000Mbit/s at 52% per annum.

Figure A7.15 Volume forecasts for total sales of EAD Aggregation services

A7.39 For a detailed discussion of the consultation responses on Ethernet volume forecasts see Section 5, paragraphs 5.100 to 5.107.

Changes to Openreach service offering

A7.40 We note that Openreach has announced that EBD 100Mbit/s services will no longer be launched. The original intention was that any ONBS 100Mbit/s volumes would migrate across to EBD 100Mbit/s.

A7.41 In our volume forecasting we now treat EBD 100Mbit/s volumes as ONBS 100Mbit/s volumes. This has no impact on our calculations as both EBD and ONBS volumes were both mapped to BES services under our technology neutrality approach. As such, cost and revenue forecasts remain unchanged

BT's WACC

We use a WACC of 11.0% for both TI and AI baskets

A7.42 For each basket, the X is determined by the level of BT's revenues and its costs. These costs consist of operating costs and capital costs. As described in Table A9.7 of our December Consultation, capital costs include depreciation, return on capital and real holding losses.

A7.43 We calculate the return on capital as WACC * Net Replacement Cost of assets.

A7.44 As discussed in Section 3 paragraphs 3.245 to 3.282, we have decided to use a pre-tax nominal WACC of 11.0% for both TI and AI services which is consistent with the "rest of BT" rate included in the OFFR Statement.

Operating cost (opex) efficiency – AI basket

Our proposals

A7.45 This is the year-on-year savings in real unit operating costs that Openreach is expected to achieve in the normal course of its operations, before taking volume and input price changes into account. We applied this to the operating costs of the services within the AI basket.

A7.46 In our December Consultation paragraphs [5.65 to 5.66] we proposed an efficiency range of -1% to -3% for the AI basket based on the conclusion set out in the OFFR Second Consultation.¹⁶

Consultation responses

A7.47 A high level summary of the consultation responses to our proposed range of efficiency for the AI basket is included in Section 5, paragraphs 5.111 to 5.116.

Our response

A7.48 For services within the scope of the AI basket we use the overall efficiency conclusion as set out in the OFFR Statement¹⁷. Specifically, it:

- considers separately the impact of efficiency and the reduction in operating costs as a result of a reduction in fault rates;
- makes the following efficiency assumptions as set out in Table A7.3:

Table A7.3 Efficiency targets as set out in OFFR statement

	2009/10	2010/11	2011/12	2012/13	Geometric average
Efficiency	-4%	-3%	-2%	-2%	-2.8%
Fault rate reduction	-2%	-2%	-2%	-2%	

- assumes that a reduction in fault rates of 2% per annum should be achievable, and estimates that this would reduce operating costs by 1.2% per annum;
- makes a distinction between costs that Openreach can control (described as “compressible costs”) and would be able to deliver efficiency gains on these costs. Other costs (“non-compressible” costs) could not be targeted for future efficiency gains because Openreach’s ability to control some categories of costs is limited (for example, rates levied by Government on Openreach’s infrastructure assets and accommodation rental charges that are subject to long term contracts); and
- concludes that Openreach’s estimate of 70% split between compressible and non-compressible operating costs are reasonable.

A7.49 The total annual average efficiency assumed in the OFFR Statement is therefore -4.0% (the sum of -2.8% and -1.2% explained above). This is applicable to the 70% of total operating costs that are compressible.

Our conclusion

A7.50 As we do not make a distinction between compressible and non-compressible costs in the LLCC model, we multiply the total efficiency assumption by 70% to give a value of 2.8% applied to the AI basket.

¹⁶ “A New Pricing Framework for Openreach. Second Consultation”, 5 December 2008, <http://www.ofcom.org.uk/consult/condocs/openreachframework/off.pdf>

¹⁷ See Annex 9 to “A New Pricing Framework for Openreach”, 22 May 2009

- The appropriate rate of efficiency savings for the AI basket is -2.8%.

Operating cost (opex) efficiency – TI basket

Our proposals

- A7.51 This is the year-on-year savings in real unit operating costs that BT is expected to achieve in the normal course of its operations, before taking volume and input price changes into account.
- A7.52 In our December Consultation (paragraphs A9.20 to A9.25) we set out the methodology used to estimate BT's efficiency to be applied to the TI basket by taking into consideration two key factors:
- BT's efficiency relative to that of appropriate comparator companies ("catch-up" component), and
 - BT's underlying rate of real unit operating cost reduction over the period 2003//04 and 2006/07 in constant volume terms ("frontier shift" component).
- A7.53 We proposed a range of 0% to -5% for the year-on-year overall efficiency savings for the TI basket.

Consultation responses

- A7.54 A high level summary of the consultation responses to our proposed range of efficiency savings for the TI basket is included in Section 4, paragraphs 4.220 to 4.227.
- A7.55 In its response, BT also included a report from Deloitte summarising its conclusion on BT's forward looking efficiency gains which we discuss below.

BT's relative inefficiency in 2003/04

We assume that BT's relative inefficiency in 2003/04 is 1.05% below the benchmark level of efficiency

Our proposals

- A7.56 We observe actual real unit operating cost reduction between 2003/04 and 2006/07. To calculate the frontier shift from this, we need to separate out BT's historical catch-up over the period.
- A7.57 To do so, we need estimates of BT's starting level of efficiency in 2003/04 and compared it against BT's efficiency in 2006/07.
- A7.58 We commissioned NERA to estimate the level of BT's efficiency in 2003/04 for the 2005 Network Charge Controls ("2005 NCCs").¹⁸ The study concluded that BT's relative inefficiency in 2003/04 was 0.5% to 3.8% below the decile.

¹⁸ "The comparative efficiency of BT in 2003. A study for Ofcom", NERA.
<http://www.ofcom.org.uk/consult/condocs/charge/main/nera.pdf>

- A7.59 We have compared BT's costs against the costs of what an "efficient" company would incur, and defined this as top 10% (i.e. the decile) of the US Local Exchange Carrier ("LECs").
- A7.60 In the December Consultation we used the lower and upper bounds, as well as the mid-point to generate the range of estimates for BT's efficiency.

Consultation responses

- A7.61 Deloitte argued that NERA estimated several models which gave different estimates of BT's efficiency relative to the top decile of US LECs, and that Ofcom did not explicitly select a preferred point estimate.
- A7.62 Deloitte identified a point estimate of 1.05% inefficiency for BT in 2003/04, which is based on the model NERA estimated that had the greatest statistical fit.

Our response

- A7.63 We think it is appropriate to adopt the value we set in our 2005 NCCs as BT's then relative inefficiency when calculating our efficiency assumptions for these charge controls (i.e.. we assume BT's relative inefficiency in 2003/04 is 1.05%).

Our conclusions

- A7.64 Based on the above we conclude that:

- BT's relative inefficiency in 2003/04 is 1.05%.

BT's relative inefficiency in 2006/07

We assume that BT's efficiency in 2006/07 is as efficient as the benchmark level of efficiency

Our proposals

- A7.65 As part of our December Consultation¹⁹ NERA estimated the efficiency of BT's end to end network costs relative to the US Local Exchange Carriers ("LECs") network costs based on different model specifications. As with NERA's 2005 study, the benchmark is assumed to be the top 10% of US LECs (i.e. the decile).
- A7.66 NERA's analysis showed that BT was between 0.8% less efficient to 4.5% more efficient than the decile. We used this range as BT's efficiency in 2006/07 to derive BT's historical catch-up from 2003/04.

Consultation responses

- A7.67 In May 2008 Deloitte, commissioned by BT, provided alternative results of BT's relative efficiency when compared to the US LECs using the same econometric method as NERA. Deloitte's estimate of BT's relative efficiency was 2.6% above the decile, and concluded that no assumptions for future catch-up would be required.

¹⁹ "The comparative efficiency of BT Openreach", NERA, 17 March 2008
<http://www.ofcom.org.uk/consult/condocs/lcc/efficiency.pdf>

- A7.68 Discussions between NERA and Deloitte on their respective datasets and econometric approaches revealed a number of differences:
- The two parties cannot reconcile the construction of the other's data. However, results obtained by the two parties based on similar model specifications are comparable.
 - Deloitte prefer the use of 1996-2006 data with three structural breaks whereas NERA disagreed on the use of multiple structural breaks to fit the data without an underlying explanation as to why this is necessary.
 - Both models showed that BT is above the decile.
- A7.69 As a result of these discussions, Deloitte provided their updated analysis and results as part of BT's submission to our December Consultation. They concluded that that BT is 6.3% more efficient than the decile.

Our response

- A7.70 Following Deloitte's May 2008 study, NERA updated their analysis²⁰ to complement their March study and to compare their results against Deloitte's. They focused their analysis on the comparison of BT Network against the US LECs, and made the following changes to their earlier specification:
- excluded the BT Openreach "pseudo-companies"²¹, and
 - Included switched minutes and duct as explanatory variables
- A7.71 NERA concluded that BT's relative efficiency is between 2% and 6% more efficient than the decile based on the range of models estimated.
- A7.72 There are differences between NERA's and Deloitte's specifications:
- Deloitte's model compares total costs against explanatory variables whereas NERA's had a unit cost specification (total costs per switched line) as the dependent variable; and as a result, and
 - the two specifications used different sets of explanatory variables.
- A7.73 Deloitte argued that NERA's total costs per switched line specification requires a constant returns to scale ("CRS") restriction, which they did not believe is supported by NERA's results because the coefficient on the log of switched access lines is near 0.5 instead of the 1.0 required.²²

²⁰ "Comments on the Deloitte paper on 'The efficiency of BT's network operations'", NERA, <http://www.ofcom.org.uk/consult/condocs/lcc/operations.pdf>

²¹ NERA was commissioned by Ofcom to carry out a comparative efficiency assessment of BT Openreach as part of the study "A new pricing framework for Openreach", focusing on BT Openreach activities, i.e. wholesale line rental and unbundled local loop. NERA concluded that the comparison between Openreach and the US LECs was problematic because it was impossible to determine how LEC costs should be divided between core network and access network activities.

²² When an equation is specified in log terms, a constant returns scale assumption can be tested to see whether $\log(Y) = a + b \cdot \log(X)$ can be specified as $\log(Y/X) = a$ by testing whether b is statistically equivalent to 1 or not. If it is, then $\log(Y) = a + \log(X)$ which can be re-arranged to the unit specification.

- A7.74 Further investigation of NERA's results show that the CRS restriction test needs to consider the sum of coefficients from switched lines, leased lines, switched minutes, total sheath and total duct and whether this is statistically equivalent to 1.0 or not. The result is 0.988 and therefore the CRS restriction can be supported.
- A7.75 Deloitte also supported the use of a longer time series as well as two structural breaks. NERA argued that the structural break for the 1996-99 data was required because of sharp decrease in cable and wire prices between 1998 and 1999, which reduced the US LECs' Current Cost Accounting ("CCA") asset values for cable. Deloitte did not provide no explanation as to why the 2004-06 structural break was required.
- A7.76 The revised results estimated by both NERA and Deloitte both show that BT has improved significantly between 2003/04 and 2006/07 and that it is likely to be above the decile when compared to the US LECs.

Our decision

- A7.77 Both NERA and Deloitte compared their results using both the full dataset from 1996-2006 with the shorter time series from 1999-2006. The results consistently showed that BT is above the decile.
- A7.78 Without Ofcom independently reviewing the datasets used by NERA and Deloitte we have to consider the results provided by both parties. We have therefore relied on NERA's results that use both their own dataset as well as Deloitte's, with different time periods and specifications.
- A7.79 For the purposes of calculating BT's observed catch-up between 2003/04 and 2006/07 we assume that

- BT is 2% to 6.8% above the decile in 2006/07.

We apply do not apply a negative catch-up if BT is above the decile

Our proposals

- A7.80 In our December Consultation (paragraph A9.23) we assumed that if BT is above the decile, future catch-up would be zero. If it was below the decile, BT would be required to catch up to the decile by the end of the control period, i.e. 2012/13.

Consultation responses

- A7.81 BT argued that a negative "catch-up" should be applied if BT is above the decile. Deloitte also commented that if BT is 6.3% above the decile, this should translate into a negative "catch-up" of -1% per annum between 2006/07 and 2012/13 and added to the frontier shift the same way it would be applied if BT was 6.3% less efficient than the decile. By not allowing a negative catch-up, it may:
- Provide reduced incentives for BT to outperform efficiency targets;
 - Be seen as inconsistency in Ofcom's previous approach; and
 - Increase risks faced by BT due to a more stringent efficiency standard as well as increase in regulatory risk.

Our response

- A7.82 We accept that the results of the analyses by both NERA and Deloitte show that BT may be more efficient than the firm at the tenth percentile. This means that our assumed rate of reduction in BT's real unit costs over the next charge control period does not need to include an allowance for the elimination of inefficiency relative to the benchmark, or "catch-up".
- A7.83 We do not accept the inference drawn by Deloitte. This is because the purpose of basing the benchmark on the top decile of LECs is to allow for the possibility of data error, rather than to generate a precise estimate of the efficient level of costs. The decile is used as the benchmark rather than, for example, the most efficient firm so that "*we can be certain that we are comparing against an achievable level of efficiency*".²³ It is clear that BT's current level of efficiency is achievable and so it is reasonable to assume that BT will be able to reduce costs at the average rate to be reasonably expected of an efficient operator, that is, the rate of frontier shift..

Our decision

- A7.84 Based on the above we conclude that:

- BT's catch-up between 2008/09 to 2012/13 is zero.

BT's underlying rate of real unit operating cost reduction ("frontier shift") based on component costs

We use a refined approach to estimating the frontier shift

Our proposals

- A7.85 In the December Consultation (paragraphs A9.23 to A9.25) we assumed that, in a technology-neutral model, BT will be able to achieve the same underlying rate of real unit operating cost (excluding depreciation) reduction over the period 2008/09 to 2012/13 as it had over the period from 2003/04 to 2006/07.
- A7.86 We estimated the underlying rate of unit cost reduction for each network component and then aggregate this to a single figure using the cost weights of these components.²⁴ We excluded a number of effects:
- Volume effects due to economies of scale, using the cost volume elasticity ("CVE") assumptions consistent with the LLCC model;
 - Input price effects - based on data provided by BT; and
 - Catch-up - achieved by BT between 2003/04 and 2006/07.
- A7.87 We excluded from our analysis distance-related costs and volumes due to methodology changes BT made in 2004/05 (i.e. changing from route to radial when measuring distances and changing the definition of trunk and terminating segments). We noted that the majority of the operating costs were included in our analysis.

²³ Page 35, "The comparative efficiency of BT in 2003, a report for Ofcom", NERA, 11 March 2005. <http://www.ofcom.org.uk/consult/condocs/charge/main/nera.pdf>

²⁴ For the full description of the methodology see A9.23 of our December Consultation.

A7.88 Our approach produced a range of 0% to 5% for the reduction in the real unit operating costs in the period 2003/04 to 2006/7.

Consultation responses

A7.89 Deloitte, in its response, also commented on our approach to calculating the frontier shift. Its analysis recommended a number of modifications:

- Inclusion of distance-related costs and volumes in the analysis; and
- Use of the Tornqvist index that takes into account the impact of changes in the cost weights of each component over time.

Distance related costs

A7.90 As BT changed its methodology for measuring distances (from route to radial), the reported volumes in BT's RFSs between 2003/04 and 2006/07 were not comparable. BT provided Deloitte with the conversion factors to get a consistent measure.

A7.91 BT also changed its definition of trunk and terminating distances in 2004/05, and confirmed with Ofcom that the corresponding costs in the RFSs have not been restated to take this change into account. Since our approach derived real unit cost reductions from component-level unit costs, this would have an effect on our trend analysis. BT argued that the impact would be small because it would only affect the unit costs in 2004/05.

Tornqvist index

A7.92 Deloitte's proposed approach to estimate real unit operating costs change is as follows:

- Estimate an aggregate Tornqvist input (cost) index and an aggregate Tornqvist output (volume) index. Costs are deflated using economy-wide inflation. The Tornqvist unit cost index is obtained by dividing the cost index by the output index.
- The frontier shift estimate is calculated as the compound annual growth rate ("CAGR") of unit cost index (at constant volumes) less input price effects and historical catch-up made by BT between 2003/04 and 2006/07

A7.93 The Tornqvist index is a standard measure used in productivity analysis and takes into account the impact of changing cost weights over time. Deloitte defined the aggregate Tornqvist volume index at time t as the average of each cost component's volume growth rate using geometric average of the base year and current year cost weights

$$V_t^T = \prod_{m=1}^M \left(\frac{v_t^m}{v_0^m} \right)^{0.5(w_0^m + w_t^m)}$$

where $w_t^m = \frac{c_t^m}{\sum_{m=1}^M c_t^m}$ is the cost component m 's nominal cost share at time t . and v_t^m

is the volume of component m at time t . The base year is defined as $t=0$, and is fixed at 2006/07.

Our response

- A7.94 We recognise that the analysis proposed in the December Consultation excluded distance-related elements. However, this amounted to around 4% of total operating costs (excluding depreciation) in 2003/04, increasing to 14% in 2006/07.
- A7.95 We took into consideration BT's conversion factors which allowed us to include the distance-related volumes on a consistent basis. Nonetheless this still does not address the mismatch between trunk and terminating volumes and costs in 2004/05 which result from the change in their respective definitions.
- A7.96 We accept Deloitte's proposals on using the Tornqvist index to calculate BT's real unit operating cost change between 2003/04 and 2006/07. However, we propose a number of modifications:
- We do not agree that it is appropriate to anchor the weights to a base year. The Tornqvist index is viewed as a discrete approximation to a continuous Divisia index, a chain index in which the weights are changed continuously. Hence, the share weights should be revised each year so that, for example, the cost index would be calculated using the relative compensation shares of the components in two adjacent years. The indices constructed under Deloitte's approach would not reflect the changing cost shares in a consistent way because it would give larger weight to the shares at date 0 than at any other date.

$$V_t = \prod_{m=1}^M \left(\frac{v_t^m}{v_{t-1}^m} \right)^{0.5(w_{t-1}^m + w_t^m)}$$

- We have refined our approach so that pay operating costs are deflated using the Average Earnings Index obtained from the Office of National Statistics ("ONS")²⁵ and non-pay operating costs are deflated using the Producer Price Index²⁶. We believe that this explicitly takes into account input price changes.
- We believe that it is necessary to take into account the cost volume elasticity ("CVE"). This is because unit cost calculations implicitly assume a CVE of 1, which contrasts with the assumptions we have made in the LLCC model. Contrary to Deloitte's results, Ofcom's approach to adjusting for the CVE assumption does not produce unit cost estimates that increase over time.

Our conclusions

A7.97 Based on the above we conclude that:

²⁵ Average Earnings Index (AEI) in the Private Services sector:

<http://www.statistics.gov.uk/cci/nugget.asp?id=10>

²⁶ Producer Price Index (PPI) <http://www.statistics.gov.uk/Statbase/Product.asp?vlnk=790>

- It is appropriate to use the Tornqvist Index without anchoring the weights to a particular base year.
- It is necessary to take into account BT's CVEs when calculating its efficiency gains. Our CVE assumption is consistent with one used in the LLCC model.

Frontier shift calculated from comparative efficiency analysis

A7.98 As part of the studies into BT's relative efficiency in 2006/07, the estimated models include a time trend, which measures the rate of change in costs of US LECs after accounting for all other environmental factors (i.e. the explanatory variables).

Our proposal

A7.99 NERA's stochastic frontier analysis concluded that the efficient level of costs (at constant volumes) was falling at 2.5% to 3.0% per year in real terms for the period 1999-2006.

Consultation responses

A7.100 The coefficient on the time trend estimated in Deloitte's stochastic frontier model suggest an annual rate of decline in total costs of around 2.2%.

Our decision

- As with our decision on BT's relative efficiency in 2006/07, we consider the results provided by both NERA and Deloitte, i.e. that the rate of cost reduction of US LECs is between 2.2% to 3.0%.

Comparisons against results based on productivity analyses

A7.101 In our December Consultation we considered alternative approaches to estimating efficiency improvements over time to support our estimates from the unit cost analysis.

A7.102 Total factor productivity (TFP) growth is the change in output not explained by the change of inputs used in production (e.g. capital and labour). As such, it is determined by how efficiently and intensely inputs are utilised in production.

Our proposal

A7.103 NERA's estimate of total factor productivity growth was around 2% per annum. This was based on data provided by Deloitte.

Consultation responses

A7.104 Deloitte estimated productivity gains using two different methods:

- Total factor productivity analysis using US LECs and 10 European incumbent operators. Deloitte's estimated TFP growth is 0.5% per annum; and
- TFP growth of between 0% and 1.9%, estimated using econometric growth model using US LECs.

- A7.105 Deloitte's TFP growth analysis used the rate of change of input and output indices of parent-level data for the US LECs and 10 European incumbent operators. Their preferred indexing approach is the Tornqvist index (as described in A7.98).
- A7.106 Deloitte argued that many of the companies in their sample have had relatively unstable volumes and hence input utilisation. To mitigate this bias, they estimated a fixed effects growth model, where the Tornqvist output index is regressed against leased lines, switched lines, local and internet minutes, and long distance minutes. The estimate on the constant term is Deloitte's estimate of TFP growth.
- A7.107 Deloitte also used a growth model derived from a standard production function to estimate TFP growth. The LECs multiple outputs were combined into a single output measure using the Tornqvist index, and regressed against capital stock, labour input, materials and time trend. The coefficient on the time trend is the TFP growth estimate.

Our response

- A7.108 Deloitte's approach to calculating the Tornqvist indices is to anchor one of the weights to a base year, rather than using adjacent year weights. As discussed in A7.101, this specification emphasises the base year weight. Deloitte reject the use of adjacent year weights due to the large changes in volumes and therefore do not believe they are appropriate to use in this case.
- A7.109 We believe that the standard approach in productivity analysis literature is to estimate year-on-year change in the indices. To get a long time trend, one would apply, for example, the Hodrick-Prescott filter or adopt a moving average approach. NERA's analysis of year-on-year changes of Deloitte's output and input indices suggest that there may be an underlying trend that could be extracted using such an approach.
- A7.110 Some cross-section TFP and efficiency studies do try to allow for potential economies of scale and input utilisation, particularly in cases where firms may not be able to adjust scale because of limited service areas. However, for most of the US LECs which are subsidiaries of much larger entities, we believe that this becomes a weaker argument and therefore we do not place great emphasis on the results from this approach.
- A7.111 In the econometric specification of total factor productivity, Deloitte focused on a fixed effects panel specification. NERA used Deloitte's dataset to estimate alternative specifications of total factor productivity and concluded that TFP growth after 2001 has been close to 2% per year and may have been higher.
- A7.112 In our view Deloitte's specification of the Tornqvist index places undue weight on the base year, and therefore their results may be biased.

We use -2.5% as BT's future operating cost efficiency based on unit cost analysis

Our overall conclusion:

- A7.113 Combining the assumptions set above, our estimates of BT's efficiency are:

- Between -1.9% to -3.5% if distance-related costs and volumes are excluded; and

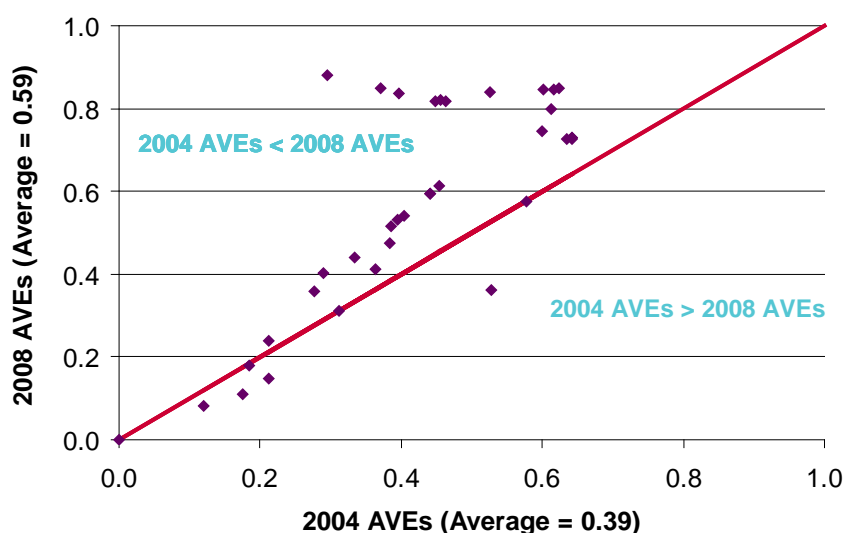
- Between -0.9% and -2.6% if distance-related costs and volumes are included.
- A7.114 We believe in placing more emphasis on the results without the distance related components because the restatement of trunk and terminating costs is still outstanding.
- A7.115 Both NERA's and Deloitte's stochastic frontier analyses suggest that US LECs have achieved cost reduction of 2.2% to 3.0% between 1999 to 2006 based on the time trend of NERA's and Deloitte's econometric specifications.
- A7.116 NERA's TFP analysis indicates that productivity growth has been at least 2.0% per year. However, the underlying data was based on Deloitte's specification of the Tornqvist index, which places undue weight on the base year.
- A7.117 Therefore our overall conclusion is that:
- We assume that BT will be able to achieve of -2.5% operating cost efficiency per annum over the charge control period. This is towards the lower end of the range suggested by our unit cost analysis, but takes into account BT's suggestion of including distance-related components as well as the results from alternative approaches.

Asset and cost volume elasticities (AVEs/CVEs)

We use AVEs/CVEs as per the 2004 PPC Statement

Our proposals

- A7.118 AVEs and CVEs control how costs in our LLCC model change in response to a 1% change in volumes. An elasticity of 1 indicates that costs change proportionately (resulting in constant unit costs) whilst an elasticity of 0 indicates that total costs are fixed (and therefore unit costs will have an inversely proportional relationship with volumes).
- A7.119 The asset volume elasticity describes the percentage increase in gross replacement costs (GRC) of the assets required for a 1% increase in cost component volumes. Similarly, the cost volume elasticity describes how operating costs change with cost component volumes.
- A7.120 BT provided a breakdown of Gross Replacement Costs ("GRC") by component and asset type. We can therefore calculate the AVEs for each cost component as the average AVE, weighted by their respective GRC ratios, as described in our December Consultation (paragraphs A9.29 to A9.34).
- A7.121 BT submitted to Ofcom their latest estimates of AVEs and CVEs. However, this was only available on a cost component basis, so we could not make direct comparisons of the underlying elasticities by asset types. Furthermore, BT only provided estimates for PPC components, and there were no AVEs for the relevant Ethernet service cost components.
- A7.122 The figure below shows our comparison of AVEs on a cost component level showed that, the majority of BT's revised component AVEs for PPCs are higher (i.e. above the 45 degree line) than what is implied by the 2004 estimates. The weighted average of BT's revised AVE estimate is 0.59 compared to the 2004 estimate of 0.39.

Figure A7.16 Scatter diagram of 2004 and 2008 component level AVEs for PPCs

A7.123 Similarly, BT's revised CVE estimates on a cost component level were significantly higher than the 2004 values.

Table A7.4 Comparison of Cost Volume Elasticities (CVEs)

	<i>2004 PPC</i>	<i>BT's 2008 estimates</i>
Opex – pay	0.24	0.53
Opex – non pay	0.24	0.48

A7.124 In the December Consultation we used the AVEs and CVEs in the 2004 PPC Statement and applied these to both the PPC and AI cost components.

Consultation responses

A7.125 A high level summary of the consultation responses by stakeholders are provided in Sections 4 (paragraphs 4.238 to 4.244) and 5 (paragraphs 5.128 to 5.134).

A7.126 Openreach argued that using the 2004 PPC AVEs and CVEs for Ethernet services significantly under-estimated the actual cost of increasing capacity as a result of growth in Ethernet volumes, particularly since BES services were launched in April 2003 and WES services in November 2004.

A7.127 In its response Openreach provided AVEs recalculated using their 2007 LRIC model. A comparison against the 2004 PPC Statement figures showed that:

- AVEs for some assets are significantly higher, for example land and buildings.
- Openreach did not provide AVEs for local exchange and main exchange.

Table A7.5 BT's proposed AVEs and CVEs for Openreach

Assets	2004 PPC	Proposal for Openreach AVEs
Cable	0.20	0.11
Duct	0.05	0.04
Local Exchange	0.55	-
Main Exchange	0.70	-
Transmission	0.65	0.86
Other Ntwk Eqpt	0.65	0.72
Motor Transport	0.40	0.76
Land & Bldgs	0.20	0.92
Computers & OM	0.74	0.83
Other	0.64	0.72
Pay opex	0.24	0.27
Non-pay opex	0.24	0.27

A7.128 Based on these revised estimates, BT compared the AVEs for WES and BES components (average AVEs, weighted by their respective GRC for each asset) and showed that they are, on the whole, higher.

Table A7.6 AVEs for AI components

	2004 PPC	Proposal for Openreach AVEs
WES electronics	0.64	0.73
WES fibre	0.19	0.18
BES electronics	0.64	0.73
BES fibre	0.19	0.24

A7.129 In addition, BT also argued that Ofcom's adjustment of equipment costs (see Table A6.5 for details of this adjustment) has a secondary effect on our cost forecasts. In this adjustment:

- We remove capital costs associated with the cost of the transmission equipment deployed at either end of an AI circuit; and in its place
- We attribute the full cost of the relevant boxes (plus an estimate of the installation costs) as operating costs

A7.130 BT argues that this approach reduces more costs in future years than is intended because:

- The capital costs removed would have been multiplied by AVEs, whereas
- The operating costs added would only be multiplied by CVEs which are lower than AVEs.

A7.131 BT's position is that the same magnitude of costs that are removed should be allowed for as operating costs. They re-calculated what the CVEs would be if this was the case.

Table A7.7 CVEs after re-classification of electronic costs

	<i>2004 PPC</i>	<i>Proposal for Openreach AVEs</i>
Opex – pay	0.34	0.39
Opex – non pay	0.34	0.39

Our response

A7.132 We did not agree with BT's re-calculated AVEs and CVEs for PPC components. As a result we used the 2004 PPC Statement AVEs and CVEs for our December Consultation.

A7.133 In addition, we have not agreed in the past with BT's approach to calculating AVEs and CVEs based on its LRIC model. This is because the LRIC of a product or service may include fixed costs incurred in its provision, while the AVEs and CVEs relate purely to cost changes arising from changes in volumes (between non-zero output levels) rather than the decision to provide the service or not.

A7.134 On the new AVEs and CVEs calculated for Openreach, we do not agree that AVEs for some Openreach assets should be significantly higher than PPC assets, for example land and buildings. BT has not yet provided Ofcom with detailed explanations of how these AVEs are derived.

Our decision

A7.135 We believe using consistent AVEs and CVEs between TI and AI baskets is the more appropriate approach.

- We conclude that the 2004 PPC Statement AVEs and CVEs will be used in the LLCC model.

Asset price changes

We use 5-year historic average asset price changes

Our proposals

A7.136 Asset price changes have offsetting effects on X:

- The first is a holding gain (or loss) as a result of the asset price increases (or fall). Such a gain (loss) reduces (increases) costs in the year that it occurs.
- The second effect is the impact on the real return. An asset price rise (fall) increases (decreases) the value of the asset base, and therefore increases (decreases) the required return. This is an increase (decrease) in the cost base.

A7.137 As a result, the impact of real price changes depends on which effect dominates and it is not known a priori whether it will increase or decrease the overall cost base.

- A7.138 As described in Table A6.2, we calculate our own estimates of BT's holding gains / losses over the charge control period using projected average real asset price changes for each asset type. We assume that future asset price change will be similar to the asset price changes experienced over the past five years. This information was provided by BT.
- A7.139 In our December Consultation we recognised that cable assets include both copper and fibre, and that copper prices have increased over the last five years, but fibre prices have fallen. However, the weighted average of these two effects, as shown by BT's data, is a nominal price increase of 6.3%. This is driven by a higher proportion of copper assets.
- A7.140 Given the future increase in the proportion of fibre assets, we did not believe 6.3% nominal price increase is appropriate. Since BT's data did not identify these two assets separately, we assumed a 0% real price change for cable assets in our December Consultation.
- A7.141 We assumed that these annual asset price changes apply over the period from 2008/09 to 2012/13.

Consultation responses

- A7.142 BT provided revised five year average price changes and noted that:
- Fibre cable prices have decreased in nominal terms by 2.1% over the last five years whilst copper cable prices have increased by 6.8% in nominal terms over this period.
 - Main exchange, other network equipment, motor transport, land & buildings, computers & OM, and other assets are now valued at historic cost, which means that future nominal holding gains/losses will be zero.
 - The latest 5 year average price change for transmission assets is -6.3% instead of the -2.4% previously provided.
- A7.143 To convert the five year average nominal price changes, BT assumed 2% inflation, based on the Bank of England's CPI inflation target.

Table A7.8 Asset price changes

Asset	BT data	Assumed in the December Consultation	BT's proposal 5 year average nominal price change
	5 year average nominal price change	Real price change	
Cable	6.3%	0.0%	
Fibre cable			-2.1%
Metallic cable			6.8%
Duct	2.0%	-1.1%	2.0%
Local exchange	0.7%	-2.4%	0.7%
Main exchange	0.7%	-2.4%	0.0%
Transmission	-2.4%	-5.4%	-6.3%
Other network equipment	-0.4%	-3.4%	0.0%
Motor transport	0.0%	-3.1%	0.0%
Land & buildings	2.1%	-1.1%	0.0%
Computers & OM	-3.2%	-6.2%	0.0%
Other	1.0%	-2.1%	0.0%

Our response

A7.144 High level responses are summarised in Sections 4 (paragraphs 4.245 to 4.253) and 5 (paragraphs 5.135 to 5.143).

A7.145 We accept BT's comments regarding the divergence between copper cable and fibre prices, and we apply separate values for those. However, since BT's "cable" asset category does not distinguish between copper cable and fibre cable, we assume the following:

- Cable assets associated with the "PC rental 2Mbit local end fibre", "PC rental 34Mbit local end" and "PC rental 140Mbit local end" cost components are categorised as fibre cable
- All other PPC-related cost components that use cable assets are categorised as copper cable. These include D side and E side copper capital, and "PC rental 2Mbit local end copper".
- Ethernet-related cost components that use cable assets are categorised as fibre cable. These are WES & LAN services fibre, WES & LAN services BNS traded and BES fibre.

A7.146 We use copper cable and fibre asset price changes as set out in the OFFR Statement.

Table A7.9 Nominal copper and fibre price changes as set out in OFFR statement

	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>	<i>Geometric average</i>
Copper	0.25%	3.0%	3.0%	3.0%	2.31%
Fibre	-2.7%	-2.7%	-2.7%	-2.7%	-2.7%

A7.147 We do not accept BT's use of historic cost accounting for some of its assets in the future. This is because we are considering the forecasts of BT's costs to 2012/13 and therefore require forward-looking costs.

A7.148 We use the inflation assumptions as set out in Table A7.11 to convert the nominal prices changes to real price changes used in the LLCC model.

Our conclusions

A7.149 Based on the above:

- For copper and fibre assets we use the assumptions adopted in the OFFR Statement. For all other assets we use the average of BT's historic five year (2002/03 to 2006/07) trend in asset prices and hold these constant over the charge control period.

Future pay and non-pay operating cost trend

We assume that pay and non-pay costs will increase at RPI+1%

A7.150 As described in our December Consultation Table A9.8, operating cost forecasts are split between pay and non-pay elements and that they are calculated in the following way:

A7.151 We assumed that both operating cost items increase at 2% per annum in nominal term before applying the effects of efficiency.

A7.152 As discussed in the ORFF statement, Ofcom believes that in terms of pay costs, Openreach's long term estimate of real wage inflation of 1.0% per annum provides a reasonable basis for modelling pay costs.

Table A7.10 Pay and non-pay assumptions as set out in OFFR statement²⁷

	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
Real pay inflation	1%	1%	1%	1%
Real non-pay inflation	1%	1%	1%	1%

A7.153 We adopt the same assumption for pay opex in the LLCC model and further assume that non-pay opex will also increase at 1% in real terms over the charge control period.

²⁷ Paragraph A6.55, OFFR Statement

Inflation assumption

We use RPI as our benchmark for inflation

A7.154 As discussed in Section 3 paragraphs 3.7 to 3.32 we use the RPI as our benchmark for inflation for charge control purposes. We use the same assumptions for inflation as per the OFFR Statement:

Table A7.11 Inflation assumptions as set out in OFFR statement²⁸

	<i>2009/10</i>	<i>2010/11</i>	<i>2011/12</i>	<i>2012/13</i>
RPI assumption	0%	2.5%	2.5%	2.5%

A7.155 The LLCC model expresses costs and revenues in real terms, and therefore our inflation assumptions have no impact on our basket Xs. Nonetheless:

- BT noted that in a world of deflation, its costs will not decrease in nominal terms even if inflation (as measured by the RPI) is negative. However, given on our pay and non-pay price trends, RPI would have to be less than -1% before nominal price rigidities become binding (i.e. where nominal prices cannot become negative as BT suggests). As discussed in Section 3 paragraph 3.22, most external forecasters attach low probabilities to material and sustained deflation over the charge control period.
- BT also noted that in a deflationary world the use of real input prices would under-estimate capital costs as a result of unrealised holding losses. This would not be the case in the LLCC model since the average historic asset prices we apply (Table A7.8) take into account historic inflation over the same period, and are therefore independent of future inflation assumptions as set out in Table A7.11 above.

A7.156 This assumption is equivalent to an average annual inflation of around 1.8% over the four years.

Cost forecasting

A7.157 In this section we discuss responses to our modelling approaches:

- Services disclosed in the regulatory accounts compared to those included in the relevant carrier price lists ("CPLs");
- Calculation of administrative costs;
- Re-allocation of common costs; and
- Cost and revenue adjustments.

²⁸ Paragraph A6.55, OFFR Statement

Services disclosed in the regulatory accounts and those on the BT price list

A7.158 As described in our December Consultation (paragraphs A9.61 to A9.69) we have had to make a number of assumptions when comparing services disclosed in the regulatory accounts and those on the BT price list.

- Identification of Ethernet services by bandwidth; and
- Assumptions around average link lengths for Ethernet circuits.

We discuss each of these in turn.

A7.159 The RFSs aggregate BES and WES services into “Other” category, so the price of this is the average price of the constituent prices weighted by their corresponding volumes.

- WES ‘other’ connections and rentals in the RFS include 155Mbit/s, 622Mbit/s, 2.5Gbit/s and 10Gbit/s services.
- BES ‘other’ connections and rentals in the RFS include 10Mbit/s, 155Mbit/s, 622Mbit/s, 2.5Gbit/s and 10Gbit/s services.

A7.160 In the LLCC model, we include in the “Other” category only the services that are within the scope of charge control, i.e. exclude 2.5Gbit/s and 10Gbit/s services.

A7.161 The provision of AISBO services contains three different charges: a one-off connection charge, an annual per end rental charge, and a distance-related main link charge.

A7.162 In the 2007/08 RFS main link, connections and rentals are reported separately. In order to forecast the volume of main links associated from the sale of Ethernet circuits we have to make the following assumptions:

Table A7.12 Average main link lengths assumed in LLCC model (metres)

Service bandwidth	Wholesale Extension Services		Backhaul Extension Services	
	2007/08 RFS Volume	Average length	2007/08 RFS Volume	Average length
10Mbit/s	26,965	3,036		
100Mbit/s	13,342	3,431	3,542	7,979
1Gbit/s	1,379	4,291	1,861	11,472
Other bandwidth	341 ²⁹	6,727	1,386	7,550
Total link length		135,848		90,078

A7.163 Openreach provided Ofcom with their average main link lengths for WES and BES services, differentiated by bandwidth. We have scaled them down so that the total link length reconcile with their restated total main link length of 195,926km,

²⁹ Note that the 2007/08 RFS WES Other bandwidth rental of 1,123 has been reduced by 782 as described in Table A7.1.

compared to the 2007/08 figure of 226,977km. Table A6.5 in Annex 6 provides further details of this restatement.

- A7.164 These average lengths are assumed to be constant within the bandwidths and constant over the charge control period.
- A7.165 We have multiplied the rental prices in the CPL (quoted on a “per end” basis) by two, since each circuit has two ends.
- A7.166 In addition, there are more variations in service types on the price list than are identified in the RFSs. For example the WES category includes WES, WEES and WESLA. We understand from BT that these variations are included within the costs and volumes given for the RFS services.
- A7.167 BT informed us that WES and WEES are priced differently to WES LA in that WES LA services do not attract the backhaul charge. In BT’s volume forecasts these services are separately identified so we have taken this into account in our revenue calculations.
- A7.168 The revenues in the LLCC model are calculated as unit service price multiplied by the service volumes. In order for us to compare our model results with those in the published RFSs we have used the average prices as shown in the 2007/08 RFS both PPCs and Ethernet services.
- A7.169 At the start of the charge control, we use:
- PPC prices from the latest CPL, plus the proposed one-off adjustments; and
 - Openreach’s latest prices³⁰ for legacy services, i.e. BES, WES, WES LA and ONBS products.

Calculation of administrative costs

We calculate admin-related AVEs and CVEs based on their respective GRC weightings

- A7.170 BT has a number of administrative “cost components” that do not have associated volumes. Usage factors for these components represent the proportion of total admin costs attributed to a particular service.
- A7.171 Without volumes we cannot use the AVE/CVE relationship to forecast how administrative costs change in the future.

Our proposals

- A7.172 In our December Consultation, we proposed two different approaches for forecasting administrative costs (paragraphs A9.73 to A9.86):
- Constant real total administrative costs attributed to each service over the charge control period. This effectively means that admin-related costs have a CVE of 0. As a result, services with declining volumes see increasing unit admin costs.

30

<http://www.openreach.co.uk/orpg/pricing/loadProductPrices.do?data=2qYKQipGu8IEldEpdH2SyFnqs1m6OcKz301sgolk8P2FdiaKKPEfrCsJCb3sZkzJ>

- Constant real unit administrative costs attributed to each service over the charge control period. This is comparable to using a CVE of 1 on the administrative cost item.

A7.173 We assumed constant real unit administrative costs for our December Consultation.

Consultation responses

A7.174 Only one respondent (C&W) disagreed with the use of unit admin costs, and suggested forecasting AVEs and CVEs.

Our response

A7.175 Since our December Consultation we have refined our approach to calculating admin-related costs because we believe that admin-related costs do vary with volume, but not as extreme as increasing in line with volumes (i.e. assuming that admin-related costs have CVE = 1).

A7.176 Based on the 2004 PPC assumptions on AVEs and CVEs, we calculate corresponding component-level AVEs and CVEs using their respective GRC weightings. This is consistent with the approach adopted for other non-admin related cost components.

Table A7.13 AVEs and CVEs for admin-related components

	AVEs	CVEs
Sales product management	0.34	0.28
SG & A private circuits	0.30	0.31
SG & A partial private circuits	0.42	0.22
SG & A Wholesale	0.49	0.19

A7.177 However, to apply these AVEs and CVEs we still need to determine the appropriate volume changes to apply these figures to.

A7.178 Our current approach to forecasting admin-related operating costs on a service basis:

- In the base year we multiply each of the admin-related cost types by the service usage factors to obtain the total service-level admin-related costs.
- We forecast admin-related costs for each service as

$$Admin-cost_{t+1} = Admin-cost_t * (\% \square service volume * CVE + 1) * (1 - efficiency) * (1 + nominal price trend_t)$$

This approach is consistent with our general approach to forecasting operating costs.³¹

³¹ See Table 9.8 of our December Consultation for details

Re-allocation of common costs

Our proposals

- A7.179 The LLCC model forecasts the costs of components which make up the TI and AI basket of services. However, BT's definitions of these cost components are narrow. That is, AI services only use AI cost components and TI services only use TI cost components.³²
- A7.180 With the cost components as currently defined, this means that declining services will see an increase in unit costs, since the fixed costs need to be recovered from a reducing volume of services. This then implies a need to increase unit prices. Similarly, growing services will see a decline in unit costs and a stronger need to reduce prices. We think this understates the potential for assets to be re-used as migration occurs, and therefore does not reflect what would happen under normal operating conditions.
- A7.181 In the December Consultation we proposed to re-allocate non-marginal costs at the aggregate TI and AI basket level. The purpose of this re-allocation is to allow a greater proportion of the non-marginal (i.e. fixed) costs to be recovered from AI services as volumes grow, and at the same time, avoid rapid increases in TI unit costs as their volumes decline. This follows the recommendation made by Analysys-Mason in their independent review of the LLCC model.
- A7.182 Analysys-Mason's suggested approach is based on an analysis of the marginal costs of components and the attribution of non-marginal costs in proportion to these. This results in a greater proportion of non-marginal costs being recovered from AI services as the volume of these grows and avoids the rapid increases in TI unit costs which would result from a constant amount of fixed costs being recovered from an ever-smaller volume of TI services.
- A7.183 In practice, in order to implement the Analysys proposal, we developed a method of re-allocating non-marginal costs at the aggregate TI and AI basket level. This approach was described in detail in Paragraph A9.82 to A9.86 of our December Consultation and therefore not reproduced here. This approach is consistent with the spirit of the Analysys method and is reasonable given that we are calculating the value of X based on the total basket level costs, rather than at an individual service level. This approach resulted in 75% of the fixed costs being re-allocated from the TI basket into the AI basket.

Consultation responses

- A7.184 BT expressed concern that this could have a negative impact on the incentive for customers to migrate onto other services. However [BT] accepted, that the extent to which this is offset by a lower control on AI services means that, overall, fixed costs should be recovered across both baskets combined.

³² For example a 34/45 Mbit/s local end service uses one 34/45 Mbit/s local end component. This component is not used by any other service. The costs of this component include around 34% fibre, 20% duct and the remainder made up of various other assets (the percentages are based on the proportion of the gross replacement costs of the assets apportioned to this component) and operating costs. In the event of service volumes declining, so will the associated volume of this component resulting in a material increase in the unit cost. However the fibre and duct can be utilised to provide other services and therefore these costs can be recovered elsewhere.

A7.185 Another respondent noted that the proposed re-allocation of fixed costs from TI to AI services would not be required if the charge controls were set using a LRIC + EPMU approach. They therefore strongly encouraged Ofcom to set charge controls on the basis of LRIC + EPMU. However, in the event that Ofcom proceeds with its proposed methodology, they believed that it is necessary to re-allocate fixed costs from the TI services to the AI services.

A7.186 Most other stakeholders agreed with our proposals, whilst some made no comments regarding our approach or our proposals.

Our response

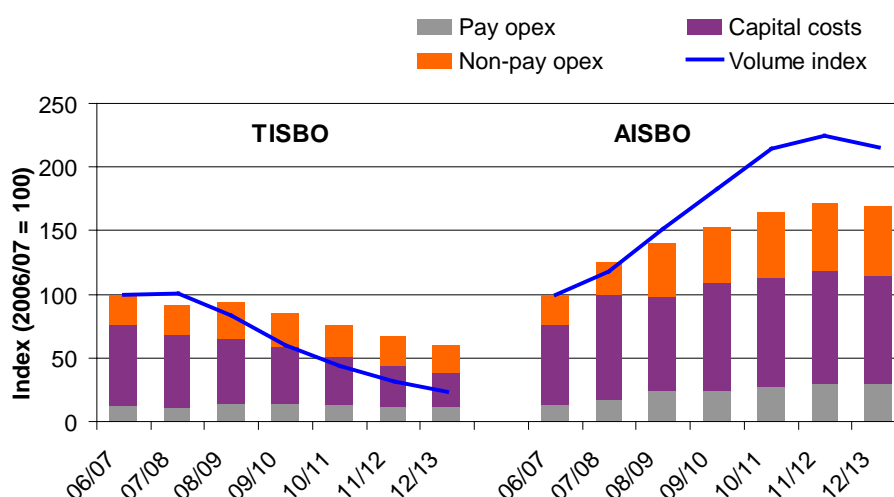
A7.187 A summary of our high-level responses are provided in Section 4 paragraphs 4.254 to 4.263.

A7.188 The need to re-allocate non-marginal costs between the TI and AI baskets arise from the fact that there are no cost components that are common between the AI and TI baskets.

A7.189 As a result, as TI services decrease (see Figure A7.17) the costs are being recovered through a smaller volume of services. Similarly, as Ethernet volumes increase, total service costs are being recovered through greater volumes, leading to a sharp decline in unit costs.

A7.190 We believe in a normal operating environment some of the underlying assets can be, and would be, re-used by expanding services. Without common cost components, we have to determine the proportion of costs to re-allocate from the TI basket to the AI basket. This implies that non-marginal costs continue to be recovered from both the TI and AI baskets.

Figure A7.17 Comparison of profiles of costs and volumes for TI and AI baskets without cost re-allocation



A7.191 We have considered different approaches to cost re-allocation:³³

³³ Source: Office of Fair Trading, "Background to cost allocation", July 2005.
http://www.offt.gov.uk/advice_and_resources/resource_base/market-studies/completed/public-information

Table A7.14 Common approaches to cost allocation

Method	Description	Applicable to LLCC?
Equi- proportional mark-up	Common costs attributed in proportion to the direct and indirectly attributable cost of the service	Yes. Can attribute relative to TI and AI marginal costs as a proportion of total marginal costs
Relative outputs	Common costs attributed in proportion to their share of total output	Yes. Can consider relative changes in AI and TI service volumes over time
Revenue method	Common costs attributed in proportion to share of total revenue	No, because cost allocation method is used to determine prices
Activity based costing	Common costs allocated based on activities undertaken to provide service	No, because underlying cost components are not common across TI and AI services
Ramsey approach	Common costs allocated on basis of relative demand elasticities	No, because of the burden of information required to estimate demand elasticities.

A7.192 Of the five methods above, only two are feasible. The approach described by Analysys-Mason is based on the principle of the first approach. We have refined our December Consultation approach as follows to take into account relative change in outputs as well as the approach proposed by Analysys-Mason.

Our conclusion

A7.193 This approach takes into consideration the impact of increasing Ethernet volumes and the increasing recovery of non-marginal costs from the AI basket. It also takes into account the relative changes in volumes of the two types of services. This approach suggests that the proportion of TI non-marginal costs allocated to the AI basket is 62% in 2012/13, and 38% remains in the TI basket.

- We allocate 62% of TI's non-marginal costs to the AI basket and the remaining 38% will remain the TI basket.

Cost and revenue adjustments

A7.194 The recently launched Ethernet Access Direct ("EAD") services require associated EAD aggregation "units"³⁴ and Openreach has provided Ofcom with forecasts of such units required (Figure A7.15). Since we do not have cost estimates associated with EAD Aggregation, under our technology neutral approach we have estimated the costs of EAD Aggregation as a "WES-type" end-to-end circuit. However, as EAD Aggregation does not include the circuit element, it is unreasonable to assume that their underlying costs would be the same as a WES-type service. We have therefore assumed that the overall profitability of EAD aggregation services is the same as WES services, and scaled down EAD aggregation costs accordingly.

³⁴

http://www.openreach.co.uk/orpg/products/ethernet/downloads/futures_workshop_slides_28.04.09_published.pdf

A7.195 Similarly, we recognise that EAD aggregation is priced differently to WES LA pricing level and structure. We have therefore priced EAD Aggregation at £200 flat rate per annum for both connection and rental, regardless of bandwidth.

A7.196 In our technology neutral approach we aggregate both ONBS and BNS volume forecasts in our overall "BES-type" service forecasts. Our cost forecasts are then driven by these aggregate volume changes. Since ONBS costs and volumes have been included in the 2007/08 RFS under Backhaul Network Services ("BNS"), the total cost forecasts include the costs associated with providing these different types of services. Similarly WES 2Mbit/s connection and rental costs and volumes have been included under the WES 10Mbit/s service categories.

A7.197 For the revenue calculations, however, we need to distinguish between the different types of BES services in cases where there is a significant differential between existing prices. For example, WES 2Mbit/s rentals are currently priced at £500 per end, compared to WES 10Mbit/s rental of £2000 per end. Accounting for this ensures that the AI basket revenues are correctly estimated.

A7.198 In order to accurately estimate revenues for the AI basket, we assume that at the start of the charge control:

- EAD Aggregation is priced at £200 per circuit per annum for connections and rentals. We forecast EAD Aggregation costs such that its profitability reflects overall WES service profitability.
- ONBS are priced as per Openreach's price list
- WES 2Mbit/s rentals is priced at £500 per end (£1000 per circuit)

Final values of X

A7.199 Below we present a summary of the assumptions we have adopted to generate the values of X for the TI and AI baskets

Table A7.15 Key input parameters used in the LLCC model

Parameter	Description	Assumption used to calculate final value of X
Service volume forecasts (see Figure A7.3 to Figure A7.7 for TISBO services and Figure A7.8 to Figure A7.15)	Volume forecasts for the individual TISBO and AISBO services in scope of the TI and AI baskets	Actual volumes as per 2007/08 RFSs + BT growth forecasts, with Openreach's adjustments to 2007/08 AI volumes
Weighted average cost of capital ("WACC") (see paragraph A7.44)	BT's WACC used to calculate the return on capital employed (ROCE) which is added into the cost stack of individual services	11%
Future efficiency gains (see paragraph A7.117)	BT efficiency savings in operating costs in every year of the next control period	2.5% per annum for TI Basket and 2.8% for the AI Basket
Asset volume elasticities ("AVEs") (see Figure A7.16)	% change in the across replacement cost of assets for a 1% change in volume	Weighted average of 0.39 (using GRC weights)
Cost volume elasticities ("CVEs") (see Table A7.5)	% change in the values of operating costs for a 1% change in assets	0.24 applied to pay and non-pay opex
Asset price changes (see paragraph A7.147)	% change in asset prices	Varies by asset category
Pay & non-pay operating cost trend (see Table A7.10)	The year-on-year change in pay and non-pay operating costs	RPI + 1%
Inflation (see Table A7.11)	Year-on-year inflation assumption	Varies by year

A7.200 These assumptions together generate the following values of X for the TI and AI baskets.

Table A7.16 Values of Xs³⁵

	TISBO basket	AISBO basket
X	-3.36%	-9.35%

³⁵ These values are not rounded to the nearest quarter.

Annex 8

KCOM commitment letter



KCOM Group PLC

Gareth Davies
Competition Policy Director
Ofcom
Riverside House
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SE1 9HA

37 Carr Lane
Hull
HU1 3RE

Tel: 01482 602527

28th November 2008

Dear Gareth,

Further to my recent discussions with Serafino Abate with respect to the Business Connectivity Market Review, KCOM can make the following commitment with respect to the provision of services in the "Hull area":

KCOM commits to providing wholesale low bandwidth AISBO services on reasonable demand from other communications providers. The pricing of the overall basket of such services will be subject to a "RPI-X%" cap, with retail prices as the entry point. The duration of the cap and the value of X are to be agreed, and an initial proposal of a 4 year cap with X=16 is attached. We would also propose that the application of the cap be subject to an audit against the underlying cost base, as documented in our DOCAS in the light of any material changes to our costs or WACC.

If you have any queries, please let me know.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Huw Saunders'.

Huw Saunders
Group Regulatory Affairs and Technology Development Director

Annex 9

Legal Instrument: SMP conditions

NOTIFICATION UNDER SECTION 48(1) 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**”).³⁶

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, BT³⁷ has significant market power. 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 Area³⁸;
- (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 Area³⁹;
- (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;
- (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.

³⁶ <http://www.ofcom.org.uk/consult/condocs/bcmr08/bcmr08.pdf>

³⁷ “**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).

³⁸ “**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).

³⁹ “**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).

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 consultation.

4. Ofcom therefore also published on 8 December 2008, alongside the BCMR Statement, a consultation document entitled '*Leased Lines Charge Control*' (the "**December Consultation**"), which included a publication at Annex 10 to that document of a notification under section 48(2) of the Act setting out Ofcom's proposals to set new SMP conditions for the purpose of imposing on BT charge controls to address the above-mentioned problems (the "**Consultation Notification**").⁴⁰ Accordingly, those proposals were made by reference to the market power determinations referred to in the BCMR Notification and, as such, were to be treated as supplementary to the BCMR Notification.

5. Copies of the Consultation Notification were 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. Ofcom invited representations on its proposals by 2 February 2009. Ofcom then extended the deadline for responses, with a new closing date for responses by 6 March 2009.

6. By virtue of section 48(5) of the Act, Ofcom may give effect, with or without modifications, to a proposal with respect to which Ofcom has published a notification under section 48(2) of the Act only if—

- (a) Ofcom has considered every representation about the proposals duly made to it within the period specified in the notification; and
- (b) Ofcom has had regard to every international obligation of the United Kingdom (if any) which has been notified to it for this purpose by the Secretary of State.

7. Ofcom received twelve responses to the Consultation Notification and has considered every such representation duly made. The Secretary of State has not notified Ofcom of any international obligation of the United Kingdom for this purpose.

Decisions

8. Ofcom hereby, in accordance with section 48(1) 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, sets 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 set by inserting it after Condition G3 in Part 2 of Schedule 1 to the BCMR Notification;

⁴⁰ <http://www.ofcom.org.uk/consult/condocs/llcc/leasedlines.pdf>

- (b) **Condition GG4** (Charge control) in **Schedule 2** to this Notification is set by inserting it after Condition GG3 in Part 2 of Schedule 2 to the BCMR Notification;
- (c) **Condition GH4** (Charge control) in **Schedule 3** to this Notification is set by inserting it after Condition GH3 in Part 2 of Schedule 3 to the BCMR Notification;
- (d) **Condition HH4** (Charge control) in **Schedule 4** to this Notification is set by inserting it after Condition HH3 in Part 2 of Schedule 4 to the BCMR Notification; and
- (e) **Condition H4** (Charge control) in **Schedule 5** to this Notification is set by inserting it after Condition H3 in Part 2 of Schedule 5 to the BCMR Notification.

9. The effect of, and Ofcom's reasons for setting the SMP Charge Control Conditions, are contained in Sections 2, 4 and 5 of the explanatory statement accompanying this Notification.

10. Ofcom considers that the setting of the SMP Charge Control Conditions comply with the requirements of sections 45 to 47, 87 and 88 of the Act as appropriate and relevant to them.

11. In making these decisions, 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. Copies of this Notification and the accompanying explanatory statement have been sent to the Secretary of State in accordance with section 50(1)(a) of the Act, as well as the European Commission in accordance with sections 50(2)(a) of the Act.

Interpretation

13. Except for references made to proposed identified services markets in paragraph 2 above (and except 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.

14. 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) “**BT**” has the meaning given to it in paragraph 2 of this Notification;
- (d) “**December Consultation**” has the meaning given to it in paragraph 4 of this Notification;
- (d) “**Central and East London Area**” has the meaning given to it in paragraph 2(c) of this Notification;
- (e) “**Hull Area**” has the meaning given to it in paragraph 2(c) of this Notification;
- (f) “**Ofcom**” means the Office of Communications

15. 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.

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

17. 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

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

2 July 2009

Schedule 1

(TISBO up to and including 8 Mbit/s)

SMP services condition G4

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 SMP Condition G4 (Charge control) shall be set by inserting it after Condition G3 in Part 2 of Schedule 1 to the BCMR Notification—

Condition G4 – Charge control

Controls of main baskets

G4.1 Without prejudice to the generality of Condition G3, and subject to paragraph G4.2, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (as determined in accordance with paragraphs G4.3 or G4.4 as appropriate) in:

- (a) the aggregate of charges for all of the products and services of the TI Basket;
- (b) the aggregate of charges for all of the products and services of the TI Equipment and Infrastructure Basket;
- (c) the aggregate of charges for all of the products and services of the TI Ancillary Basket;

is, for each of those three baskets, not more than the Controlling Percentage (as determined in accordance with paragraph G4.6).

G4.2 For the purpose of complying with paragraph G4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, the following formula is satisfied:

$$RC(1 - D) \leq TRC$$

where:

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

TRC is the target revenue change required in the Relevant Year to achieve compliance with paragraph G4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph G4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

G4.3 The Percentage Change for the purposes of each of the TI Basket and the TI Ancillary Basket specified in paragraphs G4.1(a) and G4.1 (c) respectively shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and/or services in the specified category (i.e. the basket in question) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket in question);

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service i and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

G4.4 The Percentage Change for the purpose of the TI Equipment and Infrastructure Basket specified in paragraph G4.1(b) shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and services in the specified category (i.e. the basket) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket);

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service i , calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the “Starting Charge Adjustment Value” as specified in Annex D to this Condition. If a “Starting Charge Adjustment Value” for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

G4.5 Subject to paragraphs G4.6 and G4.7, the Controlling Percentage in relation to any Relevant Year means:

(a) for the TI Basket specified in paragraph G4.1(a), RPI reduced by 3.25 percentage points;

(b) for the TI Equipment and Infrastructure Basket specified in paragraph G4.1(b), RPI reduced by 0 percentage points;

(c) for the TI Ancillary Basket specified in paragraph G4.1(c), RPI reduced by 0 percentage points.

G4.6 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs G4.1(a), G4.1(b) and G4.1(c) the Controlling Percentage for the

following Relevant Year shall be determined in accordance with paragraphs G4.5, but increased by the amount of such deficiency.

G4.7 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs G4.1(a), G4.1(b) and G4.1(c) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph G4.5, but decreased by the amount of such excess.

Controls of sub-baskets

G4.8 In the case of the TI Terminating Sub-basket, and subject to paragraph G4.9, the Dominant Provider shall also, and in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in the aggregate of charges for all of the products and services of the TI Terminating Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph G4.8, the Percentage Change shall be calculated by employing the formula set out in paragraph G4.3, which shall be read accordingly.

G4.9 In the case of the TI Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Sub-basket is not more than RPI increased by 5 percentage points. For the purpose of this paragraph G4.9, the Percentage Change shall be calculated by employing the formula set out in paragraph G4.12.

G4.10 In the case of the TI PoH Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI PoH Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph G4.10, the Percentage Change shall be calculated by employing the formula set out in paragraph G4.12.

G4.11 In the case of the TI Equipment and Infrastructure Basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Equipment and Infrastructure Sub-basket is not more than 5 percentage points in nominal terms. For the purpose of this paragraph G4.11, the Percentage Change shall be calculated by employing the formula set out in paragraph G4.12, which shall be read accordingly.

G4.12 The Percentage Change for the purposes each of the TI Sub-basket, the TI PoH Sub-basket and TI Equipment and Infrastructure Basket shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the products and services in the sub-basket in question at a particular time t during the Relevant Year;

p_0 save for the First Relevant Year of the control, p_0 is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control p_0 for a specific product or service shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service is not listed in Annex D to this Condition then p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

General provisions and interpretation

G4.13 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs G4.1 to G4.12 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

G4.14 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

- (a) pursuant to Condition G4.1, the calculated percentage change relating to each category of products and services listed in conditions G4.1(a) through to (g);
- (b) pursuant to Condition G4.2, calculation of the revenue accrued as a result of all relevant individual charge charges during any Relevant Year compared to the target revenue change;
- (c) all relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions G4.3 and G4.4, including for each specific product or service i :
 - (i) all relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service;
 - (ii) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;
- (d) the relevant published charges at the start of the Relevant Year;

(e) all relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions G4.5, including for each specific product or service i :

- (i) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;
- (ii) the relevant published charge at the start of the Relevant Year;
and

(f) other data necessary for monitoring compliance with the charge control.

G4.15 Paragraphs G4.1 to G4.14 shall not apply to such extent as Ofcom may direct.

G4.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

G4.17 In this Condition:

- (a) “**Controlling Percentage**” is to be determined in accordance with Condition G4.5;
- (b) “**First Relevant Year**” means a period of 12 months beginning on 1st October 2009 and ending on 30 September 2010. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the First Relevant Year unless the context otherwise requires;
- (c) “**Relevant Financial Year**” means the period of 12 months ending on 31 March immediately preceding the Relevant Year;
- (d) “**Relevant Year**” means any of the three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012;
- (e) “**Retail Prices Index**” means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items;
- (f) “**RPI**” means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30 June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period;
- (g) “**Starting Charge Adjustment Value**” means the relevant value for specific product or service i as specified in Annex D to this Condition;
- (h) “**TI Ancillary Basket**” means the products and services listed in Annex C to this Condition;

- (i) **"TI Basket"** means the products and services listed in Annex A to this Condition;
- (j) **"TI Equipment and Infrastructure Basket"** means the products and services listed in Annex B to this Condition;
- (k) **"TI PoH Sub-basket"** means the products and services listed in Part 2c of Annex A to this Condition;
- (l) **"TI Sub-basket"** means the products and services listed in Parts 1a and 1b, Parts 2a and 2b and Part 3 of Annex A to this Condition; and
- (m) **"TI Terminating Sub-basket"** means the products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition.

G4.18 In the Annexes to this Condition:

- (a) **"Partial Private Circuit" or "PPC"** means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions G1, G3 or G7 under section 49 of the Act; and
- (b) **"PPC Contract"** means the Dominant Provider's Standard PPC Handover Agreement as at the date of publication of this Notification, i.e. 2nd July 2009.

Annex A to Condition G4

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

For the purposes of Condition G4.1(a) the expression “**TI Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly):

Part 1a: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 1Mbit/s
- 2Mbit/s

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 128kbit/s
- 192kbit/s
- 256kbit/s
- 320kbit/s
- 384kbit/s
- 448kbit/s
- 512kbit/s
- 576kbit/s
- 640kbit/s
- 704kbit/s
- 768kbit/s

- 832kbit/s
- 896kbit/s
- 960kbit/s
- 1Mbit/s
- 2Mbit/s

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 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

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segment at all bandwidths.

Part 4: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex A shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information including care levels, please refer to http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.01.rtf

http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.03.rtf

Annex B to Condition G4**Products and services subject to charge control pursuant to Condition G4.1(b)**

For the purposes of Condition G4.1(b), the expression “**TI Equipment and Infrastructure Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Point of connection equipment products used in the provision of a Partial Private Circuit:

(a) Customer Sited Handover (CSH) products:

(i) in respect of CSH Configuration SMA-16:

- SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (2 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (2 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)

- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(ii) in respect of CSH Configuration SMA-4:

- SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 port)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 port), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (2 port)

- STM-1 electrical trib interface (2 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(iii) in respect of CSH Configuration SMA-1:

- SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection

(iv) in respect of CSH Configuration MSH51:

- MSH51 ADM with no trib interfaces (single fibre working) - existing site

- MSH51 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1300+1550nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1550nm) - existing site
- Additional charge for new site
- Per km from serving exchange to MSH node - single fibre working
- Per km from serving exchange to MSH node - dual fibre working
- STM-1 electrical trib interface (4 ports)
- STM-1 optical (1300nm) trib interface (2 ports)
- STM-1 electrical trib card (4 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (2 ports), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection

(b) In Span Handover (ISH) products:

(i) in respect of ISH Configuration SMA-16:

- SMA –16 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(ii) in respect of ISH Configuration SMA-4:

- SMA-4 ADM with single STM-4 handover (1300nm)
- Optional STM-4 1550nm handover

(iii) in respect of ISH Configuration STM-1:

- SMA-4 ADM with single STM-1 handover (1300nm)
- Additional cost for STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iv) in respect of ISH Configuration SMA-1

- SMA-1 ADM with single STM-1 Handover (1300nm)
- SMA-1 ADM with single STM-1 handover (1550nm)

(v) in respect of ISH Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(c) Re-designation and Grandfathering Charges for Customer Sited Handover products:

- CSH Re-Designed SMA-16 ADM
- CSH Re-Designed SMA- 4 ADM
- CSH Re-Designed SMA– 1 ADM
- CSH Re-Designed MSH- 51 ADM
- Grandfathered SMA- 1 –legacy equipment
- Grandfathered 16x2 – legacy equipment
- Grandfathered 4x2 – legacy equipment

(d) In-span Handover Extension products:

(i) in respect of ISH Configuration STM-16:

- SMA – 16 ADM with single STM- 16 handover (1300nm)
- Optional STM- 16 1550nm handover

(ii) in respect of ISH Extension Configuration STM-4:

- SMA-4 ADM with single ATM-4 handover (1300nm)
- Optional STM-4 1550nm handover
- SMA-4 ADM with single STM-1 handover (1300nm)
- Optional STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iii) in respect of ISH Extension Configuration STM-1:

- SMA-1 ADM with single STM-1 handover (1300nm)

(iv) in respect of ISH Extension Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550 nm handover

(e) PPC Miscellaneous Generic Equipment

- Additional charge for new site
- 2Mbit/s bearer Access – required for access to DPCN
- Plus rental per km from PoH BT serving node to DPCN node

Part 2: Third party equipment products used in the provision of a Partial Private Circuit:

(a) Third party customer link infrastructure:

- KiloStream NTU 64k – 256k on existing copper
- KiloStream NTU 64k – 256k on new copper
- KiloStream NTU 320k – 640k on existing copper
- KiloStream NTU 320k – 640k on new copper
- KiloStream NTU 128k – 640k on 2Mb infrastructure
- KiloStream NTU 704k – 960k all delivery options
- 1Mb/s circuit on existing copper (from 23/10/2001)
- 1Mb/s circuit on new copper (from 23/10/2001)
- 2Mbit/s circuit on HDSL on existing copper
- 2Mbit/s circuit on HDSL on new copper
- First 2Mbit/s circuit on 4x2 at existing site
- First 2Mbit/s circuit on 16x2 at existing site
- Additional Charge for 4x2 and 16x2 new site
- Subsequent 2Mbit/s circuit on existing PPC 4x2 or 16x2
- Additional Charge to provide new fibre infrastructure at a new site
- 34/45 Mbit/s ASDH NTE existing fibre site
- 34/45 Mbit/s ASDH NTE Expansion Unit

(b) in respect of third party customer sited SMA-16 ADM:

- SMA-16 ADM with no trib interfaces (single fibre working) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) - existing site

- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34 Mbit/s trib cards (3 ports)
- 45 Mbit/s trib cards (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(c) in respect of third party customer sited SMA-4 ADM:

- SMA-4 ADM with no trib interfaces (single fibre working) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

- STM-4 optical (1300 nm) trib card (1 port)

(d) in respect of third party customer sited SMA-1 ADM:

- SMA-1 ADM with no trib interfaces (single fibre working) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib card (32 ports)
- 2Mbit/s trib card (16 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

(e) In respect of 3rd part customer sited MSH-51C ADM:

- MSH51 with no trib interfaces (single fibre working)-existing site
- MSH51 with no trib interfaces (dual fibre working 1300nm)-existing site
- MSH51 with no trib interfaces (dual fibre working 1550nm)-existing site
- Per km from serving exchange to MSH node-single fibre working
- Per km from serving exchange to MSH node-dual fibre working
- STM-1 electrical trib card (4 ports)
- STM-1 optical (1300nm) trib card (2 ports)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300nm) trib card (1 port)

(f) In respect of PPC Radio Access at 3rd part customer end:

- 4x2Mbit/s
- 16x2Mbit/s
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) Existing site
- SMA-1 ADM with no trib interfaces (dual fibre 1300+1500nm)
- SMA-1 ADM with no trib interfaces (single fibre working + dual fibre working 1300nm) Existing site

(g) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- Radio Site Share

Part 3: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex B shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information including care levels, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf

Annex C to Condition G4**Products and services subject to charge control pursuant to Condition G4.1(c)**

For the purposes of Condition G4.1(c), the expression “**TI Ancillary Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these twelve products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Services (and all related charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)

- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)
- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)
- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days
- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days
- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure
- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges
- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges
- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Part 2: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex C shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information including care levels, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html

- For information held in the price list, please refer to http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8_06.rtf

Annex D to Condition G4**Starting Charge Adjustment Values pursuant to Conditions G4.3, G4.4 and G4.12****Part 1**

Services	Price per external circuit/ per annum (£)
64 kbit/s	100
2 Mbit/s	170
34/45 Mbit/s	860
140/155 Mbit/s	1,600

Part 2

Services	Initial Price (£)
64 kbit/s link	125.62
64 kbit/s local end (external)	479.34
64 kbit/s enhanced maintenance	80.62
2 Mbit/s local end (external)	663.76
2 Mbit/s trunk	46.83

Services		Initial Price (£)	
Main Link		Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	125.62	80.62	0.02
128k	226.86	82.50	0.04
192k	339.36	84.38	0.04
256k	453.72	86.24	0.06
320k	568.10	88.12	0.08
384k	763.06	93.74	0.12
448k	888.70	95.62	0.12
512k	1,016.18	99.36	0.14
576k	1,143.68	101.24	0.16
640k	1,273.28	103.12	0.18
704k	1,398.66	106.86	0.18
768k	1,524.28	108.72	0.20
832k	1,651.78	112.26	0.22
896k	1,779.26	114.34	0.24
960k	1,904.88	116.26	0.26
1024k	2,030.52	118.12	0.28

Part 3

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

Schedule 2

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

SMP services condition GG4

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 SMP Condition GG4 (Charge control) shall be set by inserting it after Condition GG3 in Part 2 of Schedule 2 to the BCMR Notification—

Condition GG4 – Charge control

Controls of main baskets

GG4.1 Without prejudice to the Generality of Condition GG3, and subject to paragraph GG4.2, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (as determined in accordance with paragraphs GG4.3 or GG4.4 as appropriate) in:

- (a) the aggregate of charges for all of the products and services of the TI Basket;
- (b) the aggregate of charges for all of the products and services of the TI Equipment and Infrastructure Basket;
- (c) the aggregate of charges for all of the products and services of the TI Ancillary Basket;

is, for each of those three baskets, not more than the Controlling Percentage (as determined in accordance with paragraph GG4.6).

GG4.2 For the purpose of complying with paragraph GG4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, the following formula is satisfied:

$$RC(1 - D) \leq TRC$$

where:

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

TRC is the target revenue change required in the Relevant Year to achieve compliance with paragraph GG4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph GG4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

GG4.3 The Percentage Change for the purposes of each of the TI Basket and the TI Ancillary Basket specified in paragraphs GG4.1(a) and GG4.1 (c) respectively shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and/or services in the specified category (i.e. the basket in question) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket in question);

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service i and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

GG4.4 The Percentage Change for the purpose of the TI Equipment and Infrastructure Basket specified in paragraph GG4.1(b) shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and services in the specified category (i.e. the basket) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket);

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service i , calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the “Starting Charge Adjustment Value” as specified in Annex D to this Condition. If a “Starting Charge Adjustment Value” for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

GG4.5 Subject to paragraphs GG4.6 and GG4.7, the Controlling Percentage in relation to any Relevant Year means:

(a) for the TI Basket specified in paragraph GG4.1(a), RPI reduced by 3.25 percentage points;

(b) for the TI Equipment and Infrastructure Basket specified in paragraph GG4.1(b), RPI reduced by 0 percentage points;

(c) for the TI Ancillary Basket specified in paragraph GG4.1(c), RPI reduced by 0 percentage points.

GG4.6 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs GG4.1(a), GG4.1(b) and GG4.1(c) the Controlling Percentage for the

following Relevant Year shall be determined in accordance with paragraph GG4.5, but increased by the amount of such deficiency.

GG4.7 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs GG4.1(a), GG4.1(b) and GG4.1(c) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph GG4.5, but decreased by the amount of such excess.

Controls of sub-baskets

GG4.8 In the case of the TI Terminating Sub-basket, and subject to paragraph GG4.9, the Dominant Provider shall also, and in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in the aggregate of charges for all of the products and services of the TI Terminating Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph GG4.8, the Percentage Change shall be calculated by employing the formula set out in paragraph GG4.3, which shall be read accordingly.

GG4.9 In the case of the TI Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Sub-basket is not more than RPI increased by 5 percentage points. For the purpose of this paragraph GG4.9, the Percentage Change shall be calculated by employing the formula set out in paragraph GG4.12.

GG4.10 In the case of the TI PoH Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI PoH Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph GG4.10, the Percentage Change shall be calculated by employing the formula set out in paragraph GG4.12.

GG4.11 In the case of the TI Equipment and Infrastructure Basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Equipment and Infrastructure Sub-basket is not more than 5 percentage points in nominal terms. For the purpose of this paragraph GG4.11, the Percentage Change shall be calculated by employing the formula set out in paragraph GG4.12, which shall be read accordingly.

GG4.12 The Percentage Change for the purposes each of the TI Sub-basket, the TI PoH Sub-basket and TI Equipment and Infrastructure Basket shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the products and services in the sub-basket in question at a particular time t during the Relevant Year;

p_0 save for the First Relevant Year of the control, p_0 is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control p_0 for a specific product or service shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service is not listed in Annex D to this Condition then p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

General provisions and interpretation

GG4.13 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs GG4.1 to GG4.12 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

GG4.14 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

(a) pursuant to Condition GG4.1, the calculated percentage change relating to each category of products and services listed in conditions GG4.1(a) through to (g);

(b) pursuant to Condition GG4.2, calculation of the revenue accrued as a result of all relevant individual charge charges during any Relevant Year compared to the target revenue change;

(c) all relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions GG4.3 and GG4.4, including for each specific product or service i :

(i) all relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service;

(ii) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;

(d) the relevant published charges at the start of the Relevant Year;

(e) all relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions GG4.5, including for each specific product or service i :

(i) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;

(ii) the relevant published charges at the start of the Relevant Year; and

(f) other data necessary for monitoring compliance with the charge control.

GG4.15 Paragraphs GG4.1 to GG4.14 shall not apply to such extent as Ofcom may direct.

GG4.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

GG4.17 In this Condition:

(a) “**Controlling Percentage**” is to be determined in accordance with Condition GG4.5;

(b) “**First Relevant Year**” means a period of 12 months beginning on 1 October 2009 and ending on 30 September 2010. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the First Relevant Year unless the context otherwise requires;

(c) “**Relevant Financial Year**” means the period of 12 months ending on 31 March immediately preceding the Relevant Year;

(d) “**Relevant Year**” means any of the three periods of 12 months beginning on 1st October starting with 1 October 2009 and ending on 30 September 2012;

(e) “**Retail Prices Index**” means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items;

(f) “**RPI**” means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30 June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period;

(g) “**Starting Charge Adjustment Value**” means the relevant value for specific product or service i as specified in Annex D to this Condition;

(h) “**TI Ancillary Basket**” means the products and services listed in Annex C to this Condition;

- (i) **"TI Basket"** means the products and services listed in Annex A to this Condition;
- (j) **"TI Equipment and Infrastructure Basket"** means the products and services listed in Annex B to this Condition;
- (k) **"TI PoH Sub-basket"** means the products and services listed in Part 2c of Annex A to this Condition;
- (l) **"TI Sub-basket"** means the products and services listed in Parts 1a and 1b, Parts 2a and 2b and Part 3 of Annex A to this Condition; and
- (m) **"TI Terminating Sub-basket"** means the products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition.

GG4.18 In the Annexes to this Condition:

- (a) **"Partial Private Circuit" or "PPC"** means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions GG1, GG3 or GG7 under section 49 of the Act; and
- (b) **"PPC Contract"** means the Dominant Provider's Standard PPC Handover Agreement as at the date of publication of this Notification, i.e. 2nd July 2009.

Annex A to Condition GG4

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

For the purposes of Condition GG4.1(a) the expression “**TI Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly):

Part 1a: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 1Mbit/s
- 2Mbit/s

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 128kbit/s
- 192kbit/s
- 256kbit/s
- 320kbit/s
- 384kbit/s
- 448kbit/s
- 512kbit/s
- 576kbit/s
- 640kbit/s
- 704kbit/s
- 768kbit/s

- 832k
- 896kbit/s
- 960kbit/s
- 1Mbit/s
- 2Mbit/s.

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 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 (for 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

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segment at all bandwidths.

Part 4: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex A shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information including care levels, please refer to http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.01.rtf

http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.03.rtf

Annex B to Condition GG4**Products and services subject to charge control pursuant to Condition GG4.1(b)**

For the purposes of Condition GG4.1(b), the expression “**TI Equipment and Infrastructure Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Point of connection equipment products used in the provision of a Partial Private Circuit:

(a) Customer Sited Handover (CSH) products:

(i) in respect of CSH Configuration SMA-16:

- SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (2 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (2 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)

- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(ii) in respect of CSH Configuration SMA-4:

- SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 port)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 port), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (2 port)

- STM-1 electrical trib interface (2 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(iii) in respect of CSH Configuration SMA-1:

- SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection

(iv) in respect of CSH Configuration MSH51:

- MSH51 ADM with no trib interfaces (single fibre working) - existing site

- MSH51 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1300+1550nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1550nm) - existing site
- Additional charge for new site
- Per km from serving exchange to MSH node - single fibre working
- Per km from serving exchange to MSH node - dual fibre working
- STM-1 electrical trib interface (4 ports)
- STM-1 optical (1300nm) trib interface (2 ports)
- STM-1 electrical trib card (4 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (2 ports), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection

(b) In Span Handover (ISH) products:

(i) in respect of ISH Configuration SMA-16:

- SMA –16 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(ii) in respect of ISH Configuration SMA-4:

- SMA-4 ADM with single STM-4 handover (1300nm)
- Optional STM-4 1550nm handover

(iii) in respect of ISH Configuration STM-1:

- SMA-4 ADM with single STM-1 handover (1300nm)
- Additional cost for STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iv) in respect of ISH Configuration SMA-1

- SMA-1 ADM with single STM-1 Handover (1300nm)
- SMA-1 ADM with single STM-1 handover (1550nm)

(v) in respect of ISH Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(c) Re-designation and Grandfathering Charges for Customer Sited Handover products:

- CSH Re-Designed SMA-16 ADM
- CSH Re-Designed SMA- 4 ADM
- CSH Re-Designed SMA– 1 ADM
- CSH Re-Designed MSH- 51 ADM
- Grandfathered SMA- 1 –legacy equipment
- Grandfathered 16x2 – legacy equipment
- Grandfathered 4x2 – legacy equipment

(d) In-span Handover Extension products:

(i) in respect of ISH Configuration STM-16:

- SMA – 16 ADM with single STM- 16 handover (1300nm)
- Optional STM- 16 1550nm handover

(ii) in respect of ISH Extension Configuration STM-4:

- SMA-4 ADM with single ATM-4 handover (1300nm)
- Optional STM-4 1550nm handover
- SMA-4 ADM with single STM-1 handover (1300nm)
- Optional STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iii) in respect of ISH Extension Configuration STM-1:

- SMA-1 ADM with single STM-1 handover (1300nm)

(iv) in respect of ISH Extension Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550 nm handover

(e) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- 2Mbit/s bearer Access – required for access to DPCN
- Plus rental per km from PoH BT serving node to DPCN node

Part 2: Third party equipment products used in the provision of a Partial Private Circuit:

(a) Third party customer link infrastructure:

- KiloStream NTU 64k – 256k on existing copper
- KiloStream NTU 64k – 256k on new copper
- KiloStream NTU 320k – 640k on existing copper
- KiloStream NTU 320k – 640k on new copper
- KiloStream NTU 128k – 640k on 2Mb infrastructure
- KiloStream NTU 704k – 960k all delivery options
- 1Mb/s circuit on existing copper (from 23/10/2001)
- 1Mb/s circuit on new copper (from 23/10/2001)
- 2Mbit/s circuit on HDSL on existing copper
- 2Mbit/s circuit on HDSL on new copper
- First 2Mbit/s circuit on 4x2 at existing site
- First 2Mbit/s circuit on 16x2 at existing site
- Additional Charge for 4x2 and 16x2 new site
- Subsequent 2Mbit/s circuit on existing PPC 4x2 or 16x2
- Additional Charge to provide new fibre infrastructure at a new site
- 34/45 Mbit/s ASDH NTE existing fibre site
- 34/45 Mbit/s ASDH NTE Expansion Unit

(b) in respect of third party customer sited SMA-16 ADM:

- SMA-16 ADM with no trib interfaces (single fibre working) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) - existing site

- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34 Mbit/s trib cards (3 ports)
- 45 Mbit/s trib cards (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(c) in respect of third party customer sited SMA-4 ADM:

- SMA-4 ADM with no trib interfaces (single fibre working) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

- STM-4 optical (1300 nm) trib card (1 port)

(d) in respect of third party customer sited SMA-1 ADM:

- SMA-1 ADM with no trib interfaces (single fibre working) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib card (32 ports)
- 2Mbit/s trib card (16 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

(e) In respect of 3rd part customer sited MSH-51C ADM

- MSH51 with no trib interfaces (single fibre working)-existing site
- MSH51 with no trib interfaces (dual fibre working 1300nm)-existing site
- MSH51 with no trib interfaces (dual fibre working 1550nm)-existing site
- Per km from serving exchange to MSH node-single fibre working
- Per km from serving exchange to MSH node-dual fibre working
- STM-1 electrical trib card (4 ports)
- STM-1 optical (1300nm) trib card (2 ports)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300nm) trib card (1 port)

(f) In respect of PPC Radio Access at 3rd part customer end:

- 4x2Mbit/s
- 16x2Mbit/s
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) Existing site
- SMA-1 ADM with no trib interfaces (dual fibre 1300+1500nm)
- SMA-1 ADM with no trib interfaces (single fibre working + dual fibre working 1300nm) Existing site

(g) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- Radio Site Share

Part 3: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex B shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information, including care levels, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf

Annex C to Condition GG4**Products and services subject to charge control pursuant to Condition GG4.1(c)**

For the purposes of Condition GG4.1(c), the expression “**TI Ancillary Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Services (and all related charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)

- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)
- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)
- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days
- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days
- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure
- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges
- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges
- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Part 2: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex C shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
[http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial Private Circuits PPC Reference Offer/Service Descriptions.html](http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html)
[http://www.btwholesale.com/pages/downloads/service_and_support/contractual information/docs/ppcoffer/briefings/ppc_product_handbook issue 3.1 Apr08.doc](http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc)
- For assurance information including care levels, please refer to
[http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial Private Circuits PPC Reference Offer/PPC Quality of Service Performance.html](http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html)

- For information held in the price list, please refer to http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8_06.rtf

Annex D to Condition GG4**Starting Charge Adjustment Values pursuant to Conditions GG4.3, GG4.4 and GG4.12****Part 1**

Services	Price per external circuit/ per annum (£)
64 kbit/s	100
2 Mbit/s	170
34/45 Mbit/s	860
140/155 Mbit/s	1,600

Part 2

Services	Initial Price (£)
64 kbit/s link	125.62
64 kbit/s local end (external)	479.34
64 kbit/s enhanced maintenance	80.62
2 Mbit/s local end (external)	663.76
2 Mbit/s trunk	46.83

Services		Initial Price (£)	
Main Link		Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	125.62	80.62	0.02
128k	226.86	82.50	0.04
192k	339.36	84.38	0.04
256k	453.72	86.24	0.06
320k	568.10	88.12	0.08
384k	763.06	93.74	0.12
448k	888.70	95.62	0.12
512k	1,016.18	99.36	0.14
576k	1,143.68	101.24	0.16
640k	1,273.28	103.12	0.18
704k	1,398.66	106.86	0.18
768k	1,524.28	108.72	0.20
832k	1,651.78	112.26	0.22
896k	1,779.26	114.34	0.24
960k	1,904.88	116.26	0.26
1024k	2,030.52	118.12	0.28

Part 3

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

Schedule 3

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

SMP services condition GH4

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 SMP Condition GH4 (Charge control) shall be set by inserting it after Condition GH3 in Part 2 of Schedule 3 to the BCMR Notification—

Condition GH4 – Charge control

Controls of main baskets

GH4.1 Without prejudice to the Generality of Condition GH3, and subject to paragraph GH4.2, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (as determined in accordance with paragraphs GH4.3 or GH4.4 as appropriate) in:

- (a) the aggregate of charges for all of the products and services of the TI Basket;
- (b) the aggregate of charges for all of the products and services of the TI Equipment and Infrastructure Basket;
- (c) the aggregate of charges for all of the products and services of the TI Ancillary Basket;

is, for each of those three baskets, not more than the Controlling Percentage (as determined in accordance with paragraph GH4.6).

GH4.2 For the purpose of complying with paragraph GH4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, the following formula is satisfied:

$$RC(1 - D) \leq TRC$$

where:

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

TRC is the target revenue change required in the Relevant Year to achieve compliance with paragraph GH4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph GH4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

GH4.3 The Percentage Change for the purposes of each of the TI Basket and the TI Ancillary Basket specified in paragraphs GH4.1(a) and GH4.1 (c) respectively shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and/or services in the specified category (i.e. the basket in question) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket in question);

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service i and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

GH4.4 The Percentage Change for the purpose of the TI Equipment and Infrastructure Basket specified in paragraph GH4.1(b) shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and services in the specified category (i.e. the basket) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket);

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service i , calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the “Starting Charge Adjustment Value” as specified in Annex D to this Condition. If a “Starting Charge Adjustment Value” for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

GH4.5 Subject to paragraphs GH4.6 and GH4.7, the Controlling Percentage in relation to any Relevant Year means:

(a) for the TI Basket specified in paragraph GH4.1(a), RPI reduced by 3.25 percentage points;

(b) for the TI Equipment and Infrastructure Basket specified in paragraph GH4.1(b), RPI reduced by 0 percentage points;

(c) for the TI Ancillary Basket specified in paragraph GH4.1(c), RPI reduced by 0 percentage points.

GH4.6 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs GH4.1(a), GH4.1(b) and GH4.1(c) the Controlling Percentage for the

following Relevant Year shall be determined in accordance with paragraph GH4.5, but increased by the amount of such deficiency.

GH4.7 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs GH4.1(a), GH4.1(b) and GH4.1(c) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph GH4.5, but decreased by the amount of such excess.

Controls of sub-baskets

GH4.8 In the case of the TI Terminating Sub-basket, and subject to paragraph GH4.9, the Dominant Provider shall also, and in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in the aggregate of charges for all of the products and services of the TI Terminating Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph GH4.8, the Percentage Change shall be calculated by employing the formula set out in paragraph GH4.3, which shall be read accordingly.

GH4.9 In the case of the TI Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Sub-basket is not more than RPI increased by 5 percentage points. For the purpose of this paragraph GH4.9, the Percentage Change shall be calculated by employing the formula set out in paragraph GH4.12.

GH4.10 In the case of the TI PoH Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI PoH Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph GH4.10, the Percentage Change shall be calculated by employing the formula set out in paragraph GH4.12.

GH4.11 In the case of the TI Equipment and Infrastructure Basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Equipment and Infrastructure Sub-basket is not more than 5 percentage points in nominal terms. For the purpose of this paragraph GH4.11, the Percentage Change shall be calculated by employing the formula set out in paragraph GH4.12, which shall be read accordingly.

GH4.12 The Percentage Change for the purposes each of the TI Sub-basket, the TI PoH Sub-basket and TI Equipment and Infrastructure Basket shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the products and services in the sub-basket in question at a particular time t during the Relevant Year;

p_0 save for the First Relevant Year of the control, p_0 is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control p_0 for a specific product or service shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service is not listed in Annex D to this Condition then p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

General provisions and interpretation

GH4.13 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs GH4.1 to GH4.12 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

GH4.14 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

(a) pursuant to Condition GH4.1, the calculated percentage change relating to each category of products and services listed in conditions GH4.1(a) through to (g);

(b) pursuant to Condition GH4.2, calculation of the revenue accrued as a result of all relevant individual charge charges during any Relevant Year compared to the target revenue change;

(c) all relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions GH4.3 and GH4.4, including for each specific product or service i :

(i) all relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service;

(ii) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;

(d) the relevant published charge at the start of the Relevant Year;

(e) all relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions GH4.5, including for each specific product or service i :

(i) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;

(ii) the relevant published charges at the start of the Relevant Year; and

(f) other data necessary for monitoring compliance with the charge control.

GH4.15 Paragraphs GH4.1 to GH4.14 shall not apply to such extent as Ofcom may direct.

GH4.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

GH4.17 In this Condition:

(a) “**Controlling Percentage**” is to be determined in accordance with Condition GH4.5;

(b) “**First Relevant Year**” means a period of 12 months beginning on 1st October 2009 and ending on 30 September 2010. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the First Relevant Year unless the context otherwise requires;

(c) “**Relevant Financial Year**” means the period of 12 months ending on 31 March immediately preceding the Relevant Year;

(d) “**Relevant Year**” means any of the three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012;

(e) “**Retail Prices Index**” means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items;

(f) “**RPI**” means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30 June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period;

(g) “**Starting Charge Adjustment Value**” means the relevant value for specific product or service i as specified in Annex D to this Condition;

(h) “**TI Ancillary Basket**” means the products and services listed in Annex C to this Condition;

- (i) **"TI Basket"** means the products and services listed in Annex A to this Condition;
- (j) **"TI Equipment and Infrastructure Basket"** means the products and services listed in Annex B to this Condition;
- (k) **"TI PoH Sub-basket"** means the products and services listed in Part 2c of Annex A to this Condition;
- (l) **"TI Sub-basket"** means the products and services listed in Parts 1a and 1b, Parts 2a and 2b and Part 3 of Annex A to this Condition; and
- (m) **"TI Terminating Sub-basket"** means the products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition.

GH4.18 In the Annexes to this Condition:

- (a) **"Partial Private Circuit" or "PPC"** means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions GH1, GH3 or GH7 under section 49 of the Act; and
- (b) **"PPC Contract"** means the Dominant Provider's Standard PPC Handover Agreement as at the date of publication of this Notification, i.e. 2nd July 2009.

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Annex A to Condition GH4

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

For the purposes of Condition GH4.1(a), the expression “**TI Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly):

Part 1a: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 1Mbit/s
- 2Mbit/s

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 128kbit/s
- 192kbit/s
- 256kbit/s
- 320kbit/s
- 384kbit/s
- 448kbit/s
- 512kbit/s
- 576kbit/s
- 640kbit/s
- 704kbit/s
- 768kbit/s

- 832kbit/s
- 896kbit/s
- 960kbit/s
- 1Mbit/s
- 2Mbit/s

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 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 (for 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

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segment at all bandwidths.

Part 4: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex A shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information including care levels, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.01.rtf

http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.03.rtf

Annex B to Condition GH4**Products and services subject to charge control pursuant to Condition GH4.1(b)**

For the purposes of Condition GH4.1(b), the expression “**TI Equipment and Infrastructure Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Point of connection equipment products used in the provision of a Partial Private Circuit:

(a) Customer Sited Handover (CSH) products:

(i) in respect of CSH Configuration SMA-16:

- SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (2 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (2 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)

- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(ii) in respect of CSH Configuration SMA-4:

- SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 port)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 port), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (2 port)

- STM-1 electrical trib interface (2 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(iii) in respect of CSH Configuration SMA-1:

- SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection

(iv) in respect of CSH Configuration MSH51:

- MSH51 ADM with no trib interfaces (single fibre working) - existing site

- MSH51 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1300+1550nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1550nm) - existing site
- Additional charge for new site
- Per km from serving exchange to MSH node - single fibre working
- Per km from serving exchange to MSH node - dual fibre working
- STM-1 electrical trib interface (4 ports)
- STM-1 optical (1300nm) trib interface (2 ports)
- STM-1 electrical trib card (4 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (2 ports), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection

(b) In Span Handover (ISH) products:

(i) in respect of ISH Configuration SMA-16:

- SMA –16 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(ii) in respect of ISH Configuration SMA-4:

- SMA-4 ADM with single STM-4 handover (1300nm)
- Optional STM-4 1550nm handover

(iii) in respect of ISH Configuration STM-1:

- SMA-4 ADM with single STM-1 handover (1300nm)
- Additional cost for STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iv) in respect of ISH Configuration SMA-1:

- SMA-1 ADM with single STM-1 Handover (1300nm)
- SMA-1 ADM with single STM-1 handover (1550nm)

(v) in respect of ISH Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(c) Re-designation and Grandfathering Charges for Customer Sited Handover products:

- CSH Re-Designed SMA-16 ADM
- CSH Re-Designed SMA- 4 ADM
- CSH Re-Designed SMA– 1 ADM
- CSH Re-Designed MSH- 51 ADM
- Grandfathered SMA- 1 –legacy equipment
- Grandfathered 16x2 – legacy equipment
- Grandfathered 4x2 – legacy equipment

(d) In-span Handover Extension products:

(i) in respect of ISH Configuration STM-16:

- SMA – 16 ADM with single STM- 16 handover (1300nm)
- Optional STM- 16 1550nm handover

(ii) in respect of ISH Extension Configuration STM-4:

- SMA-4 ADM with single ATM-4 handover (1300nm)
- Optional STM-4 1550nm handover
- SMA-4 ADM with single STM-1 handover (1300nm)
- Optional STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iii) in respect of ISH Extension Configuration STM-1:

- SMA-1 ADM with single STM-1 handover (1300nm)

(iv) in respect of ISH Extension Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550 nm handover

(e) PPC Miscellaneous Generic Equipment

- Additional charge for new site
- 2Mbit/s bearer Access – required for access to DPCN
- Plus rental per km from PoH BT serving node to DPCN node

Part 2: Third party equipment products used in the provision of a Partial Private Circuit:

(a) Third party customer link infrastructure:

- KiloStream NTU 64k – 256k on existing copper
- KiloStream NTU 64k – 256k on new copper
- KiloStream NTU 320k – 640k on existing copper
- KiloStream NTU 320k – 640k on new copper
- KiloStream NTU 128k – 640k on 2Mb infrastructure
- KiloStream NTU 704k – 960k all delivery options
- 1Mb/s circuit on existing copper (from 23/10/2001)
- 1Mb/s circuit on new copper (from 23/10/2001)
- 2Mbit/s circuit on HDSL on existing copper
- 2Mbit/s circuit on HDSL on new copper
- First 2Mbit/s circuit on 4x2 at existing site
- First 2Mbit/s circuit on 16x2 at existing site
- Additional Charge for 4x2 and 16x2 new site
- Subsequent 2Mbit/s circuit on existing PPC 4x2 or 16x2
- Additional Charge to provide new fibre infrastructure at a new site
- 34/45 Mbit/s ASDH NTE existing fibre site
- 34/45 Mbit/s ASDH NTE Expansion Unit

(b) in respect of third party customer sited SMA-16 ADM:

- SMA-16 ADM with no trib interfaces (single fibre working) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) - existing site

- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34 Mbit/s trib cards (3 ports)
- 45 Mbit/s trib cards (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(c) in respect of third party customer sited SMA-4 ADM:

- SMA-4 ADM with no trib interfaces (single fibre working) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

- STM-4 optical (1300 nm) trib card (1 port)

(d) in respect of third party customer sited SMA-1 ADM:

- SMA-1 ADM with no trib interfaces (single fibre working) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib card (32 ports)
- 2Mbit/s trib card (16 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

(e) In respect of 3rd part customer sited MSH-51C ADM

- MSH51 with no trib interfaces (single fibre working)-existing site
- MSH51 with no trib interfaces (dual fibre working 1300nm)-existing site
- MSH51 with no trib interfaces (dual fibre working 1550nm)-existing site
- Per km from serving exchange to MSH node-single fibre working
- Per km from serving exchange to MSH node-dual fibre working
- STM-1 electrical trib card (4 ports)
- STM-1 optical (1300nm) trib card (2 ports)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300nm) trib card (1 port)

(f) In respect of PPC Radio Access at 3rd part customer end:

- 4x2Mbit/s
- 16x2Mbit/s
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) Existing site
- SMA-1 ADM with no trib interfaces (dual fibre 1300+1500nm)
- SMA-1 ADM with no trib interfaces (single fibre working + dual fibre working 1300nm) Existing site

(g) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- Radio Site Share

Part 3: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex B shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information including care levels, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf

Annex C to Condition G4**Products and services subject to charge control pursuant to Condition GH4.1(c)**

For the purposes of Condition GH4.1(c), the expression “**TI Ancillary Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Services (and all related charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)

- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)
- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)
- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days
- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days
- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure
- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges
- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges
- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Part 2: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex C shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
[http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial Private Circuits PPC Reference Offer/Service Descriptions.html](http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html)
[http://www.btwholesale.com/pages/downloads/service_and_support/contractual information/docs/ppcoffer/briefings/ppc_product handbook issue 3.1 Apr08.doc](http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc)
- For assurance information, including care levels, please refer to
[http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial Private Circuits PPC Reference Offer/PPC Quality of Service Performance.html](http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html)

- For information held in the price list, please refer to http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8_06.rtf

Annex D to Condition GH4

Starting Charge Adjustment Values pursuant to Conditions GH4.3, GH4.4 and GH4.12

Part 1

Services	Price per external circuit/ per annum (£)
64 kbit/s	100
2 Mbit/s	170
34/45 Mbit/s	860
140/155 Mbit/s	1,600

Part 2

Services	Initial Price (£)
64 kbit/s link	125.62
64 kbit/s local end (external)	479.34
64 kbit/s enhanced maintenance	80.62
2 Mbit/s local end (external)	663.76
2 Mbit/s trunk	46.83

Services		Initial Price (£)	
Main Link		Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	125.62	80.62	0.02
128k	226.86	82.50	0.04
192k	339.36	84.38	0.04
256k	453.72	86.24	0.06
320k	568.10	88.12	0.08
384k	763.06	93.74	0.12
448k	888.70	95.62	0.12
512k	1,016.18	99.36	0.14
576k	1,143.68	101.24	0.16
640k	1,273.28	103.12	0.18
704k	1,398.66	106.86	0.18
768k	1,524.28	108.72	0.20
832k	1,651.78	112.26	0.22
896k	1,779.26	114.34	0.24
960k	1,904.88	116.26	0.26
1024k	2,030.52	118.12	0.28

Part 3

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

Schedule 4

(AISBO up to and including 1 Gbit/s)

SMP services condition HH4

Condition imposed on British Telecommunications plc under the Communications Act 2003 as a result of the analysis of the market for the provision of alternative interface symmetric broadband origination with a bandwidth capacity up to and including one gigabit per second within the United Kingdom but not including the Hull Area

1. The following new SMP Condition HH4 (Charge control) shall be set by inserting it after Condition HH3 in Part 2 of Schedule 4 to the BCMR Notification—

Condition HH4 – Charge control

Starting charges

HH.4.1(A) For the period 1 August 2009 to 30 September 2009 the Dominant Provider shall not charge more than the “Starting Charge Adjustment Values” as specified in Annex D to this Condition.

Controls of main baskets

HH4.1 Without prejudice to the generality of Condition HH3, and subject to paragraph HH4.2, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (as determined in accordance with paragraphs HH4.3 or HH4.4 as appropriate) in:

- (a) The aggregate of charges for all of the products and services in the AI Basket;
- (b) The aggregate of charges for all products and services in the AI Accommodation Basket;
- (c) The aggregate of charges for all products and services in the AI Ancillary Basket;

is, for each of those three baskets, not more than the Controlling Percentage (as determined in accordance with paragraph HH4.6).

HH4.2 For the purpose of complying with paragraph HH4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, the following formula is satisfied:

$$RC(1 - D) \leq TRC$$

where:

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

TRC is the target revenue change required in the Relevant Year to achieve compliance with paragraph HH4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph HH4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366

HH4.3 The Percentage Change for the purposes of each of the AI Basket, AI Accommodation Basket and AI Ancillary Basket specified in paragraphs HH4.1(a), HH4.1(b) and HH4.1 (c) respectively shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and/or services in the specified category (i.e. the basket in question) at a particular time *t* during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket in question);

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service *i* and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

p_{0,i} save for the First Relevant Year of the control, *p_{0,i}* is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control *p_{0,i}* for a specific product or service *i* shall be the “Starting Charge Adjustment Value” as specified in Annex D to this Condition. If a “Starting Charge Adjustment Value” for specific product or service *i* is not listed in Annex D to this Condition then *p_{0,i}* is the published charge made by the Dominant Provider for the specific product or service *i* at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

HH4.4 Subject to paragraphs HH4.5 and HH4.6, the Controlling Percentage in relation to any Relevant Year means:

- (a) for the AI Basket specified in paragraph HH4.1(a), RPI reduced by 7.00 percentage points;
- (b) for the AI Accommodation Basket specified in paragraph HH4.1(b),
 - i. for the First Relevant Year, 3.00 percentage points, and
 - ii. for the Second Relevant Year, RPI increased by 4.50 percentage points;
- (c) for the AI Ancillary Basket specified in paragraph HH4.1(c), RPI reduced by 0 percentage points.

HH4.5 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs HH4.1(a), HH4.1(b) and HH4.1(c) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraphs HH4.5, but increased by the amount of such deficiency.

HH4.6 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs HH4.1(a), HH4.1(b) and HH4.1(c) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph HH4.5, but decreased by the amount of such excess.

Controls of sub-baskets

HH4.7 In the case of the BES Sub-basket, and subject to paragraph HH4.8, the Dominant Provider shall also, and in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in the aggregate of charges for all of the products and services for the BES Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph HH4.7, the Percentage Change shall be calculated by employing the formula set out in paragraph HH4.3, which shall be read accordingly.

HH4.8 In the case of the AI Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the AI Sub-basket is not more than RPI increased by 5 percentage points. For the purpose of this paragraph HH4.8, the Percentage Change shall be calculated by employing the formula set out in paragraph HH4.11.

HH4.9 In the case of the AI Accommodation Basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the AI Accommodation basket is

(a) not more than the Controlling Percentage increased by 10 percentage points; and

(b) not less than the Controlling Percentage reduced by 10 percentage points;

For the purpose of this paragraph HH4.8, the Percentage Change shall be calculated by employing the formula set out in paragraph HH4.11.

HH4.10 In the case of the AI Accommodation Administration Fee, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the AI Accommodation Fee is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph HH4.9, the Percentage Change shall be calculated by employing the formula set out in paragraph HH4.11.

HH4.11 The Percentage Change for the purposes each of the AI Sub-basket and the AI Accommodation Fee shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the products and services in the sub-basket in question at a particular time t during the Relevant Year;

p_0 save for the First Relevant Year of the control, p_0 is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control p_0 for a specific product or service shall be the “Starting Charge Adjustment Value” as specified in Annex D to this Condition. If a “Starting Charge Adjustment Value” for specific product or service is not listed in Annex D to this Condition then p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

General provisions and interpretation

HH4.12 Where the Dominant Provider makes a material change (other than to a charge, except for charges mentioned in this paragraph HH4.12 below) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs HH4.1 to HH4.11 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product

or service. A material change for the purposes of this paragraph shall also be taken to include any change to the charges for the LLU Co-mingling Products in the period between 1st October 2009 and 30 September 2012.

HH4.13 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

- (a) pursuant to Condition HH4.1, the calculated percentage change relating to each category of products and services listed in conditions HH4.1(a) through to (c);
- (b) pursuant to Condition HH4.2, calculation of the revenue accrued as a result of all relevant individual charge charges during any Relevant Year compared to the target revenue change;
- (c) all relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions HH4.3, including for each specific product or service i :
 - (i) all relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service;
 - (ii) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;
- (d) the relevant published charge at the start of the Relevant Year;
- (e) all relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions HH4.4, including for each specific product or service i :
 - (i) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;
 - (ii) the relevant published charge at the start of the Relevant Year; and
- (f) other data necessary for monitoring compliance with the charge control.

HH4.14 Paragraphs HH4.1 to HH4.13 shall not apply to such extent as Ofcom may direct.

HH4.15 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

HH4.16 In this Condition:

- (a) “**AI Basket**” means the products and services listed in Annex A to this Condition;

- (b) “**BES Sub-Basket**” means the products and services listed in Parts 1b and 2b of Annex A to this Condition;
- (c) “**AI Accommodation Basket**” means the products and services listed in Part 1 of Annex B to this Condition;
- (d) “**AI Accommodation Administration fee**” means the products and services listed in Part 2 of Annex B to this Condition;
- (e) “**AI Ancillary Basket**” means the products and services listed in Annex C to this condition.
- (f) “**Controlling Percentage**” is to be determined in accordance with Condition HH4.4;
- (g) “**First Relevant Year**” means a period of 12 months beginning on 1st October 2009 and ending on 30 September 2010. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the First Relevant Year unless the context otherwise requires;
- (h) “**LLU co-mingling products**” mean those products as listed in Part 3 of the Annex to Condition FA3(A) contained in Schedule 1 of Annex 3 of the OFFR Statement;
- (i) “**Relevant Financial Year**” means the period of 12 months ending on 31 March immediately preceding the Relevant Year;
- (j) “**Relevant Year**” means any of the three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012;
- (k) “**Retail Prices Index**” means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items; and
- (l) “**RPI**” means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30 June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period.
- (m) “**Second Relevant Year**” means a period of 12 months beginning on 1st October 2010 and ending on 30 September 2011. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the Second Relevant Year unless the context otherwise requires;
- (n) “**OFFR Statement**” means the document “A new pricing framework for Openreach” published by Ofcom on 22 May 2009⁴¹; and
- (o) “**Starting Charge Adjustment Value**” means the relevant value for specific product or service *i* as specified in Annex D to this Condition.

⁴¹ <http://www.ofcom.org.uk/consult/condocs/openreachframework/statement/statement.pdf>

Annex A to Condition HH4**Products and services subject to charge control pursuant to Condition HH4.1(a)**

For the purposes of Condition HH4.1(a), the expression “**AI Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1a: Connection services in respect of the provision of Wholesale Extension Services (“WES”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- WES/WEES 10 Mbit/s
- WES/WEES 10 Mbit/s (Local Reach)
- WES/WEES 10 Mbit/s (Managed)
- WES/WEES 100 Mbit/s
- WES/WEES 155 Mbit/s
- WES/WEES 622 Mbit/s
- WES/WEES 1000 Mbit/s (LAN/SAN)
- WES/WEES 1000 Mbit/s (Extended Reach)
- WESLA 10 Mbit/s (Managed)
- WESLA 100 Mbit/s (Managed)
- WESLA 1000 Mbit/s (Managed)
- WES/WEES main link charge

Part 1b: Connection services in respect of the provision of Backhaul Extension Services (“BES”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BES/BES Daisy Chain 10 Mbit/s
- BES/BES Daisy Chain 100 Mbit/s
- BES/BES Daisy Chain 155 Mbit/s
- BES/BES Daisy Chain 622 Mbit/s
- BES/BES Daisy Chain 1000 Mbit/s (Extended Reach)
- BES/BES Daisy Chain main link charge

Part 1c: Connection services in respect of the provision of Openreach Network Backhaul Services (“ONBS”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- ONBS 100 Mbit/s
- ONBS 1000 Mbit/s
- ONBS main link charge

Part 1d: Connection services in respect of the provision of Backhaul Network Services (“BNS”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BNS 1000 Mbit/s
- BNS main link charge

Part 1e: Connection services in respect of the provision of Ethernet Backhaul Direct (“EBD”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EBD 1000 Mbit/s

Part 1f: Connection services in respect of the provision of Bulk Transport Link (“BTL”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BTL 1 Gbit/s
- BNS main link charge

Part 1g: Connection services in respect of the provision of Ethernet Access Direct (“EAD”) /Ethernet Access Direct Local Access (“EADLA”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EAD 10 Mbit/s
- EAD 100 Mbit/s
- EAD 1000 Mbit/s
- EAD 1000 Mbit/s Extended Reach
- EADLA 10 Mbit/s
- EADLA 100 Mbit/s
- EADLA 1000 Mbit/s
- EAD main link charge

Part 1h: Connection services in respect of the provision Street Access in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- Street Access remote street furniture site (Per local end)
- Street Access main link charge

Part 2a: Rental and maintenance services in respect of the provision of Wholesale Extension Services (“WES”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- WES/WEES 10 Mbit/s
- WES/WEES 10 Mbit/s (Local Reach)
- WES/WEES 10 Mbit/s (Managed)
- WES/WEES 100 Mbit/s
- WES/WEES 155 Mbit/s
- WES/WEES 622 Mbit/s
- WES/WEES 1000 Mbit/s (LAN/SAN)
- WES/WEES 1000 Mbit/s (Extended Reach)
- WESLA 10 Mbit/s (Managed)
- WESLA 100 Mbit/s (Managed)
- WESLA 1000 Mbit/s (Managed)
- WES/WEES main link charge

Part 2b: Rental and maintenance services in respect of the provision of Backhaul Extension Services (“BES”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BES/BES Daisy Chain 10 Mbit/s
- BES/BES Daisy Chain 100 Mbit/s
- BES/BES Daisy Chain 155 Mbit/s
- BES/BES Daisy Chain 622 Mbit/s
- BES/BES Daisy Chain 1000 Mbit/s (Extended Reach)
- BES/BES Daisy Chain main link charge

Part 2c: Rental and maintenance services in respect of the provision of Openreach Network Backhaul Services (“ONBS”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- ONBS 100 Mbit/s
- ONBS 1000 Mbit/s

- ONBS main link charge

Part 2d: Rental and maintenance services in respect of the provision of Backhaul Network Services (“BNS”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BNS 1000 Mbit/s

Part 2e: Rental and maintenance services in respect of the provision of Ethernet Backhaul Direct (“EBD”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EBD 1000 Mbit/s

Part 2f: Rental and maintenance services in respect of the provision of Bulk Transport Link (“BTL”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- BTL 1 Gbit/s
- BTL main link charge

Part 2g: Rental and maintenance services in respect of the provision of Ethernet Access Direct (“EAD”) /Ethernet Access Direct Local Access (“EADLA”) in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- EAD 10 Mbit/s
- EAD 100 Mbit/s
- EAD 1000 Mbit/s
- EAD 1000 Mbit/s Extended Reach
- EADLA 10 Mbit/s
- EADLA 100 Mbit/s
- EADLA 1000 Mbit/s
- EAD main link charge

Part 2h: Rental and maintenance services in respect of the provision Street Access in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

- Street Access remote street furniture site (Per local end)
- Street Access main link charge

Part 3: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex A shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For product information, please refer to
http://www.openreach.co.uk/orpg/products/ethernet/bes/downloads/bes_product_handbookissue7-7.pdf
http://www.openreach.co.uk/orpg/products/ethernet/bes/downloads/chin_bes_version7-8.pdf
http://www.openreach.co.uk/orpg/products/wes/downloads/wes_product_handbook_issue8.8.pdf
http://www.openreach.co.uk/orpg/products/ethernet/bns/downloads/bns_product_handbook_issue2.pdf
http://www.openreach.co.uk/orpg/products/ethernet/onbs/downloads/onbs_prod_handbook_issue4-1.pdf
http://www.openreach.co.uk/orpg/products/ethernet/ead/downloads/ead_product_handbook_issue1.pdf
http://www.openreach.co.uk/orpg/products/ethernet/ebd/downloads/ethernet_backhaul_direct_product_handbook_issue3.pdf
http://www.openreach.co.uk/orpg/products/ethernet/btl/downloads/bulk_transport_link_product_handbook_issue2.pdf
http://www.openreach.co.uk/orpg/products/ethernet/streetaccess/downloads/street_access_product_handbook_issue1-2.pdf
- For assurance information, including care levels, please refer to
http://www.openreach.co.uk/orpg/products/ethernet/bes/downloads/tandc/bes_wes_consolidated_schedule4_310309.pdf
http://www.openreach.co.uk/orpg/products/ethernet/bns/downloads/bns_schedule_4_issue_1_dated_270706.pdf
http://www.openreach.co.uk/orpg/products/ethernet/onbs/downloads/tandc/ones_schedule4_issue1_2_260607.pdf
http://www.openreach.co.uk/orpg/products/ethernet/streetaccess/downloads/tandc/street_access_schedule4_sla_issue1-1_180108.pdf
- For information held in the price list, please refer to
<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=kxWGSeZ9BRMKF3tctK4117%2FuVhXjMR5hQz3DdrCHJqBvWsgMC%2F4dy9qJJFTkna2>
<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=kM1u9yq1NPJ1yTuBFDTfUb%2FuVhXjMR5hQz3DdrCHJqBvWsgMC%2F4dy9qJJFTkna2>
<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=LXUpEZ%2FwiQ3yBdStL31boL%2FuVhXjMR5hQz3DdrCHJqBvWsgMC%2F4dy9qJJFTkna2>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=hSWx9y3X%2FMWMtAsSqRfHvyUycYeyp0LS%2FM7XrdsmaHfgP3UPszSry78iVKC0gUAr>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=IYtHitbTbj8UqO%2FKEckHpCUycYeyp0LS%2FM7XrdsmaHfgP3UPszSry78iVKC0gUAr>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=Ala3xbmmAzoo9G4wkCnqDSUycYeyp0LS%2FM7XrdsmaHfgP3UPszSry78iVKC0gUAr>

<http://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=INHQdTapsYeb%2FK8LXYJpuL%2FuVhXjMR5hQz3DdrCHJqBvRWsgMC%2F4dy9qJJFTkna2>

Annex B to Condition HH4**Accommodation services subject to charge control pursuant to Condition HH4.1(b)**

For the purposes of Condition HH4.1(b), the expression “**AI Accommodation Basket**” shall be construed as including only the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or to substitute one or more of these twelve products and/or services for another (in which case this list shall be construed accordingly).

Part 1: All charges in respect of the provision of Accommodation Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

(a) Access Locate

- Access Locate Accommodation
- Access Locate Power

Item

- Hand-over Distribution Frame option per 100 pair Frame capacity
- Distant location full survey
- Missed joint survey or testing appointment
- Co-location order rejection – no space available
- Co-location order discontinued – indicative quote for Co-location facilities above £60,000
- Co-location full survey
- Site visit charge to be allocated to all orders not in conjunction with the installation of a base product.
- Co-Mingling order rejection – no space or insufficient space available
- Forecast administration charge
- Co-Mingling set up fee (per sq metre)
- Comingling Shared Point of Presence Administration Fee
- Ancillary Service Structure Fixed price to service 1-3 Rack Space Units
- Ancillary Service Structure Fixed price to service 4-6 Rack Space Units
- Ancillary Service Structure Fixed price to service 7-9 Rack Space Units
- Ancillary Service Structure upgrade from 1-3 Rack Space Units to 4-6 Rack Space Units
- Ancillary Service Structure downgrade from 4-6 Rack Space Units to 1-3 Rack Space Units
- Low Capacity Unit (LCU)
- Medium Capacity Unit 1 (MCU with 1 customer rack space unit)
- Medium Capacity Unit 2 (MCU with 2 customer rack space units)
- B-BUSS3 (Broadband Britain Umbilical Services Structure with 3 customer rack space units)

- B-BUSS7 (Broadband Britain Umbilical Services Structure with 7 customer rack space units)
- AC final distribution
- Cooling per kw
- Initial UBASE rack including 5400 pair capacity Handover Distribution Frame or Cable Management Frame
- Initial or Additional UBASE standard rack (no Handover Distribution Frame or Cable Management Frame included)
- Provision of first Rack Space Unit (RSU) provided at time of initial order or when ordered at a subsequent date
- Provision of each additional RSU
- Upgrade of existing MCU1 product to MCU2
- Upgrade of existing BBUSS3 Point Of Presence to BBUSS7 (power and space)
- Upgrade of existing BBUSS 3 Point Of Presence to B-BUSS 7 (space only)
- Downgrade of existing BBUSS 7 Point Of Presence to B-BUSS 3 (space only)
- MCU Max Initial build
- MCU Max upgrade to existing MCU1 / MCU2
- MCU Max Upgrade from MCU1 / MCU2 Out of Hours Connection Fee
- MCU Max Aux upgrade to existing MCU1 / MCU2
- MCU Max Aux Upgrade from MCU1 / MCU2 Out of Hours Connection Fee
- Basic Single Rack
- Complete Single Rack
- Security rental per sq. metre
- Service Charge per square metre per annum
- BT's Normal Working Hours, planned (Note 17 & 18)
- BT's Normal Working Hours, unplanned (Note 17 & 18)
- BASIS (BT Assisted Site Delivery Service) fixed charge
- Site Access
- Handover
- Security partitioning annual rental per site charge
- Rental per kW per annum (charges will appear in billed units of decawatts (100W))
- Survey for capacity upgrade
- Rental of existing capacity per kW per annum (charges will appear in billed units of decawatts (100W))
- Provision of sub meter
- Rental per kW per annum

Part 2: Connection, rental and maintenance services in respect of the provision of Accommodation Services in each of the following product or service descriptions and bandwidths in all parts of the United Kingdom excluding the Hull Area:

(a) Access Locate

- Contract conversion From RANF to Access Locate. Administration charge

Part 3: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex B shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For product information, please refer to http://www.openreach.co.uk/orpg/products/llu/accesslocate/downloads/Access_Locate_and_Access_Locate_Plus_Product_Description_Issue_3.0_%20120609.pdf
- For assurance information, including care levels, please refer to <http://www.openreach.co.uk/orpg/products/llu/accesslocate/downloads/Access%20Locate%20Schedule%203%20SLA%20Issue%201%2031jul08.pdf>
- For information held in the price list, please refer to <http://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=00GjpLz%2F0UvnmG1%2FP0iljyUycYeyp0LS%2FM7XrdsmaHfgP3UPszSry78iVKC0gUAR>

Annex C to Condition HH4

Ancillary charges subject to charge control pursuant to Condition HH4.1(c)

For the purposes of Condition HH4.1(c), the expression “**AI Ancillary Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these twelve products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Services used in the provision of Wholesale Extension Services (“WES”):

(a) Circuit Migration Charges:

- WES/WEES - Circuit Migration Charges (Successful Circuit Migration to WES)
- WES/WEES - Circuit Migration Charges (Failed Circuit Migration to WES)
- WES/WEES - Circuit Migration Charges (Successful Circuit Migration to WES/WEES)
- WES/WEES - Circuit Migration Charges (Failed Circuit Migration to WES/WEES)

(b) Additional CP Equipment Connection & Rental Charges (Ancillary optical cabling, associated optical patch panels and kevlar armoured cable)

(c) Cancellation Charges

(d) Ethernet Transfer of Service

(e) WES/WEES Circuit Shift Changes

- Shift - Internal. Internal Shift of a WES/WEES local end within the existing building.
- Shift - External Resite. Resiting of a WES/WEES local end in another building served by the same local serving exchange
- Shift – External Rearrange. Rearranging a WES/WEES local end in another building served by a different local serving exchange

(f) Time Related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(g) Excess Construction Charges

Part 2: Services used in the provision of Backhaul Extension Services (“BES”):

(a) Circuit Upgrade Charges:

- BES Circuit Upgrades (from BES 10 to BES 100)
- BES Circuit Upgrades (from BES 10 to BES 155)
- BES Circuit Upgrades (from BES 10 to BES 622)

- BES Circuit Upgrades (from BES 10 to BES 1000)
- BES Circuit Upgrades (from BES 100 to BES 155)
- BES Circuit Upgrades (from BES 100 to BES 622)
- BES Circuit Upgrades (from BES 100 to BES 1000)
- BES Circuit Upgrades (from BES 155 to BES 622)
- BES Circuit Upgrades (from BES 155 to BES 1000)
- BES Circuit Upgrades (from BES 622 to BES 1000)

(b) Circuit Migration Charges:

- Circuit Migration Charges – Successful Circuit Migration to BES
- Circuit Migration Charges – Failed Circuit Migration to BES
- Circuit Migration Charges – Successful Circuit Migration to BES
- Circuit Migration Charges – Failed Circuit Migration to BES

(c) BES Circuit Shift Charges

- Shift - Internal. Internal Shift of a BES local end within the existing building.
- Shift - External Resite. Resiting of a BES local end in another building served by the same local serving exchange
- Shift – External Rearrange. Rearranging a BES local end in another building served by a different local serving exchange

(d) Time Related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(e) Excess Construction Charges

(f) Cancellation Charges

Part 3: Services used in the provision of Openreach Network Backhaul Services (“ONBS”):

(a) Circuit Upgrades: Only offered as a cease and provide, and the customer will not be held to term against the original service.

(b) Circuit Migration Charges

(c) Resilient Option 1

- Openreach Network Backhaul Services 100M Bandwidths per end
- Openreach Network Backhaul Services Generic Resilience option 1 monitoring fee per path

- Main link per metre or part thereof
- Resilience link per metre or part thereof

(d) Resilient Option 2

- Openreach Network Backhaul Services - All Bandwidths per circuit
- Main link per metre or part thereof
- Resilience link per metre or part thereof

(e) Cancellation Charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

(f) Timescale Charges

Part 4: Services used in the provision of Backhaul Network Services (“BNS”):

(a) Circuit upgrades:

- 1Gb to 2Gb

(b) Additional charges: Interfaces

- M mode
- S mode

(c) Cancellation charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

(d) Excess Construction Charges

(e) Timescale Charges

Part 5: Services used in the provision of Ethernet Backhaul Direct (“EBD”)

(a) Migration charges from BES to EBD:

- BES to EBD migration charge

(b) EBD Resilience Option 2

- 1Gbps
- Generic Facility Fee

(c) Cancellation Charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

(d) Time related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(e) Excess Construction Charges

Part 6: Services used in the provision of Bulk Transport Link (“BTL”):

(a) Time related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(b) Excess Construction Charges

(c) Additional charges: Interfaces

- M Mode: 1000 Base SX (850nm Multi Mode) 50mm presentation. Reach approx 300 Metres. Used on DLE sites
- S Mode: 1000 Base LX (1310nm Single Mode). Reach approx 10km.
- S Mode: Used on customer PoP sites

(d) Cancellation charges

- 2 or less working days before Contractual Delivery Date
- 3 > 19 working days before Contractual Delivery Date
- 20 – 22 working days before Contractual Delivery Date
- 23 – 25 working days before Contractual Delivery Date
- 26 or more working days before Contractual Delivery Date

Part 7: Services used in the provision of Ethernet Access Direct (“EAD”) and Ethernet Access Direct Local Access (“EADLA”):

(a) EAD Resilience Option 1

- EAD 10 Mbit/s
- EAD 100 Mbit/s
- EAD 1000 Mbit/s
- EADLA 10 Mbit/s
- EADLA 100 Mbit/s
- EADLA 1000 Mbit/s

(b) RO2 Resilience Main Link Charge

- Generic Resilience Facility Fee per path
- RO2 Main link per metre or part thereof
- RO2 Resilience main link per metre or part thereof

(c) Time related Charges (applicable to Out of Hours Visits, Abortive Visits, Equipment Testing, etc.)

(d) Excess Construction Charges

(e) Cancellation Charges

- CDD minus 2 days
- CDD minus 10 days to CDD minus 3 days
- KCI3 to CDD minus 11 days

Part 8: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex C shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For product information, please refer to
http://www.openreach.co.uk/orpg/products/ethernet/bes/downloads/bes_product_handbookissue7-7.pdf
http://www.openreach.co.uk/orpg/products/ethernet/bes/downloads/chin_bes_version7-8.pdf

http://www.openreach.co.uk/orpg/products/wes/downloads/wes_product_handbook_issue8.8.pdf

http://www.openreach.co.uk/orpg/products/ethernet/bns/downloads/bns_product_handbook_issue2.pdf

http://www.openreach.co.uk/orpg/products/ethernet/onbs/downloads/onbs_prod_handbook_issue4-1.pdf

http://www.openreach.co.uk/orpg/products/ethernet/ead/downloads/ead_product_handbook_issue1.pdf

http://www.openreach.co.uk/orpg/products/ethernet/ebd/downloads/ethernet_backhaul_direct_product_handbook_issue3.pdf

http://www.openreach.co.uk/orpg/products/ethernet/btl/downloads/bulk_transport_link_product_handbook_issue2.pdf

http://www.openreach.co.uk/orpg/products/ethernet/streetaccess/downloads/street_access_product_handbook_issue1-2.pdf

- For assurance information including care levels, please refer to http://www.openreach.co.uk/orpg/products/ethernet/bes/downloads/tandc/bes_wes_consolidated_schedule4_310309.pdf

http://www.openreach.co.uk/orpg/products/ethernet/bns/downloads/bns_schedule_4_issue_1_dated_270706.pdf

http://www.openreach.co.uk/orpg/products/ethernet/onbs/downloads/tandc/ones_schedule4_issue1_2_260607.pdf

http://www.openreach.co.uk/orpg/products/ethernet/streetaccess/downloads/tandc/street_access_schedule4_sla_issue1-1_180108.pdf

- For information held in the price list, please refer to <https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=kxWGSeZ9BRMKF3tctK4117%2FuVhXjMR5hQz3DdrCHJqBvRWsgMC%2F4dy9qJJFTkna2>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=kM1u9yq1NPJ1yTuBFDtFUb%2FuVhXjMR5hQz3DdrCHJqBvRWsgMC%2F4dy9qJJFTkna2>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=LXUpEZ%2FwiQ3yBdStL31boL%2FuVhXjMR5hQz3DdrCHJqBvRWsgMC%2F4dy9qJJFTkna2>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=hSWx9y3X%2FMWMTAsSqRfHvyUycYeyp0LS%2FM7XrdsmaHfgP3UPszSry78iVKC0gUAR>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=IYtHitbTbj8UqO%2FKEckHpCUycYeyp0LS%2FM7XrdsmaHfgP3UPszSry78iVKC0gUAR>

<https://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=Ala3xbmmAZoo9G4wkCnqDSUycYeyp0LS%2FM7XrdsmaHfgP3UPszSry78iVKC0gUAR>

<http://www.openreach.co.uk/orpg/pricing/loadProductPriceDetails.do?data=INHQdTapsYeb%2FK8LXYJpuL%2FuVhXjMR5hQz3DdrCHJqBvRWsgMC%2F4dy9qJJFTkna2>

Annex D to Condition HH4**Starting Charge Adjustment Values pursuant to Conditions HH4.1(A), HH4.3 and HH4.11****Part 1**

Services	Rental price per end (£)
BES 1 Gbit/s	4,137

Schedule 5

(Trunk)

SMP services condition H4

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 SMP Condition H4 (Charge control) shall be set by inserting it after Condition H3 in Part 2 of Schedule 5 to the BCMR Notification—

Condition H4 – Charge control

Controls of main baskets

H4.1 Without prejudice to the Generality of Condition H3, and subject to paragraph H4.2, the Dominant Provider shall take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change (as determined in accordance with paragraphs H4.3 or H4.4 as appropriate) in:

- (a) the aggregate of charges for all of the products and services of the TI Basket;
- (b) the aggregate of charges for all of the products and services of the TI Equipment and Infrastructure Basket;
- (c) the aggregate of charges for all of the products and services of the TI Ancillary Basket;

is, for each of those three baskets, not more than the Controlling Percentage (as determined in accordance with paragraph H4.6).

H4.2 For the purpose of complying with paragraph H4.1, the Dominant Provider shall take all reasonable steps to secure that the revenue it accrues as a result of all relevant individual charge changes during any Relevant Year shall be no more than that which it would have accrued had all of those changes been made at 1st October in the Relevant Year. For the avoidance of doubt, this obligation shall be deemed to be satisfied where, in the case of a single change in charges during the Relevant Year, the following formula is satisfied:

$$RC(1 - D) \leq TRC$$

where:

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

TRC is the target revenue change required in the Relevant Year to achieve compliance with paragraph H4.1, calculated by the Percentage Change required in the Relevant Year to achieve compliance with paragraph H4.1 multiplied by the revenue accrued during the Relevant Financial Year; and

D is the elapsed proportion of the Relevant Year, calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 364, divided by 365. In the case of a leap year it is calculated as the date on which the change in charges takes effect, expressed as a numeric entity on a scale ranging from 1st October = 0 to 30th September = 365, divided by 366.

H4.3 The Percentage Change for the purposes of each of the TI Basket and the TI Ancillary Basket specified in paragraphs H4.1(a) and H4.1(c) respectively shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and/or services in the specified category (i.e. the basket in question) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket in question);

R_i is the sum of the revenue accrued during the Relevant Financial Year in respect of the specific product or service i and the revenue accrued during the Relevant Financial Year in respect of equivalent products or services provided by the Dominant Provider to itself, calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

H4.4 The Percentage Change for the purpose of the TI Equipment and Infrastructure Basket specified in paragraph H4.1(b) shall be calculated by employing the following formula:

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

where:

C_t is the Percentage Change in the aggregate of charges for the products and services in the specified category (i.e. the basket) at a particular time t during the Relevant Year;

n is the number of products and services in the specified category (i.e. the basket);

R_i is the revenue accrued during the Relevant Financial Year in respect of the specific product or service i , calculated to exclude any discounts offered by the Dominant Provider;

$p_{0,i}$ save for the First Relevant Year of the control, $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control $p_{0,i}$ for a specific product or service i shall be the "Starting Charge Adjustment Value" as specified in Annex D to this Condition. If a "Starting Charge Adjustment Value" for specific product or service i is not listed in Annex D to this Condition then $p_{0,i}$ is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

$p_{t,i}$ is the published charge made by the Dominant Provider for the specific product or service i at time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

H4.5 Subject to paragraphs H4.6 and H4.7, the Controlling Percentage in relation to any Relevant Year means:

(a) for the TI Basket specified in paragraph H4.1(a), RPI reduced by 3.25 percentage points;

(b) for the TI Equipment and Infrastructure Basket specified in paragraph H4.1(b), RPI reduced by 0 percentage points;

(c) for the TI Ancillary Basket specified in paragraph H4.1(c), RPI reduced by 0 percentage points.

H4.6 Where the Percentage Change in any Relevant Year is less than the Controlling Percentage, then for the purposes of each of the three baskets identified in paragraphs H4.1(a), H4.1(b) and H4.1(c) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraphs H4.5, but increased by the amount of such deficiency.

H4.7 Where the Percentage Change in any Relevant Year is more than the Controlling Percentage, then for the purposes of each of the three baskets identified

in paragraphs H4.1(a), H4.1(b) and H4.1(c) the Controlling Percentage for the following Relevant Year shall be determined in accordance with paragraph H4.5, but decreased by the amount of such excess.

Controls of sub-baskets

H4.8 In the case of the TI Terminating Sub-basket, and subject to paragraph H4.9, the Dominant Provider shall also, and in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in the aggregate of charges all of the products and/or services of the TI Terminating Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph H4.8, the Percentage Change shall be calculated by employing the formula set out in paragraph H4.3, which shall be read accordingly.

H4.9 In the case of the TI Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Sub-basket is not more than RPI increased by 5 percentage points. For the purpose of this paragraph H4.9, the Percentage Change shall be calculated by employing the formula set out in paragraph H4.12.

H4.10 In the case of the TI PoH Sub-basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI PoH Sub-basket is not more than RPI reduced by 0 percentage points. For the purpose of this paragraph H4.10, the Percentage Change shall be calculated by employing the formula set out in paragraph H4.12.

H4.11 In the case of the TI Equipment and Infrastructure Basket, the Dominant Provider shall also and, in any event, take all reasonable steps to secure that, at the end of each Relevant Year, the Percentage Change in each of the charges for each and every product and/or service falling within the TI Equipment and Infrastructure Sub-basket is not more than 5 percentage points in nominal terms. For the purpose of this paragraph H4.11, the Percentage Change shall be calculated by employing the formula set out in paragraph H4.12, which shall be read accordingly.

H4.12 The Percentage Change for the purposes each of the TI Sub-basket, the TI PoH Sub-basket and the TI Equipment and Infrastructure Basket shall be calculated by employing the following formula:

$$C_t = \frac{(p_t - p_0)}{p_0}$$

where:

C_t is the Percentage Change in charges for the products and services in the sub-basket in question at a particular time t during the Relevant Year;

p_0 save for the First Relevant Year of the control, p_0 is the published charge made by the Dominant Provider for the specific product or service i at the beginning of the Relevant Year excluding any discounts offered by the Dominant Provider.

In the First Relevant Year of the charge control p_0 for a specific product or service shall be the "Starting Charge Adjustment Value" as specified in Annex D to this

Condition. If a “Starting Charge Adjustment Value” for specific product or service is not listed in Annex D to this Condition then p_0 is the published charge made by the Dominant Provider for the specific product or service at the beginning of the First Relevant Year excluding any discounts offered by the Dominant Provider; and

p_t is the published charge made by the Dominant Provider for the specific product or service at the time t during the Relevant Year excluding any discounts offered by the Dominant Provider.

General provisions and interpretation

H4.13 Where the Dominant Provider makes a material change (other than to a charge) to any product or service which is subject to this Condition or to the date on which its financial year ends or there is a material change in the basis of the Retail Prices Index, paragraphs H4.1 to H4.12 shall have effect subject to such reasonable adjustment to take account of the change as Ofcom may direct to be appropriate in the circumstances. For the purposes of this paragraph, a material change to any product or service which is subject to this Condition includes the introduction of a new product or service wholly or substantially in substitution for that existing product or service.

H4.14 The Dominant Provider shall record, maintain and supply to Ofcom in an electronic format, no later than three months after the end of each Relevant Year, the data necessary for Ofcom to monitor compliance of the Dominant Provider with the price control by performing the calculation of the Percentage Change. The data shall include:

- (a) pursuant to Condition H4.1, the calculated percentage change relating to each category of products and services listed in conditions H4.1(a) through to (g);
- (b) pursuant to Condition H4.2, calculation of the revenue accrued as a result of all relevant individual charge charges during any Relevant Year compared to the target revenue change;
- (c) all relevant data the Dominant Provider used in the calculation of the percentage change C_t pursuant to Conditions H4.3 and H4.4, including for each specific product or service i :
 - (i) all relevant revenues accrued during the Relevant Financial Year in respect of the specific product or service;
 - (ii) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;
- (d) the relevant published charges at the start of the Relevant Year;
- (e) all relevant data the Dominant Provider used in the calculation the percentage change C_t pursuant to Conditions H4.5, including for each specific product or service i :

- (i) published charges made by the Dominant Provider at time t during the Relevant Year excluding any discounts offered by the Dominant Provider;
- (ii) the relevant published charge at the start of the Relevant Year; and

(f) other data necessary for monitoring compliance with the charge control.

H4.15 Paragraphs H4.1 to H4.14 shall not apply to such extent as Ofcom may direct.

H4.16 The Dominant Provider shall comply with any direction Ofcom may make from time to time under this Condition.

H4.17 In this Condition:

- (a) **“Controlling Percentage”** is to be determined in accordance with Condition H4.5;
- (b) **“First Relevant Year”** means a period of 12 months beginning on 1st October 2009 and ending on 30 September 2010. For the avoidance of doubt, any reference in this Condition to a Relevant Year includes the First Relevant Year unless the context otherwise requires;
- (c) **“Relevant Financial Year”** means the period of 12 months ending on 31 March immediately preceding the Relevant Year;
- (d) **“Relevant Year”** means any of the three periods of 12 months beginning on 1st October starting with 1st October 2009 and ending on 30 September 2012;
- (e) **“Retail Prices Index”** means the index of retail prices compiled by an agency or a public body on behalf of Her Majesty’s Government or a governmental department (which is the Office for National Statistics at the time of publication of this Notification) from time to time in respect of all items;
- (f) **“RPI”** means the amount of the change in the Retail Prices Index in the period of twelve months ending on 30th June immediately before the beginning of a Relevant Year, expressed as a percentage (rounded to two decimal places) of that Retail Prices Index as at the beginning of that first mentioned period;
- (g) **“Starting Charge Adjustment Value”** means the relevant value for specific product or service i as specified in Annex D to this Condition;
- (h) **“TI Ancillary Basket”** means the products and services listed in Annex C to this Condition;
- (i) **“TI Basket”** means the products and services listed in Annex A to this Condition;
- (j) **“TI Equipment and Infrastructure Basket”** means the products and services listed in Annex B to this Condition;

(k) “**TI PoH Sub-basket**” means the products and services listed in Part 2c of Annex A to this Condition;

(l) “**TI Sub-basket**” means the products and services listed in Parts 1a and 1b, Parts 2a and 2b and Part 3 of Annex A to this Condition; and

(m) “**TI Terminating Sub-basket**” means the products and services listed in Parts 1a and 1b and Parts 2a and 2b of Annex A to this Condition.

H4.18 In the Annexes to this Condition:

(a) “Partial Private Circuit” or “PPC” means a circuit provided pursuant to the PPC Contract and in accordance with any directions made by Ofcom pursuant to SMP services conditions H1, H3 or H7 under section 49 of the Act; and

(b) “PPC Contract” means the Dominant Provider's Standard PPC Handover Agreement as at the date of publication of this Notification, i.e. 2nd July 2009.

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Annex A to Condition H4**Products and services subject to charge control pursuant to Conditions H4.1(a)**

For the purposes of Condition H4.1(a), the expression “**TI Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly):

Part 1a: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 1Mbit/s
- 2Mbit/s

Part 1b: Connection services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area and the Hull Area:

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

Part 2a: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Hull Area:

- 64kbit/s
- 128kbit/s
- 192kbit/s
- 256kbit/s
- 320kbit/s
- 384kbit/s
- 448kbit/s
- 512kbit/s
- 576kbit/s
- 640kbit/s
- 704kbit/s
- 768kbit/s

- 832kbit/s
- 896kbit/s
- 960kbit/s
- 1Mbit/s
- 2Mbit/s

Part 2b: Rental and maintenance services in respect of the provision of a Partial Private Circuit terminating segment in each of the following bandwidths in all parts of the United Kingdom excluding the Central and East London Area (for 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.

- 34 Mbit/s – 45 Mbit/s
- 140 Mbit/s – 155 Mbit/s

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 and the Hull Area as specifies 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

Part 3: Rental and maintenance services in respect of the provision of a Partial Private Circuit trunk segment at all bandwidths.

Part 4: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex A shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to [http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial Private Circuits PPC Reference Offer/Service Descriptions.html](http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html)
- For assurance information including care levels, please refer to [http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial Private Circuits PPC Reference Offer/PPC Quality of Service Performance.html](http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html)
- For information held in the price list, please refer to http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.01.rtf
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf

http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.03.rtf

Annex B to Condition H4

Products and services subject to charge control pursuant to Condition H4.1(b)

For the purposes of Condition H4.1(b), the expression “**TI Equipment and Infrastructure Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Point of connection equipment products used in the provision of a Partial Private Circuit:

(a) Customer Sited Handover (CSH) products:

(i) in respect of CSH Configuration SMA-16:

- SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-16 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (2 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (2 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)

- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(ii) in respect of CSH Configuration SMA-4:

- SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-4 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 port)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 port), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection
- STM-1 optical (1300nm) trib interface (2 port)
- STM-1 optical (1300nm) trib card (2 port), required for MSP protection
- STM-1 electrical trib interface (2 port)

- STM-1 electrical trib interface (2 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 electrical trib interface (4 ports)
- STM-1 electrical trib interface (4 port) required for 1+1 card protection, can be used for MSP protection 1+1 Protection
- STM-1 optical (1300nm) trib interface (4 port)
- STM-1 optical (1300nm) trib card (4 port), required for MSP protection

(iii) in respect of CSH Configuration SMA-1:

- SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300+1550nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1300nm) – existing site
- SMA-1 ADM with no trib interfaces (Single Fibre Working + dual fibre working 1500nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1300nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (Single Fibre + dual fibre working 1550nm) – existing site
- STM-1 electrical trib interface (1 ports)
- STM-1 optical (1300nm) trib interface (1 port)
- STM-1 electrical trib card (1 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (1 port), required for MSP protection

(iv) in respect of CSH Configuration MSH51:

- MSH51 ADM with no trib interfaces (single fibre working) - existing site

- MSH51 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- MSH51 ADM with no trib interfaces (dual fibre working 1300+1550nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1300nm) - existing site
- MSH51 ADM with no trib interfaces (Single Fibre working + dual fibre working 1550nm) - existing site
- Additional charge for new site
- Per km from serving exchange to MSH node - single fibre working
- Per km from serving exchange to MSH node - dual fibre working
- STM-1 electrical trib interface (4 ports)
- STM-1 optical (1300nm) trib interface (2 ports)
- STM-1 electrical trib card (4 ports), required for 1+1 card protection
- STM-1 optical (1300nm) trib card (2 ports), required for MSP protection
- STM-4 optical (1300nm) trib interface (1 port)
- STM-4 optical (1300nm) trib card (1 port), required for MSP protection

(b) In Span Handover (ISH) products:

(i) in respect of ISH Configuration SMA-16:

- SMA –16 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(ii) in respect of ISH Configuration SMA-4:

- SMA-4 ADM with single STM-4 handover (1300nm)
- Optional STM-4 1550nm handover

(iii) in respect of ISH Configuration STM-1:

- SMA-4 ADM with single STM-1 handover (1300nm)
- Additional cost for STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iv) in respect of ISH Configuration SMA-1

- SMA-1 ADM with single STM-1 Handover (1300nm)
- SMA-1 ADM with single STM-1 handover (1550nm)

(v) in respect of ISH Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550nm handover

(c) Re-designation and Grandfathering Charges for Customer Sited Handover products:

- CSH Re-Designed SMA-16 ADM
- CSH Re-Designed SMA- 4 ADM
- CSH Re-Designed SMA– 1 ADM
- CSH Re-Designed MSH- 51 ADM
- Grandfathered SMA- 1 –legacy equipment
- Grandfathered 16x2 – legacy equipment
- Grandfathered 4x2 – legacy equipment

(d) In-span Handover Extension products:

(i) in respect of ISH Configuration STM-16:

- SMA – 16 ADM with single STM- 16 handover (1300nm)
- Optional STM- 16 1550nm handover

(ii) in respect of ISH Extension Configuration STM-4:

- SMA-4 ADM with single ATM-4 handover (1300nm)
- Optional STM-4 1550nm handover
- SMA-4 ADM with single STM-1 handover (1300nm)
- Optional STM-1 1550nm handover
- Additional STM-1 handovers (1300nm) – max 3
- Additional STM-1 handovers (1550nm) – max 3

(iii) in respect of ISH Extension Configuration STM-1:

- SMA-1 ADM with single STM-1 handover (1300nm)

(iv) in respect of ISH Extension Configuration MSH51:

- MSH51 ADM with single STM-16 handover (1300nm)
- Optional STM-16 1550 nm handover

(e) PPC Miscellaneous Generic Equipment

- Additional charge for new site
- 2Mbit/s bearer Access – required for access to DPCN
- Plus rental per km from PoH BT serving node to DPCN node

Part 2: Third party equipment products used in the provision of a Partial Private Circuit:

(a) Third party customer link infrastructure:

- KiloStream NTU 64k – 256k on existing copper
- KiloStream NTU 64k – 256k on new copper
- KiloStream NTU 320k – 640k on existing copper
- KiloStream NTU 320k – 640k on new copper
- KiloStream NTU 128k – 640k on 2Mb infrastructure
- KiloStream NTU 704k – 960k all delivery options
- 1Mb/s circuit on existing copper (from 23/10/2001)
- 1Mb/s circuit on new copper (from 23/10/2001)
- 2Mbit/s circuit on HDSL on existing copper
- 2Mbit/s circuit on HDSL on new copper
- First 2Mbit/s circuit on 4x2 at existing site
- First 2Mbit/s circuit on 16x2 at existing site
- Additional Charge for 4x2 and 16x2 new site
- Subsequent 2Mbit/s circuit on existing PPC 4x2 or 16x2
- Additional Charge to provide new fibre infrastructure at a new site
- 34/45 Mbit/s ASDH NTE existing fibre site
- 34/45 Mbit/s ASDH NTE Expansion Unit

(b) in respect of third party customer sited SMA-16 ADM:

- SMA-16 ADM with no trib interfaces (single fibre working) - existing site
- SMA-16 ADM with no trib interfaces (dual fibre working 1300nm) - existing site

- SMA-16 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-16 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34 Mbit/s trib cards (3 ports)
- 45 Mbit/s trib cards (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300 nm) trib card (1 port)

(c) in respect of third party customer sited SMA-4 ADM:

- SMA-4 ADM with no trib interfaces (single fibre working) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-4 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-4 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib cards (32 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

- STM-4 optical (1300 nm) trib card (1 port)

(d) in respect of third party customer sited SMA-1 ADM:

- SMA-1 ADM with no trib interfaces (single fibre working) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) - existing site
- SMA-1 ADM with no trib interfaces (dual fibre working 1550nm) - existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (single fibre working) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1300 nm) – existing site
- Protected Path enabled SMA-1 ADM with no trib interfaces (dual fibre working 1500 nm) – existing site
- 2Mbit/s trib card (32 ports)
- 2Mbit/s trib card (16 ports)
- 34Mbit/s trib card (3 ports)
- 45Mbit/s trib card (3 ports)
- STM-1 electrical trib card (1 port)
- STM-1 optical (1300nm) trib card (1 port)
- 140Mbit/s electrical trib card (1 port)

(e) In respect of 3rd part customer sited MSH-51C ADM

- MSH51 with no trib interfaces (single fibre working)-existing site
- MSH51 with no trib interfaces (dual fibre working 1300nm)-existing site
- MSH51 with no trib interfaces (dual fibre working 1550nm)-existing site
- Per km from serving exchange to MSH node-single fibre working
- Per km from serving exchange to MSH node-dual fibre working
- STM-1 electrical trib card (4 ports)
- STM-1 optical (1300nm) trib card (2 ports)
- 140Mbit/s electrical trib card (1 port)
- STM-4 optical (1300nm) trib card (1 port)

(f) In respect of PPC Radio Access at 3rd part customer end:

- 4x2Mbit/s
- 16x2Mbit/s
- SMA-1 ADM with no trib interfaces (dual fibre working 1300nm) Existing site
- SMA-1 ADM with no trib interfaces (dual fibre 1300+1500nm)
- SMA-1 ADM with no trib interfaces (single fibre working + dual fibre working 1300nm) Existing site

(g) PPC Miscellaneous Generic Equipment:

- Additional charge for new site
- Radio Site Share

Part 3: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex B shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
http://www.btwholesale.com/pages/downloads/service_and_support/contractual_information/docs/ppcoffer/briefings/ppc_product_handbook_issue_3.1_Apr08.doc
- For assurance information including care levels, please refer to
http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to
http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8.02.rtf

Annex C to Condition H4**Products and services subject to charge control pursuant to Condition H4.1(c)**

For the purposes of Condition H4.1(c), the expression “**TI Ancillary Basket**” shall be construed as including the following products and/or services, subject to such changes as Ofcom may direct from time to time following any proposal by the Dominant Provider to introduce a new product and/or service or withdraw or to substitute one or more of these products and/or services for another (in which case this list shall be construed accordingly).

Part 1: Services (and all related charges) used in the provision of a Partial Private Circuit:

(a) Bandwidth Upgrade and Change of Interface Presentation charges:

- Change of speed within 320Kbit/s – 1024Kbit/s bandwidths
- Bandwidth Upgrade and Change of Interface Presentation Charges (2.4Kbit/s – 48Kbit/s)
- Bandwidth Upgrade and Change of Interface Presentation Charges (64Kbit/s up to 155Mbit/s)
- Change of Interface (64Kbit/s up to 155Mbit/s)

(b) Third Party Internal and External Moves:

- Internal Move of a circuit at 3rd Party Customer End (64 kbit/s- 256 kbit/s only)
- Internal Move of a circuit at 3rd Party Customer End (320 kbit/s – 960 kbit/s)
- Internal Move of a circuit at 3rd Party Customer End (1 Mbit/s)
- Internal Move of a circuit at 3rd Party Customer End (2 Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (64kbit/s – 2Mbit/s)
- External Move of a Circuit to another third party premises within the same BT serving (34 – 155Mbit/s)
- External Move of a Circuit to another third party premises in different BT serving exchange area (all bandwidths)

(c) Point of Handover Internal and External moves:

- Internal Move of a Circuit at within a point of handover (Shift Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (SDH to SDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to PDH Charge per Circuit)
- External Move of a Circuit to another point of handover within the same BT serving exchange area (PDH to SDH Charge per Circuit)

- External Move of a Circuit to another point of handover in different BT serving exchange area (All Bandwidths)
- Circuit Move at Point of Handover – 1M/bits, 2M/bits Access Bearer, 2M/bits and greater (Move Charge Per Circuit)
- Circuit Move at Point of Handover – Circuits on 2M/bits Access Bearer (Move Charge Per Circuit)

(d) Visit and Time Related Charges

(e) Excess Construction charges

(f) Cancellation Charges:

- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 10 working days
- Cancellation charges for circuits & associated Third Party Link Infrastructure with a requisite period of 30 working days
- Cancellation charges for all other circuits & associated Third Party Link Infrastructure plus ISH and CSH Infrastructure
- Cancellation charges to be applied for all Third Party Link

(g) ISH/ISH Extension SFW/DFW:

- ISH/ISH Extension SFW/DFW – Equipment Charges
- ISH/ISH Extension SFW/DFW – Installation/Conversion Charges
- ISH/ISH Extension SFW/DFW – Managed Conversion Charge

Part 2: Except in so far as the context otherwise requires, the terms or descriptions of products and/or services used in this Annex C shall be construed as having the same meaning as those provided by the Dominant Provider on its website for definitions and explanations of its products in addition to future product updates.

These are currently found as follows:

- For PPC product information, please refer to http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/Service_Descriptions.html
- For assurance information including care levels, please refer to http://www.btwholesale.com/pages/static/Pricing_and_Contracts/Reference_Offers/Partial_Private_Circuits_PPC_Reference_Offer/PPC_Quality_of_Service_Performance.html
- For information held in the price list, please refer to http://www.btwholesale.com/pages/downloads/service_and_support/pricing_information/carrier_price_list_browsable/B8_06.rtf

Annex D to Condition H4**Starting Charge Adjustment Values pursuant to Conditions H4.3, H4.4 and H4.12****Part 1**

Services	Price per external circuit/ per annum (£)
64 kbit/s	100
2 Mbit/s	170
34/45 Mbit/s	860
140/155 Mbit/s	1,600

Part 2

Services	Initial Price (£)
64 kbit/s link	125.62
64 kbit/s local end (external)	479.34
64 kbit/s enhanced maintenance	80.62
2 Mbit/s local end (external)	663.76
2 Mbit/s trunk	46.83

Services		Initial Price (£)	
Main Link		Enhanced Maintenance	
Bandwidth	Main Link fixed charge per annum	Fixed p.a.	Per km p.a.
2.4k-64k	125.62	80.62	0.02
128k	226.86	82.50	0.04
192k	339.36	84.38	0.04
256k	453.72	86.24	0.06
320k	568.10	88.12	0.08
384k	763.06	93.74	0.12
448k	888.70	95.62	0.12
512k	1,016.18	99.36	0.14
576k	1,143.68	101.24	0.16
640k	1,273.28	103.12	0.18
704k	1,398.66	106.86	0.18
768k	1,524.28	108.72	0.20
832k	1,651.78	112.26	0.22
896k	1,779.26	114.34	0.24
960k	1,904.88	116.26	0.26
1024k	2,030.52	118.12	0.28

Part 3

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

Annex 10

Glossary

Accumulated (HCA) depreciation

Totality of deductions made to the original purchase price of a tangible fixed asset to reflect its cumulative consumption since acquisition

Accumulated (CCA) depreciation

Totality of deductions made to the gross replacement cost of a tangible fixed asset to reflect its cumulative consumption since acquisition

Alternative interface symmetric broadband origination (AISBO)

A form of symmetric broadband origination service providing symmetric capacity between two sites, generally using an Ethernet IEEE 802.3 interface

Bandwidth

The physical characteristic of a telecommunications system that indicates the speed at which information can be transferred. In analogue systems, it is measured in cycles per second (Hertz) and in digital systems in bits per second (Bit/s).

Base-station Controller (BSC)

An element of a Mobile Telephone Network that controls a number of radio base-stations

Bulk Transport Link (BTL)

A wholesale Ethernet product which provides high capacity, resilient solution for the delivery of multiple Openreach services from an Openreach Handover Point (OHP) to a Communications Provider's site not located in a BT Local Exchange.

Backhaul Ethernet Services (BES)

A wholesale Ethernet service which provides high speed, point-to-point data circuits. Each one provides a secure link from a customer's premises, to a Communications Provider's Digital Subscriber Line Access Multiplexer and the Communications Provider's site.

Capital expenditure

Spending on assets that have physical substance and are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes on a continuing basis in an entity's activities

Current Cost Accounting (CCA)

An accounting convention, where assets are valued and depreciated according to their current replacement cost whilst maintaining the operating or financial capital of the business entity.

Customer Sited Handover (CSH)

Interconnection occurs at a communications provider's premises.

Customer Premises Equipment (CPE)

Sometimes referred to as customer apparatus or consumer equipment, being equipment on consumers' premises which is not part of the public telecommunications network and which is directly or indirectly attached to it.

Digital Local Exchange (DLE)

The telephone exchange to which customers are connected, usually via a concentrator

Digital Subscriber Line (DSL)

A technology for bringing high-bandwidth information to homes and small businesses over ordinary copper telephone lines

Ethernet Access Direct (EAD)

A wholesale Ethernet product which offers permanently connected, point-to-point high speed data circuits that provide a secure and un-contended access service for Communications Providers. EAD is a next generation network compatible service designed to complement Openreach's Ethernet Backhaul Direct (EBD) and Bulk Transport Link (BTL) products already offered within the Connectivity Services portfolio.

Ethernet Backhaul Direct (EBD)

A wholesale Ethernet product which offers permanently connected, point-to-point high speed data circuits that provide a secure and un-contended backhaul service for Communications Providers.

Electronic Communications Network (ECN)

A network that enables intercommunication between users of that network

Excess Construction Charge (ECC)

A charge levied where additional construction of duct and fibre or copper is required to provide service to a customer premise

Fibre Multi Service Access Node

A device typically installed in a telephone exchange (although sometimes in a roadside cabinet) which connects customers' telephone lines to the core network, to provide telephony, ISDN and broadband all from a single platform

Financial capability maintenance (FCM)

The maintenance of an entity's financial capability (i.e. the amount of the shareholders' equity interest) when determining the profitability of an entity

Fully allocated cost (FAC)

An accounting approach under which all the costs of the company are distributed between its various products and services. The fully allocated cost of a product or service may therefore include some common costs that are not directly attributable to the service

Gross replacement cost (GRC)

The cost of replacing an existing tangible fixed asset with an identical or substantially similar new asset having a similar production or service capacity

HCA (historical cost accounting) depreciation

The measure of the cost in terms of its original purchase price of the economic benefits of tangible fixed assets that have been consumed during a period. Consumption includes the wearing out, using up or other reduction in the useful economic life of a tangible fixed asset whether arising from use, effluxion of time or obsolescence through either changes in technology or demand for the goods and services produced by the asset.

In Span Handover (ISH)

Interconnection occurring at a point between BT's premises and a communications provider's premises

kbit/s

kilobits per second. A measure of speed of transfer of digital information

LAN Extension Service (LES)

A communications service that enables the connection of two Local Area Networks together

Leased line

A permanently connected communications link between two premises dedicated to the customers' exclusive use.

Local Loop Unbundling (LLU) backhaul circuit

A circuit provided by BT that enables the connection of a communications provider's DSLAM to a communications provider's point of connection with BT's SDH network.

Long Run Incremental Cost (LRIC)

The cost caused by the provision of a defined increment of output given that costs can, if necessary, be varied and that some level of output is already produced.

Mbit/s

Megabits per second. A measure of speed of transfer of digital information.

Net current assets (NCA)

Total current assets less current liabilities

Net replacement cost (NRC)

Gross replacement cost less accumulated depreciation based on gross replacement cost.

An alternative is *Depreciated replacement cost (of tangible fixed assets other than property:-*

The cost of replacing an existing tangible fixed asset with an identical or substantially similar new asset having a similar production or service capacity, from which appropriate deductions are made to reflect the value attributable to the remaining portion of the total useful economic life of the asset and the residual value at the end of the asset's useful economic life

Next Generation Network (NGN)

A Network utilising new technology such as Ethernet and IP to provide an array of services to end-users

OCM depreciation

This is the sum of CCA depreciation and HCA depreciation

Operating capability maintenance (OCM depreciation)

The maintenance of an entity's operational capability (i.e. the capacity to produce goods and services) when determining the profitability of an entity

Operating expenditure

Costs reflected in the profit and loss account excluding depreciation financing costs such as interest charges

Partial Private Circuit (PPC)

A generic term used to describe a category of private circuits that terminate at a point of connection between two communications providers' networks. It is therefore the provision of transparent transmission capacity between a customer's premises and a point of connection between the two communications providers' networks. It may also be termed a part leased line

Plesiochronous Digital Hierarchy (PDH)

An older method of digital transmission used before SDH which requires each stream to be multiplexed or demultiplexed at each network layer and does not allow for the addition or removal of individual streams from larger assemblies

Points of Connection (POC)

A point where one communications provider interconnects with another communications provider for the purposes of connecting their networks to 3rd party customers in order to provide services to those end customers

Radio Base Station (RBS) backhaul circuit

A circuit provided by BT that connects a mobile communications provider's base-station to the mobile communications provider's mobile switching centre

Stand Alone Cost (SAC)

An accounting approach under which the total cost incurred in providing a product is allocated to that product

Supplementary depreciation

The additional depreciation charge to convert an HCA depreciation charge into a CCA depreciation charge

Synchronous Digital Hierarchy (SDH)

A method of digital transmission where transmission streams are packed in such a way to allow simple multiplexing and de-multiplexing and the addition or removal of individual streams from larger assemblies

Symmetric broadband origination (SBO)

A symmetric broadband origination service provides symmetric capacity from a customer's premises to an appropriate point of aggregation, generally referred to as a node, in the network hierarchy. In this context, a "customer" refers to any public electronic communications network provider or end user

Symmetric Digital Subscriber Line (SDSL)

A technology that allows the use of a copper line to send an equal quantity of data (e.g. a television picture) in both directions

Tier 1

A tier in BT's SDH network that denotes a network of nodes covering areas of high population. These nodes are connected by very high capacity line systems and denote the BT trunk network.

Traditional interface symmetric broadband origination (TISBO)

A form of symmetric broadband origination service providing symmetric capacity from a customer's premises to an appropriate point of aggregation in the network hierarchy, using a CCITT G703 interface

Wave division multiplexing (WDM)

A technology which multiplexes multiple optical carrier signals on a single optical fiber by using different wavelengths (colours) of laser light to carry different signals. This allows for a multiplication in capacity, in addition to enabling bidirectional communications over one strand of fiber.

Wholesale Extension Service (WES)

Leased Lines Charge Control

A wholesale Ethernet product that can be used to link a customer premise to a node in a communications network

Wide Area Network (WAN)

A geographically dispersed telecommunications network