BT's Response to Ofcom's Consultation Document

"Review of the wholesale broadband access markets 2006/07

Identification of relevant markets, assessment of market power and proposed remedies"

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BT welcomes comments on the content of this document, which is available electronically at http://www.btplc.com/responses

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CONTENTS

EXECUTIVE SUMMARY **3**

1 INTRODUCTION **4**

2 MARKET DEFINITION **6**

2.1 QUESTION 2 6
2.2 QUESTION 3 6
2.3 QUESTION 4 6
2.4 QUESTION 5 7
2.5 QUESTION 6 7

3 MARKET POWER ASSESSMENT **10**

3.1 QUESTION 7 10
3.2 QUESTION 8 10
3.3 QUESTION 9 11
3.4 QUESTION 10 11
3.5 QUESTION 11 12

4 REGULATORY REMEDIES **15**

4.1 QUESTION 12 15
4.2 QUESTION 13 AND QUESTION 14 15
4.3 BT'S COMMENTS ON THE CONCEPT OF TRANSITIONAL REMEDIES IN MARKET 3 16

ANNEX 1:

COMMENTS ON ALTERNATIVE BROADBAND TECHNOLOGIES **17**

QUESTION 15 17

ANNEX 2:

ECONOMIC ASSESSMENT OF MARKET BOUNDARIES AND MARKET POWER **19**

APPENDIX 1:

SOME NOTES ON CRITICAL SALES LOSS AND SALES STOCKS AND FLOWS **30**

APPENDIX 2:

THE NATURE OF DOWNSTREAM APPLICATIONS **32**

APPENDIX 3:

THE DISTINCTION BETWEEN SYMMETRIC AND ASYMMETRIC MARKETS **50**

Executive Summary

- Broadband in the UK has changed radically since Ofcom's first wholesale broadband access Market Review concluded almost three years ago in May 2004. BT therefore agrees that the time is right to bring the regulation of wholesale broadband access up-to-date and ensure investment and innovation over the period until the next Review.
- The current regulatory framework for wholesale broadband access does not reflect the significant variations in competitive conditions across the UK. BT therefore strongly supports Ofcom's proposal to define separate geographic markets.
- We believe that Ofcom's methodology, based on BT's local exchange footprint, for assessing geographic variations in competitive conditions, is the most pragmatic approach at the current stage of market development in advance of any widespread development of new access technologies.
- However, BT considers that the separate geographic markets proposed in the consultation document have not kept up to date even with known market-place changes, in particular the most developed market referred to as 'Market 3'. Recent announcements from scale LLU operators including Carphone Warehouse and Sky indicate that by mid-2007 there will be significantly more exchange areas with at least four 'Principal Operators' than Ofcom proposes should be in Market 3.
- In addition, we see the two thresholds set by Ofcom for the inclusion of an exchange area in Market 3 as also having been overtaken by real-world events. We believe vigorous competition is feasible with a number of operators below the four proposed by Ofcom. We also disagree with the proposed threshold of 10,000 end users: once LLU entry has taken place at an exchange, then each entrant has not only determined that unbundling is viable there, but has already made the necessary investments and incurred sunk costs.
- LLU entry by well-resourced competitors is expected to be more widespread than Ofcom forecast even at the time the consultation document was written, and this will increase migration from BT's wholesale broadband access products. We believe that this evidence, together with other factors including market share trends, demonstrates that BT does not have SMP in Market 3 on the forward looking basis required by an approach which will need to provide stability across at least several years.
- Finally, BT looks forward to contributing positively to the ongoing debate on the future of the continuing growth of broadband services, and the role that wholesale broadband regulation would play in that, and we would be happy to discuss with Ofcom and other stakeholders our views as set out in this response.

1 Introduction

Broadband continues to transform the way we live our lives, both at home and at work. The sector has changed radically since Ofcom's first wholesale broadband access Market Review ("the first Review") concluded in May 2004. Then, ADSL was available to 85 per cent of the UK population and there were around 1 million cable and 2 million ADSL broadband users. Now broadband availability stands at over 99.8 per cent. The current broadband user base of over 13 million includes more than 3 million cable customers, almost 9 million served via BT Wholesale services and 1.5 million[1] served via Openreach unbundled local loops. In the first Review, any speed over 128 kilobits per second was classified as broadband. Whilst Ofcom has retained this aspect of the definition for the current Market Review, in practice speeds of 2Mb/s – sixteen times faster – are now considered 'entry level' and speeds of up to 24 Mb/s will be increasingly available from January 2008.

Regulation is a key element of the broadband environment in the UK. At the conclusion of the first Review, Ofcom imposed a number of remedies on BT and Kingston. Later in 2004, Ofcom also conducted a Market Review in the related wholesale local access market. This resulted in the setting of further SMP conditions, including an explicit requirement on BT, replacing an earlier licence condition, to provide local loop unbundling (LLU) services to other Communications Providers.

The first question posed in the current consultation document asks whether "respondents consider that the regulatory remedies put in place in the 2003/04 [wholesale broadband access] Market Review were effective in counterbalancing BT's and Kingston's SMP in the relevant markets". BT's response to the Final Statement on this earlier Review set out our concerns at a number of aspects of the market analysis leading to the adoption of these remedies. We argued inter alia: that sub-national markets should be defined; that the margin squeeze test was over-complex and risked distorting investment decisions; that it may not be appropriate to define a market covering asymmetric services only.

We do not believe it would be productive to revisit these arguments in detail in this response. Rather, we would respond to Ofcom's question by stressing our view that one of the key factors in creating the vibrant broadband sector which the UK enjoys today has been the pragmatic and responsible approach adopted by the industry to ensure that broadband providers of various types – niche and mass-market, consumer and business-oriented, LLU and bitstream-based – have opportunities to invest and compete in the marketplace.

BT has played a key role in developing this approach through the series of product pricing and development initiatives that we have taken since the first Review and the voluntary commitments we have made. These commitments include the groundbreaking offer of Undertakings which we made to Ofcom and which, with general support from the rest of industry, Ofcom accepted in September 2005. We have also recently made commitments on floors and ceilings for future broadband pricing and on continued supply of IPStream and Wholesale Broadband Connect. Taken together, these commitments are designed to protect consumers in areas where the feasibility of competing broadband infrastructures remains doubtful in the medium to long term, and to allow BT to remain competitive in the wholesale

[1] Office of the Telecommunications Adjudicator (OTA) Update for January 2007: http://www.offta.org.uk/otaupdate20070202.htm

broadband market whilst helping to provide a period of stability to allow LLU operators to establish sustainable businesses.

The innovative approaches taken in the UK have delivered considerable benefits to consumers and to industry. In our view, similar approaches may not be wholly applicable elsewhere in Europe, where various factors have driven different mixes of ADSL, cable, LLU and, more recently, fibre-based access. Other European countries have different population densities, different extents of existing local cable infrastructure and different attitudes towards more legalistic regulation, all of which have contributed to different broadband mixes and outcomes. Nonetheless, we believe that a constructive and forward-looking partnership between regulator, incumbent and industry such as that in the UK can contribute to a fair and competitive environment, ensuring that there is more consistency of principle and open access where economic bottlenecks exist.

2 Market definition

BT's detailed views on the market definitions set out in Ofcom's consultation document are set out in Annex 2. These are summarised below, under the headings of the questions on market definition on which Ofcom seeks respondents' views.

2.1 Question 2

Do respondents agree with Ofcom's definition of the retail asymmetric broadband internet access market in the UK?

Ofcom identifies two retail broadband markets that are relevant downstream markets to wholesale broadband access:

- Aymmetric broadband internet access which as a minimum provides an always on capability, allows both voice and data services to be used simultaneously and provides data at speeds greater than a dial up connection. This market includes both business and residential customers in the UK (excluding the Hull area); and
- The same product market in the Hull area.

In BT's view, the analysis in the consultation document does not recognise the impact of bundling on downstream market definition. Bundling is of major relevance to the industry, with consumers increasingly choosing to buy packages of applications including TV and video on demand. We also have some reservations about the separate treatment of symmetric and asymmetric services. These issues are discussed in Annex 2.

2.2 Question 3

Do respondents agree with Ofcom's definition of the wholesale broadband access product market?

Ofcom proposes to define the relevant product market as asymmetric broadband access and any backhaul as necessary to allow interconnection with other Communications Providers which provides an always-on capability, allow both voice and data service to be used simultaneously and provide data at speeds greater than a dial-up connection.

BT considers that a rigorous Market Review would consider business-focused wholesale access services supporting corporate applications such as VPNs separately from those supporting consumer and SME mass market internet access, and that Ofcom should address these services in the forthcoming Leased Lines Market Review.

2.3 Question 4

Do respondents agree that the Hull area should be defined as a separate geographic market on the basis of the presence of common pricing constraints?

Ofcom proposes a separate geographic market for the Hull area based on the presence of a common pricing constraint. BT supports geographic market definition, which, as a requirement of the EU Framework Directive, is an essential feature of the regulatory framework. We believe that the conditions of competition in the Hull area are clearly distinct from those in the rest of the UK. The only provider of retail fixed broadband internet access in the Hull area is Kingston, and neither BT, cable operators nor LLU operators have a presence

there in retail or wholesale broadband access. BT therefore agrees that the Hull area should be defined as a separate geographic market.

2.4 Question 5

Do respondents agree with Ofcom's methodology for assessing geographic variations in the competitive conditions in the wholesale broadband access product market?

Ofcom assesses the geographic scope of the market using the following methodology:

- Identifying the geographic unit that should be used for geographic market assessment. Ofcom concludes that the most appropriate geographic unit for assessing the wholesale broadband access geographic market definition is BT's local exchange footprint; and
- Identifying the factors that should be used to identify similar conditions of competition. Ofcom identifies structural factors that could be used to identify geographic areas of similar competitive conditions in the wholesale broadband access market.

We do not believe that BT's local exchange footprint is the *ideal* basis for geographic market definition. It can lead to anomalies at the boundaries, for example where new estates have been built next to rural areas.

The main possible alternative to BT's local exchange footprint would be to define geographic markets using postcodes. The advantage of this approach is that postcodes are technologically neutral and detached from any BT presence. In addition, most of the general market research data available is referenced or based on postcodes.

However, it is likely that the postcode-based approach would only become appropriate if new access technologies such as Wi-Fi were adopted some time in the future, making BT's local exchange footprint less indicative of the relevant geographic market.

In view of this, we believe that using BT's local exchange footprint is the most pragmatic way to identify geographic markets at this point in time and we therefore agree that Ofcom should follow this methodology in this Review.

2.5 Question 6

Do respondents agree with Ofcom's analytical framework for defining geographic markets in the UK (excluding the Hull area) and the conclusions reached?

Ofcom's proposals for the definition of geographic wholesale broadband access markets in the UK excluding the Hull area are as follows:

- Exchanges where BT is the only operator ("Market 1");
- Exchanges where there are 2 or 3 operators irrespective of exchange size AND exchanges where there are 4 or more operators where the exchange serves less than 10,000 homes and businesses ("Market 2"); and
- Exchanges where there are 4 or more operators where the exchange serves 10,000 or more homes and businesses ("Market 3").

Ofcom's rationale for the definition of Market 1 is that it seems reasonable to argue that competitive conditions across the areas where BT is the only 'Principal Operator' are sufficiently homogenous and different from those in other areas to indicate that they should be defined as a separate market.

The basis for the definition of separate Market 2 and 3 is that in Ofcom's view, the areas outside Market 1 encompass extremes in which competitive conditions are not sufficiently homogenous for them to form a single geographic market.

Ofcom proposes two thresholds for the inclusion of an exchange area in Market 3. The first is that there must be at least four Principal Operators including BT and Virgin Media. This is because Ofcom considers that an area with three Principal Operators would have "an appreciable lower level of competitiveness" than one with four. The second threshold for inclusion in Market 3 is the existence of at least 10,000 end users at the exchange. This is because Ofcom considers that "an exchange size of at least 10,000 end users is a size from which sustainable [LLU] entry is achievable" and that the barriers to entry in such areas are therefore lower.

BT strongly supports the proposal to identify geographic markets and, as discussed above, we agree that geographic market definition based on factors relating to BT's exchange footprint is the most pragmatic approach at the current stage of development of wholesale broadband access in the UK. Nevertheless, we do not believe that the three markets as defined are wholly appropriate, for the reasons set out below:

- Data available to BT suggests that the criteria and thresholds proposed in the consultation document would result in wider Markets 2 and 3 and a narrower Market 1. We believe that Market 3 should contain around 820 exchanges, Market 2 approximately 780 and Market 1 in the order of 4000.
- Indeed, we believe that the geographic definition of Market 3 has been overtaken by events which in themselves justify a wider definition. This is evidenced by public announcements from LLU operators. Notably:
    - Carphone Warehouse stated in its Third Quarter Trading Update published on 12 January "We are well on target for our goal of 1,000 exchanges by May, and have begun to increase our footprint beyond our original plans because of the strength of demand";
    - Sky, in its results for the six months ended 31 December 2006, announced that they had already unbundled at 771 exchanges covering 50% of the UK, and that they expect to achieve 70% coverage of the UK by the end of June.
- We do not believe there is a sound basis for the use of a threshold of four Principal Operators for the inclusion of an exchange area in the most developed market. It is quite possible for a market to be effectively competitive with fewer than four competitors. Indeed, an area with a single strong LLU operator competing against BT and Virgin Media could see competition which was more vigorous than it would be with a more fragmented LLU presence.
- In addition, BT does not agree with the proposed threshold of 10,000 end users for the inclusion of an exchange area in Market 3. If LLU entry has taken place at an exchange, then each entrant has not only determined that unbundling is viable there, but has already made the necessary investments and incurred sunk costs. Further, exclusion of exchanges from Market 3 on the basis of this threshold is likely to lead to anomalous results whereby individual exchange area or small blocks of such areas in Market 2 are completely surrounded by contiguous Market 3 areas.

The announcements from LLU operators highlighted above demonstrate how significantly the wholesale broadband access market has changed even since the consultation document was

written, and how rapidly it is continuing to develop. We believe that whilst regulation should provide certainty and stability, it also needs to keep pace with change in markets. BT suggests that Ofcom should consider how it would balance these objectives if significant change were take place in wholesale broadband access during the period of the Review – for example if there were a material increase in competition in Market 2. We would suggest that in such circumstances a comprehensive Review of the whole product market would not be required. Instead, Ofcom could use its powers to review only the relevant geographic market.

3 Market Power Assessment

BT's detailed views on Ofcom's preliminary market power assessments are set out in Annex 2 to this response. These views are summarised below, under the headings of the relevant Ofcom questions.

3.1 Question 7

Do respondents agree that Ofcom has used relevant criteria for assessing SMP in the markets defined?

Ofcom identifies the most important criteria for assessing Significant Market Power (SMP) as the following:

- Market growth and market shares;
- Future potential market shares;
- Barriers to entry and expansion;
- Economies of scale and scope; and
- Countervailing buyer power.

Ofcom finds that other criteria relevant to assessing market power are less relevant to the markets it identifies. The consultation document gives a brief explanation of why the other criteria are considered less relevant, but it does not explain the choice of the actual criteria that Ofcom has used for assessing SMP.

BT does not disagree that the selected factors are relevant, but we would appreciate an insight into the reasoning behind the choice of criteria. There may be important issues behind the choice, but without discussion in the document, these are not transparent.

In our view, some of the factors dismissed by Ofcom are in fact relevant. An example is price trends and pricing behaviour. We believe Ofcom's reasons for finding this factor not to be relevant are not supported by the evidence. There is a history of downward competitive pressure on BT's prices for its wholesale broadband access products, and this demonstrates that any alleged market power may be eroded by price pressure in these markets. This will be especially relevant as the take-up of LLU increases during the period of the Review.

3.2 Question 8

Do respondents agree with the approach set out by Ofcom for its market power assessment in the Hull area and its conclusion of finding Kingston to have SMP?

Ofcom concludes that Kingston has SMP in the wholesale broadband access market in the Hull area and considers that Kingston is likely to retain SMP for the period of this review.

The main reasons for this conclusion are:

- Kingston has a 100% share of wholesale broadband access products in this market and this is not expected to change in the period of the review;
- No communication providers have taken LLU in the Hull area and, as far as Ofcom is aware, none plan to do so in the foreseeable future;
- There is no cable alternative in the Hull area - Kingston's wholesale broadband access market share is thus expected to remain unchanged for the period of the review;

- There are currently no wholesale customers in the Hull area - Kingston self-provides to its downstream arms only and as such there is no countervailing buyer power in the Hull area.

On the basis of the SMP criteria chosen by Ofcom, BT agrees with the approach to market power assessment and the finding that Kingston has SMP. We would also note that in our view, the assessment of SMP in the Hull area is more straightforward than in the markets in the rest of the UK. This is not only because of the distinct competitive conditions there but also because, unlike Market 1, Market 2 and Market 3, the Hull area has a very clear geographic boundary.

3.3 Question 9

Do respondents agree with the approach set-out by Ofcom for its market power assessment in Market 1 and its conclusion of finding BT to have SMP?

Ofcom's analysis is based on its assessment that Market 1 is composed of 4,074 exchange areas, within which BT (based on a forecast for January 2007) is the only wholesale broadband access operator. These exchange areas cover 24% of all UK delivery points. BT is the only operator and competitive conditions within this set of exchange areas are appreciably different from other exchange areas, where there are competitors to BT. Ofcom concludes that BT has SMP in the provision of wholesale broadband access in Market 1 for the following reasons:

- BT's market share at the wholesale level at July 2006 of 98%;
- The further likelihood of this share to persist in the future given the absence of significant cable or LLU entry in this market;
- Tthe existence of significant entry barriers;
- The existence of significant economies of scale and scope; and
- The lack of countervailing buyer power.

While recognising the growing nature of this market, Ofcom considers that BT will retain SMP throughout the period of this review.

BT acknowledges that the factors identified may be taken to indicate SMP, but we note that future access technologies could change this assessment considerably. While this may not be relevant for the period of the review, BT would advocate a close monitoring of developments so that appropriate action can be taken if the introduction of such technologies accelerates.

Specific comments on the question of market power in Market 1 are set out in Annex 2 at paragraph 10 *et seq*.

3.4 Question 10

Do respondents agree with the approach set-out by Ofcom for its market power assessment in Market 2 and its conclusion of finding BT to have SMP?

Ofcom concludes that BT has SMP in the market for wholesale broadband access in Market 2 for the period of this Market Review. This finding is based on:

BT's market share at the wholesale level of 73% at July 2006, forecast to fall to 60%-70% by January 2008;

- Uncertainty regarding the sustainability and expansion of LLU;
- The existence of significant entry barriers;
- The existence of significant economies of scale and scope; and
- The lack of countervailing buyer power.

While recognising the growing and somewhat uncertain nature of this market, Ofcom considers that BT will retain SMP throughout the period of this Review.

We have already noted in the previous section of this response BT's concerns over the definition of Market 2. In short, we do not agree with the thresholds for inclusion in Market 3 of at least four Principal Operators and at least 10,000 end users. This position naturally feeds through into our view on the assessment of market power in the areas defined by Ofcom as Market 2: we consider that a significant portion of this area should be in Market 3, where we do not believe that BT has SMP. Indeed, given the evidence supporting a wider Market 3 referenced earlier in this response, Ofcom could even consider simplifying its proposals by 'sharing out' the whole of Market 2 to the other geographic markets.

3.5 Question 11

Do respondents agree with the approach set out by Ofcom for its market power assessment in Market 3?

Ofcom identifies the following criteria as relevant to the assessment of SMP in wholesale broadband access markets:

- Market growth and market shares;
- Future potential market shares;
- Barriers to entry and expansion;
- Economies of scale and scope; and
- Countervailing buyer power.

3.5.1 Market growth and market shares, Future potential market shares

Ofcom reports that at July 2006, BT's market share was 56%, ntl's share 34% and LLU operators' combined share 10%. However, Ofcom's market share forecasts show BT's share reducing to 47%-53% by January 2007 and to 36%-48% by January 2008. On a forward looking basis, as required by the EU framework, BT's market share is likely to fall below the 50% threshold likely to indicate market power. In addition, consolidation may mean that BT will face a smaller number of stronger competitors, and this will lead to a further reduction in BT's strength in the market.

One factor behind Ofcom's reluctance to decide now that BT should not have SMP in market 3 is that "no single operator, apart from BT, is predicted to have complete coverage of all local exchanges included within this market[2]…No competitors to BT currently plan to enable all of

[2] Paragraph 5.118

the [784] exchanges in Market 3 by January 2008[3]". This has clearly been overtaken by events: as pointed out earlier in this response:

- Carphone Warehouse stated in its Third Quarter Trading Update published on 12 January "We are well on target for our goal of 1,000 exchanges by May, and have begun to increase our footprint beyond our original plans because of the strength of demand";
- Sky, in its results for the six months ended 31 December 2006, announced that they had already unbundled at 771 exchanges covering 50% of the UK, and that they expect to achieve 70% coverage of the UK by the end of June.

This indicates that at least two LLU operators *will* cover the whole of Market 3 by mid-2007, before the Market Review is likely to conclude. We believe these statistics strongly support a finding of no SMP in Market 3, and that they support the view that competition in Market 3 will increase at a faster pace than earlier predictions anticipated.

There are further factors not acknowledged in the consultation document which we consider are likely to exert pressure on BT's share in this market. Competition to BT comes increasingly from well-resourced companies with strong positions outside broadband. In addition, any operator with existing downstream customers served via BT's wholesale broadband services will migrate its customers from these services to LLU as soon as possible after unbundling at an exchange.

3.5.2 Barriers to entry and expansion

Ofcom acknowledges that LLU operators offering services in this market have already invested in their ability to provide DSL services. Therefore there are no further sunk costs to these operators expanding their services to new customers and they do not face any barriers to expansion in Market 3.

Although Ofcom identifies sunk costs in co-locating at a BT exchange and acquiring the equipment needed to provide DSL services as a barrier to entry, this sunk cost does not prevent Principal Operators using LLU from investing in this sunk cost in these exchanges. Market 3 is defined as having at least two Principal Operators using LLU and BT and Virgin Media, or BT and at least three other principal operators. For this reason, the alleged barrier to entry represented by these sunk costs has not been deemed significantly high to prevent market entry by several Principal Operators using LLU. It appears unlikely, for this reason, that the sunk costs would deter market entry.

In addition, LLU backhaul is available from competing suppliers in many areas which would fall within Market 3 and on an Equivalence of Inputs basis from Openreach across the whole of the UK.

3.5.3 Economies of scale/scope/density

BT agrees that LLU entrants into this market have their own scope advantages through their ability to offer bundles of service in addition to broadband internet access. These will include television and video on demand.

[3] Paragraph 5.120

3.5.4 Countervailing buyer power

BT agrees with Ofcom's assessment that there are some ISPs which could be considered as important outlets for BT in this market and could have opportunities to purchase services from alternative suppliers and so would be able to exercise countervailing buyer power.

In view of these factors, we believe that BT should be found not to have SMP in Market 3.

4 Regulatory Remedies

4.1 Question 12

Do respondents agree with Ofcom's proposed regulatory remedies on Kingston in relation to the market for wholesale broadband access in the Hull area?

We believe that the obligations imposed on Kingston should be at least as robust as remedies imposed on BT in Market 1.

4.2 Question 13 and Question 14

Do respondents agree with Ofcom's proposed regulatory remedies on BT in relation to the market for wholesale broadband access in Market 1 and if so are there any particular implementation or compliance issues that you believe needs to be considered?

And

Question 14: Do respondents agree with Ofcom's proposed regulatory remedies on BT in relation to the market for wholesale broadband access in Market 2 and if so are there any particular implementation or compliance issues that you believe needs to be considered?

Ofcom proposes that in Markets 1 and 2, BT should be subject to the following SMP obligations:

- Requirement to provide Network Access on reasonable request;
- Requirement not to discriminate unduly;
- Requirement to publish a reference offer;
- Requirement to notify terms and conditions, with a 90 day notice period for Market 1 and a 28 day notice period for Market 2;
- Requirement to publish technical information, with a 90 day notice period in both Market 1 and Market 2; and
- Requirement to have accounting separation.

This set of obligations is characterised as 'Option 2'. Without prejudice to our views on market definition and SMP assessment set out in the previous sections of this response, BT agrees that Option 2 represents the most appropriate of the sets of remedies considered by Ofcom.

As regards the other options for remedies which Ofcom outlines, BT considers that Option 1 (no regulation) is unlikely to comply with the requirements of the Framework Directive and the Communications Act. Option 3 would involve price control measures which would, in our view, be undesirable and unworkable in a dynamic industry sector such as broadband where market conditions, including underlying prices, are subject to change. In addition, experience of the regulatory margin tests currently applying to BT shows that such regulation has unintended side effects on product development and innovation.

Another factor which needs to be taken into account in setting remedies is the dynamic nature of the wholesale broadband access markets. This issue was raised earlier, in our response to Question 6. BT is concerned that it may be difficult to ensure that regulation keeps abreast of

market change. We believe there may be significant changes during the period of the review such that SMP determinations and remedies set during 2007 will become inappropriate during the period of the review.

As discussed earlier, in BT's view it would be appropriate for Ofcom to review regularly progress in the geographical markets it defines, particularly for the boundary between Market 2 and Market 3, where circumstances may change more rapidly than for example in Market 1. BT believes that such an approach is consistent with Ofcom's obligations to review markets at appropriate intervals. Alternatively, different ways of ensuring that remedies remain appropriate, potentially involving self-regulation, could be explored.

4.3 BT's Comments on the Concept of Transitional Remedies in Market 3

As regards the issue of transitional obligations that Ofcom believes it may consider imposing on BT in Market 3 following the removal of SMP, BT believes that there is no legal basis for such obligations. Article 16(3) of the Framework Directive requires National Regulatory Authorities to withdraw SMP obligations where a market is found to be effectively competitive. Section 84(4) of the Communications Act states that:

> *"where on, or in consequence of, a further analysis under this section, OFCOM determine that a person to whom any SMP conditions apply is no longer a person with significant market power in that market, they must revoke every SMP services condition applied to that person by reference to the market power determination made on the basis of the earlier analysis.*

This does not appear to allow for the continuation in force of SMP conditions where SMP has been found no longer to be present.

Ofcom cites the final sentence of Article 16(3) of the Framework Directive, rather than any provision of the UK legislation, in support of its position. This text states that "An appropriate period of notice shall be given to parties affected by such a withdrawal [of SMP obligations]".

Whilst the text is ambiguous, the better reading of this provision in line with the objective of the Directives is that it was intended to apply specifically where SMP was removed in the transition to the current regulatory framework and not where SMP is removed following subsequent Market Review.

If any measures were necessary to avoid undue market disruption in Market 3 following a finding of no SMP, BT would be willing to consider time-limited voluntary commitments.

Annex 1

Comments on Alternative Broadband Technologies

Ofcom seeks respondents' views on the following question:

Question 15

Do respondents agree that the alternative broadband technologies referred to in this annex are unlikely to be sufficiently widespread or utilised within the period of this review to constrain prices in the market for wholesale broadband access services?

BT considers that three essential factors relating to alternative broadband technologies have not been fully considered in the consultation document. These are:

- Convergence, which means that access technologies support more than one downstream application;
- The complementary nature of alternative access technologies;
- The effects of regulatory remedies on the climate for investment in alternative access technologies.

These factors arise because the approach Ofcom has taken in the consultation document is essentially a static, steady-state market analysis where dynamic, time dependent parameters are effectively ignored. Each is discussed below.

Convergence

Convergence arises from economies of scope from several common technologies, not just marketing and billing as cited by Ofcom, but especially common access technology supporting many applications.

Ofcom have still found a very narrow set of retail markets and, irrespective of the validity or otherwise of that finding, this means that the dynamic effects of convergence are dismissed and not effectively analysed.

BT notes that in the previous Broadband Market Review, Ofcom gave the fact that broadband *could* support other applications such as IPTV and VoIP in the future as a critical reason for broadband and narrowband being in different markets, even though these applications may not have been in widespread use at the time of that review.

Whether or not convergence-based bundling is a major factor to consumer purchasing choice today, it is certainly a major factor in any operator's investment decision making.

Complementarity

Ofcom refers to complementarity in the discussion on bundling in paragraph 4.138 of the consultation document, stating that "Where there is bundling of different services at the retail level, this would create complementarities at the wholesale level rather than substitution". However, most access technologies are *both* complements and competitors. The very presence of complementarity between access technologies will actively hide the extent to which they are substitutes: when the overall impact is assessed, the plus and the minus will tend to offset each other.

Effects of regulatory remedies on the investment climate

BT believes that the remedies proposed by Ofcom would have a profound influence on the climate for investment in access technologies and bias investors' choice of technology.

We note that separate regulation of different services using the same access technology leads to ambiguous regulation and uncertainty for investment. This is especially the case with baseband voice, asymmetric broadband and symmetric broadband. In our view, this has unintended consequences in the choice of technology and creates a considerable barrier to investment in access technology convergence.

BT also notes that Ofcom considers next generation access not to be relevant in the current broadband market review on the grounds that "..this technology is not currently being offered to broadband end-users in the UK". However, investment decisions on next generation access are being taken now, and they will be affected by the outcome of the review.

In summary, BT believes that regulation of the market today cannot be considered separately from the climate for investment in the next generation of technology. We believe Ofcom must ensure that remedies imposed as a result of the broadband market review do not have unintended consequences of:

- Mandating investment in old technology;
- Placing barriers in the way of convergence; and
- Tipping the balance of investment decision against next generation access, which to be financially viable *must* secure revenue from multiple applications.

Annex 2

Economic Assessment of Market Boundaries and Market Power

I Introduction

1. BT has a number of reservations and concerns regarding how Ofcom has conducted this preliminary market review, notwithstanding the possibility of some deregulation following a more thorough consideration of the geographic nature of markets in the UK.

2. The net effect of these methodological and technical aspects of the market review procedure is to unequivocally exaggerate the extent of market power held by BT and increase the likelihood of a finding of SMP for the provision of bitstream access to mass market consumers.

3. The principal issues of concern are the following:

- The precise sequential ordering of the market assessment, which follows product substitution then customers (residential and business) and finally geography, results in a bias toward overly narrow economic markets whereas if the analysis had been conducted in a different way, it is likely that alternative combinations of these features would have been found leading to a different assessment of SMP.
- The interpretation of the survey evidence as being 'unrealistic' is not substantiated and is asserted without justification.
- This point aside, the critical sales loss computed actually understates the findings of the test, as key additional sources of potential loss of profits have been excluded altogether.
- Distinct geographic markets will imply different competitive price levels (as indicated from the cost analysis). BT believes that Ofcom should have conducted the HMT using these (or others set using other means of research) rather than nationally averaged rates from the survey. Alternatively, the survey would have to be disaggregated to match the supposition of separate geographic markets themselves/
- The importance of bundling of a variety of downstream applications including TV is of major relevance to the industry and this has not been addressed in the SMP assessment.
- There is no distinction between the use of bitstream access as an end-user service and for corporate network build.

4. BT welcomes two particular changes since the last review as follows.

5. Regarding geographic markets, BT's February 2004 submission to Ofcom's (draft) Explanatory Statement and Notification, argued that a single economic market at the downstream level was not contingent on the presence of BT's national retail tariffs, and irrespective as to whether these were a result of commercial free choice or a regulatory constraint (implicit or explicit). By the same token, a single wholesale market is not contingent on the presence of a single retail market (uniform national price). The decision to re-assess geographic boundaries is therefore very welcome.

6. At the network level, BT supports the proposal to drop the ATM-IP margin squeeze, noting that few if any market entrants chose to 'climb the ladder of investment' this way and indeed such a strategy would never have made sense to any entrant sinking significant assets in essentially a redundant technology. ATM and IP were already sufficiently substitutable for the bulk of services used by mass market consumers across the Internet to make this test inappropriate.

II The Downstream (Retail) Markets

II.i Context

7. BT provided Oftel with detailed and extensive analyses of our views of the nature of demand and supply to downstream applications/customers in January and July 2003.[4] In the latter document at Annexes II and III, BT set out reasoning for the following positions:

- Consumer applications across broadband access are numerous and overlap with other distribution channels including many outside the telecoms infrastructure (and in particular that of BT).

  > 'In summary, there is a wide range of consumer applications associated with broadband access and not just for the Internet which is itself a package of applications which overlaps with other consumer services. A full market analysis would also need to look at all the components of a "triple play" offer i.e. PSTN service, Internet access, and broadcast TV, as well as distribution of content using physical media such as CDs and DVDs.' (paragraph 9).

  Corporate applications were distinguished from consumer applications. The former –

  > 'are driven differently from consumer applications .. Many of the corporate applications are not effectively supported on narrowband access .. it is possible for broadband access to create a new geographically-based definition of the relevant market'. (paragraphs 15-16).

  Note too that corporate applications are clearly distinguished from mass market applications in Annex III, Figures III.2-5.

- The distinction between symmetric and asymmetric services placing the former in the leased lines market and the latter in a distinct market, cannot be reconciled with placing contended and uncontended broadband origination in the same economic market (paragraphs 75-84). See also the main BT 2003 response paragraph 151.

8. BT is of the view that in the three years since these submissions were made, BT is of the view that in the main, its positions have generally stood the test of time. Appendix 1 provides further detail on the development of applications across the Internet and corporate networks and an outline of the competitive conditions of their deployment.

9. Three particular issues are highlighted below concerning the way in which the economic markets have been determined. Respectively these concern:

(i) The ordering of the analysis and the applicability of the HMT;

(ii) Issues to do with the survey and the calculation of the Critical Sales Loss (CSL); and

(iii) The use of postcode information and cable coverage.

II.ii The Ordering of the Market Boundary Assessments and the Geographic Market

[4] 'The 2003 regulatory market review of broadband services, BT views on market boundaries and market power', 28th January 2003; 'BT Response to Oftel's Consultation Document "Review of the Wholesale Broadband Access Market"', 7th July 2003.

10. The manner in which Ofcom has conducted the market boundary review has important implications for the consequential SMP assessment. This can be seen most clearly in Market 1 where by definition BT has '100%' market share and, (by implication), market power. However this is not self evidently the case. Ofcom simply *presume* that these exchanges constitute a market and *assume* that SMP is present.

11. The issue on market definition is whether for these exchanges, it is possible to profitably raise price 10% above the competitive level. If it is, then this is a market in its own right – and of course there is SMP also. However, the empirical evidence suggests that the current price level at these exchanges could well be below - and for some exchanges probably significantly below - the competitive price level. Indeed this is evidently Ofcom's view also, as discussed at paragraphs 4.219-4.224 and Figure 4.2.

12. For many, if not all, of these exchanges, it may not be possible to profitably increase the price above the competitive price level. Ofcom's CSL calculations should test this market breakdown to show: (a) the likely variation in the competitive price levels for each of the three areas; (b) whether the CSL parameters of costs and price elasticities also vary; and (c) whether these differences also impact on the results.

13. If this reasoning is correct, it follows that it may be desirable to look at a range of exchange sizes (beyond just > or <10,000) when considering the hypothetical monopoly test of whether they constitute a market,

14. In fact, it seems highly likely that the customer responses to hypothetical increases in prices above a higher absolute price level in Market 1 in particular would be greater than Ofcom presupposes on the basis of its own survey evidence. Ofcom's SMP analysis is therefore not at all robust as regards the procedure of defining the market boundaries in this way.

15. A further issue arises here in the context of geographic markets which is the relevance of a uniform price as an *a priori* indicator of a national market. As in previous consultations, Ofcom describes uniform prices as 'common pricing constraints' (4.150-4.151). Ofcom (4.154) notes however, that within a year of the Final Statement, BT had de-averaged not only its bitstream access product (DataStream), but also IPStream which Ofcom described as a service in an intermediate market. Elsewhere Ofcom (4.117) notes that even at the retail level, uniform pricing - 'has recently begun to break down'.

16. BT re-iterates its previously held position that such constraints as do arise, emanate from Ofcom's decisions to impose uniform prices for the portfolio of BT's wholesale services. These services are to varying degrees competitive against each other.

17. BT cannot reconcile Ofcom's view of uniform pricing being a (presumably) self-imposed constraint, with the statement that absence of a uniform pricing confers - 'discretion to a dominant operator to set the market boundary' (4.196). Constraint and discretion are mutually incompatible. *Either* an operator is constrained (presumably by externally imposed factors but conceivably from constraints of its own carelessness or lack of foresight) *or* it has discretion, in which case such constraints of either kind do not exist.

18. By the same token, BT cannot concur with Ofcom's assertion (4.125) that - 'it is reasonable to conclude that BT's offer of a wholesale product only exists because it anticipated a potential requirement for regulation'. BT has repeatedly stated that the wholesale offer was made on commercial grounds alone – there was no possibility of such a service being profitable based on BT's limited downstream presence.

II.iii The Interpretation of the Survey Evidence and the Product Market

19. BT and its external advisors made very extensive comments on the use of surveys in the previous market review. These concerns appear to remain valid now.

20. In the Final Statement of May 2004, Ofcom (paragraph 2.69) repeated and emphasised an earlier belief that while later adopters might have a lower willingness to pay for broadband compared with narrowband, greater awareness of the benefits of broadband would likely more than compensate for this - 'meaning a hypothetical monopolist will be more likely to profitably increase its prices. This is an area where Ofcom *will be attempting to collect more evidence from its consumer surveys*'. (Ofcom emphasis)

21. In the context of narrowband and broadband Internet access, the latest surveys clearly do not provide the results which Ofcom believed would happen. Three years is a substantial time in which consumers can become fully aware of the benefits of broadband, including its on-line functionality and so forth. Based on Ofcom's surveys, it is extremely clear that the HMT, indicating potential market power from the monopolistic provision of broadband Internet services - is not 'passed'.

22. Ofcom's response is to dismiss the survey as: on occasion too small in size to be certain (4.71, 4.81); customers showed an 'unrealistically high' response to the hypothetical price increase (4.71); consumers may have 'misinterpreted the questions being asked' (4.71); there is difficulty in the interpreting results (4.73). Ofcom therefore falls back on 'a range of qualitative arguments' (4.74) to support the separate markets hypothesis along with the promise of more consumer research (4.71).

23. BT is not at all surprised by the survey evidence; in fact casual estimation of the implicit own-price elasticities is actually quite close to BT's own econometric analysis which Ofcom has previously rejected. Qualitative evidence in reality is little more than assertion and cannot be a robust basis to justify regulation.

24. Ofcom suggests that the surveys have a bias for consumers to exaggerate their price responsiveness. This may well be the case, but these particular surveys also have biases which are unambiguously in the other direction making it an open question as to what the net effect of these 'biases' is likely to be.

25. The use of the HMT and CSL are comparatively straightforward for single product testing in a stable mature environment. However, as Ofcom has previously noted, Internet access services are trending and not stable, in which case it is necessary to examine all potential users of all services on the basis of stocks and flows of joiners and leavers.[5] Appendix 2 to this note contains some technical exposition of the issue of stocks and flows and joiners and leavers.

26. Three key observations following from that analysis are:

- Potential joiners are likely to be individuals who to date have chosen not to join and as Ofcom has previously noted, they would be expected to be relatively price sensitive. Those with a desire to get onto broadband (having high willingness to pay for it) will have already joined. In areas where broadband has been available for some time, potential

[5] See the April 2003 Consultation at paragraph 2.42, the December 2003 Consultation at paragraph 2.60 and the May 2004 Statement at paragraph 2.49.

joiners are by definition inter-marginal customers who are thus likely to be adversely affected by a 10% price increase.

- The survey needs to assess the response of *all* potential joiners. In practice only those taking narrowband were surveyed even though quite a high proportion of broadband uptake is from those who had no Internet access at all previously (4.65).
- There is no evidence that the HMT tests in Ofcom's Annex 4 incorporate data from the responses to the narrowband survey, let alone those who do not have Internet at the moment. This would appear to impart a clear and potentially sizable bias to the measure of CSL toward *underestimating* the sales loss of the price increase.

II.iv The Bundling of Downstream Applications

27. Ofcom (4.111) dismisses the relevance of bundles of applications arguing firstly, that this is consistent with the Commission's view that at the retail level they are not pervasive enough to have an impact to justify the status of a separate market in their own right; and secondly, the issue would become one of complementarity at the wholesale level (4.138).

28. Later on however, in the SMP assessment of what is thought to be the most competitive area of the country (Market 3), Ofcom (5.140) invokes precisely the issue of bundling – 'Other LLU operators are specialist providers of television services and can be expected to aggressively compete in the delivery of video-on-demand and other value-added offerings'.

29. Not only is bundling expected to happen, it is anticipated by Ofcom that this will include IPTV or its derivatives – which was expressly put to one side at the stage of the market boundary assessment. A similar comment is made by Ofcom in the wholesale market analysis (4.135).

30. Ofcom appears to make no reference at this stage to the vigorous competition which BT (and indeed most LLU operators) already face which is of *integrated* competition with Sky and the cable networks, let alone the BBC through Freeview.[6]

31. Bundling is highly significant as it increases the level of competition between hitherto distinct sectors. Further, it should be noted that the Commission's views were based on consultants who were looking at a pan-EU position encompassing many countries, where the incumbent remained dominant at the downstream level and where ISP competition may be very limited.

32. BT is aware that something like three-quarters of cable customers take either dual or triple play, split roughly half and half. The recent growth of Sky and Carphone Warehouse has been very greatly facilitated by bundled offers (sometimes described as 'free') of broadband and/or broadcast. The mobile operators are also starting to offer bundled packages of triple or quadruple play.

33. Bundling raises the issue of replicability, as Ofcom has noted in the context of BT's own bundling of calls to major businesses. Bundling also may lead to a form of third degree price

[6] BT also notes that Ofcom has just published its Market Impact Assessment on the BBC's on-demand services which raises a substantial number of similar issues.

discrimination, whereby third parties can acquire non-discriminatory access to BT's broadband services and package their own services from a position of economic strength. In turn, the price constraining effect at the wholesale level across BT's network will necessarily be augmented to compete for those customers. The SMP assessment therefore has to look at the overall position in the relevant downstream markets before deducing that market power arises in the provision of any one component of the bundles themselves.

II.v Symmetric and Asymmetric Broadband Internet Access

34. Ofcom continues to believe that symmetric and asymmetric services are in different economic markets. BT considers that this distinction is rather artificial as it is largely dependent on the appropriateness of a range of regulatory decisions. In other words, it is essentially an endogenous issue, as discussed at Appendix 3.

II.vi Residential and Business Asymmetric Broadband Internet Access

35. BT agrees that for businesses with applications and requirements similar to consumers, it is logical to aggregate these sets of customers: our views on corporate applications were discussed earlier in this annex.

III The Upstream Markets

III.i Indirect Constraints

36. As a matter of principle, BT does not agree with the application of the HMT to complementary stages of vertical production (4.126-4.129). The reason is that this methodology is *only* applicable to substitute products i.e. in horizontal markets. Outside this framework, the results will be arbitrary. Notwithstanding this point, BT agrees that cable and DSL are direct competitors at the retail level and there is therefore a price-constraining impact upstream.

III.ii Wholesale Broadband Access Products

37. BT supports the change in direction of the current review to move away from topology-specific markets. The technological developments, especially with NGNs, are driving significant changes in optimal network structures, both in network topology and also in which protocols are deployed at which nodes. BT welcomes the move that allows all operators freedom to optimise their network structure and topology in light of new technologies.

III.iii Bundling

38. BT agrees with Ofcom that downstream bundling may create complementarities at the network level (4.138). However, this is less than straightforward to assess as different components in the downstream bundle may at different times be either substituting or genuinely complementary (in effect service-enhancing more than true economic complementarity). The net effect on the upstream platform is therefore a composite of the effects downstream

IV The SMP Assessment

IV.i Context

39. In this section, three specific issues are reviewed:

- The use of a forward-looking 'bright line' test based on major competitors in the assessment of SMP.
- The inclusion of small exchanges in Market 2.
- The treatment of cable penetration.

IV.ii The Assessment Of Extent Of Competition

40. In theory, the hypothetical competitive price which retail customers face could vary from exchange to exchange in order to reflect the underlying cost differences associated with varying geographic density of customers. (In this context, density is also negatively correlated with backhaul costs such that the less dense exchanges also tend to be more expensive to connect to the network.) The competitive price level would have to take into account the nature of product differentiation for the provision of combinations of services across different platforms such as cable, satellite, LLU etc.

41. If the analysis is to be based on BT's network alone, it would appear to be sensible to group exchanges according to the number of connections at an exchange and on pragmatic grounds it seems reasonable to have a relatively small number of such groupings. However, whether to have just 2 groupings (above and below 10,000 connections) needs further examination.

42. Putting the issue of the appropriate number of groupings to one side, the next principle on which aggregation/disaggregation is based, is the number of current or potential future competitors present in an exchanges footprint. Ofcom distinguish (putting to one side the size of the exchange):

- 1 operator present.
- 2-3 operators present.
- 4 or more operators present.

43. Ofcom argues that a greater number of competitors typically implies a more competitive market and that a significant break in the level of competition can be defined between 3 competitors and 4 or more competitors (Review para 4.214-5).

44. It is a widely held assumption that more players means a more competitive marketplace – although much depends on the detailed circumstances. One source of evidence of increasing levels of competition would be the level of price in an exchange footprint as a function of the number of competitors or potential competitors – although it would be necessary to control for the size of the exchange.

45. When there are significant sunk costs associated with entry, one can expect vigorous price competition post entry. In BT's view, the nature of competition already present at the retail level for broadband services makes this indisputable.

46. Much however will depend upon price levels and Ofcom's comments about lack of entry in Market 1 are not necessarily valid; the current spatial aggregation of tariffs is another reason for absence of competition in these areas.

47. BT therefore believes that Ofcom's requirements of the actual number of operators to be present are too onerous and effective competition will be feasible at lower numbers. At the least, BT considers that Ofcom should re-assess the sensitivity of its conclusions to an empirical assessment of the current and likely behavioural characteristics of this particular marketplace. The evidence to date, and indeed Ofcom's own analysis (5.149) - shows that incumbent market shares can decline extremely quickly.

48. In this context, BT wishes to draw Ofcom's attention to the views previously expressed by Oftel in 1998.[7] These include the following:

> '3.12 In particular, BT proposed a specific test a the first stage of analysis such that a market with at least three 'significant participants' should be considered to be competitive….
>
> 3.13 Although Oftel would in principle be attracted to the use of tests which would simplify the information gathering process as well as provide relatively simple measures which would be understood by the industry at large – it remains sceptical about whether tests can be devised which are not overly simplistic and which do not mask the underlying complexity of competition in a particular market….
>
> 3.14 In general the tests proposed by (BT) … focus very heavily on structural factors such as market shares and make no mention of behavioural factors. However, market shares on their own do not provide a reliable indication of the extent of competition in a market …'

49. BT therefore suggests that Ofcom considers carefully the specifics of competition, noting that LLU entrants are increasingly multi-product operators coming from positions of strength in related markets.

IV.iii The Treatment Of Smaller Exchanges

50. The Ofcom markets M2, M3 above puts exchanges with <10,000 customers but with 4 operators in the same competitive market as those with 2 or 3 operators whatever the exchange size. In BT's view this procedure really needs further justification.

51. One can make the argument that exchange size influences the ability for entrants to get a foothold in the market (because of the cost conditions), but these are exchanges which already have 4 competitors. Unless there is good evidence that some are likely to exit, there seems no good reason for excluding them from Market 3 – if there is genuinely felt to be a difference in the level of competition going from 3 to 4 players. If there is not, then this is an argument for adding Markets 2 and 3 together and treating these as likely to have no SMP. Alternatively, a more appropriate procedure would be to add them to Market 3 which is what BT proposes.

IV.iv Cable Penetration

[7] 'Effective Competition Review Statement on market definition and competition analysis', Oftel, February, 1998.

52. BT is unclear how Ofcom has treated cable customers.. The text (4.208) suggests that the 65% figure relates to potential customers (passed and potentially served). However, Appendix 3.7 and table 3.1 suggest this is customers actually served. It is unclear why the 65% threshold was chosen. BT is of the view that cable presence is the relevant indicator, not actual customers served, and a lower threshold would more likely be appropriate for inclusion.

Appendix 1

Some Notes on Critical Sales Loss and Sales Stocks and Flows

1. The survey estimates of sales loss are used in a 'critical sales loss' test. Denoting the critical sales loss as *CSL*, this is the percentage of sales loss that would make a price increase of a specified amount just marginally profitable. It can be shown that if the price increase is by a proportionate amount α, the *CSL* is given by the formula:

$$CSL = \frac{-\alpha}{m+\alpha}$$

where m is the price cost mark-up at the competitive price level.

2. Essentially, under the hypothetical monopoly test, a product will be found to be a relevant market if the sale loss, *SL* that is judged likely to arise following an increase in price of *BB* is less than the critical sales loss; that is, if $SL < CSL$ for the service, this is a 'market on its own'.

3. The generic question, for any product being subject to a *CSL* test is - "what is total product sales loss that would arise when the price of the product is increased by the factor α." (α typically being set at 0.1 for a 10% sales loss test).

4. Suppose for example the product is "apples", and suppose that previously (say) 100 apples were sold and following the price increase 92 apples would be sold. The percent sales loss would then be calculated as (92-100)/100= -0.08. That is, a fall of 8%. This looks all straightforward enough –but in the context of broadband services, the measurement of consumption is less straightforward.

5. In the applications to broadband markets, quantities are typically viewed as the numbers of subscribers. This is reasonable, since subscribers do not pay for their usage, but rather pay a fixed fee per month in order to get the broadband service.

6. Now it is true that, even in a fairly stable market, there is always a degree of flux; in every period some new subscribers will subscribe to the service and some existing subscribers will exit. Even in a very 'stable' market setting, this occurs, for the simple reason that there is a turnover of subscribers. This is even more the case in markets in which demand is trending – as is typically the case in emergent markets.

7. In this case it is best to view sales in a period in a stock/flow context as being made up of three components:

$$\begin{pmatrix} Subscribers \\ period\ t \end{pmatrix} = \begin{pmatrix} Subscribers \\ in\ period\ t-1 \end{pmatrix} + \begin{pmatrix} Joiners\ in \\ period\ t \end{pmatrix} - \begin{pmatrix} Leavers\ in \\ period\ t \end{pmatrix} \qquad (1)$$

or in short hand as:

$$S_t = S_{t-1} + J_t - L_t . \qquad (2)$$

8. The percentage sales loss induced by an increase in price at time *t* depends on the total or aggregate change in subscribers the price change induces; that is the change in S_t. Equivalently, this can also be viewed as the sum of the change in the number joining, J_t minus the change in those

leaving, L_t. Notice that this measure can be computed even in a trending market.[8] That is, writing Δ to denote 'change in', from equation (2), it follows that

$$\Delta S_t = \Delta\left(S_{t-1} + J_t - L_t\right) = \Delta J_t - \Delta L_t \,. \qquad (3)$$

9. Expressed as a ratio of subscribers at period *t*-1, the sales loss figure required for comparison with the *CSL* figure is thus

$$SL = \left|\frac{\Delta S_t}{S_{t-1}}\right| = \frac{\Delta L_t - \Delta J_t}{S_{t-1}} \qquad (4)$$

10. The overall sales loss impact of the BB price increase thus comprises the sum of an increase in leavers ($\Delta L_t > 0$) and a decrease in joiners ($-\Delta J_t > 0$). To emphasise, both of these are positive sales loss terms.

11. This makes clear that, on increasing the price of broadband service, to calculate the aggregate impact on sales through survey analysis, it is necessary to ask:

(a) Of ***current subscribers***, whether they would stay or leave on being presented with the price increase – this identifies the change in the number of 'leavers'; and

(b) Of ***<u>all</u> non-subscribers*** who, in the absence of a price increase would be joiners in the period, whether the price increase would now induce them not to join.

12. In (b) above, it may be that the dominant part of this number are narrowband users contemplating upgrading to broadband – but these are not the only potential joiners; thus the survey work conducted for just those customers would <u>under-estimate</u> the total impact on sales loss, in so far as it ignores those who join broadband without previously having been on narrowband. If consideration of the impact on the non-narrowband group of potential joiners is omitted, the bias is toward finding unduly narrow market boundaries.

[8] It can be argued that the evidence of strong trends in sales implies the market is not in equilibrium – which in itself calls into question the use of an essentially static analytic methodology.

Appendix 2

The Nature of Downstream Applications

I Introduction

13. In the previous broadband market review, BT and Ofcom made rather different assessments of the relevant retail product market. Ofcom found then, and still finds an 'asymmetric broadband Internet access'. In BT's view, this retail market analysis pays insufficient attention to the 'Internet' part of the market definition.

14. Central to the Ofcom argument is that, on the basis of demand side characteristics, 'narrowband' is sufficiently distinct from 'broadband' to place them in separate economic markets and 'asymmetric' is sufficiently different from 'symmetric' to place them in separate markets. However, In BT's view these distinctions are not sufficiently based on an economic analysis of the applications associated with 'Internet'.

15. Some key questions are not addressed in either the May 2004 Statement or this consultation include the following:

- Whether voice over IP services, such as offered Vonage or Skype, form part of 'Internet access' or are distinct from 'Internet access' and what are the price constraining effects felt and imposed by these services?
- Whether IPTV services form part of 'Internet access' or are distinct from 'Internet access' and what is the price constraining effects felt and imposed by these services?
- Whether the rise of services such as YouTube and iTunes in any way change the willingness to pay for Internet access services
- Does the use of instant messaging clients together with a microphone and webcam constitute a video conferencing service?
- Is the use of Web access from the home to Corporate Internet application using clients such as supplied Citrix or Microsoft's Outlook Web Access form part of a residential or a business market?
- Even assuming DRM and download time issues are fully resolved, what is the evidence that customers will pay a premium to download films and videos over rental/purchase of DVD media and what is the evidence, if any, that such a capability would affect the willingness to pay for internet access?
- What are the economic factors which affect the availability of applications as Internet Web sites, 'walled garden' applications, or separate access applications (like baseband PSTN)?

16. The analysis presented by BT in the previous round of consultation attempted to give insight into these issues by reviewing at the total suite of applications relevant to three main categories of users: (i) residential customers; (ii) SOHO/SME customers, and (iii) corporate customer.

17. BT maintains that the passage of the last three years have reinforced the appropriateness of this approach:

- ‘Internet access’ is not a monolithic service but a means of accessing a wide range of applications which are either bundled as part of a package from a service provider, or bundled together by the user, or a mixture of the two.
- ‘Internet access’ is acquiring a growing range of applications but these applications are normally not new but are a different means of delivering existing applications. No major applications have emerged which suggest the user is prepared to pay a premium for the applications delivered over ‘Internet access’ compared to existing means of delivery. Indeed, generally the customer expects the applications to be cheaper or ‘free’ (i.e. no incremental price).
- Most applications are deliverable using a variety of access services ranging from dial access, mobile, terrestrial broadcast, satellite broadcast, CATV, leased lines, postal services, and shops, as well as the broadband access technologies.
- Application creators and providers have a strong incentive to make their applications available across a wide range of access technologies in order to increase their market reach.
- Retail economic markets are broadly characterised by bundling and chains of substitution. The boundaries are difficult to identify and they unstable over time.

II The Development Of Applications

18. The following diagrams reproduce those in BT's submission of July 2003. BT believes them to be still essentially accurate, having stood the test of time.

TABLE II.1

Access Component Features Required By Consumer Applications

Consumer Application	Downstream Bandwidth				Downstream Mode			Upstream Bandwidth				QoS		Time Mode	
	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Broad-cast	Stagger-cast	Switched	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Best Effort	Real-time	Cache-able	Live
Basic ISP Package	◗	●	●	●	○	○	●	●	●	●	●	●	●	●	●
Media/software download	○	○	◗	●	◗	○	●	●	●	●	●	●	●	●	●
Media/software sharing	○	○	◗	●	◗	○	●	○	◗	◗	●	●	●	●	●
Free to Air TV	●	●	◗	◗	●	●	●	●	●	●	●	●	●	●	●
Broadcast Radio	○	◗	●	●	●	●	●	●	●	●	●	○	●	●	●
Subscription and Pay per View TV	●	●	◗	◗	●	●	●	●	●	●	●	●	●	●	●

Consumer Application	Downstream Bandwidth				Downstream Mode			Upstream Bandwidth				QoS		Time Mode	
	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Broad-cast	Stagger-cast	Switched	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Best Effort	Real-time	Cache-able	Live
Video on Demand	●	●	◗	◗	●	○	●	●	●	●	●	●	●	●	●
Voice Telephony Single line	○	●	●	●	●	●	●	○	●	●	●	◗	●	●	●
Voice Telephony Additional line	◗	◗	●	●	●	●	●	◗	◗	●	●	◗	●	●	●
Video telephony and conferencing	◗	○	◗	●	●	●	●	◗	○	◗	●	◗	●	●	●
Interactive gaming	○	◗	◗	●	●	◗	●	◗	◗	●	●	○	●	●	●

● - not possible ◗ - just about possible ○ - poor or restricted service ◗ - adequate service ● - good service

TABLE II.2

Access Component Features Required By SME/Soho and Corporate Applications

SME/SOHO and Corporate Application	Downstream Bandwidth				Downstream Mode			Upstream Bandwidth				QoS		Time Mode	
	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Broad-cast	Stagger-cast	Switched	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Best Effort	Real-time	Cache-able	Live
Basic ISP Package	◗	●	●	●	○	○	●	●	●	●	●	●	●	●	●
Media/software download	○	○	◗	●	◗	○	●	●	●	●	●	●	●	●	●
Voice Telephony Single line	○	●	●	●	●	●	●	○	●	●	●	◗	●	●	●
Voice Telephony Multiple line	●	○	●	●	●	●	●	●	○	●	●	◗	●	●	●
Video telephony and conferencing	◗	○	◗	●	●	●	●	◗	○	◗	●	◗	●	●	●
Internet access (for servers)	○	◗	◗	●	●	●	●	○	◗	◗	●	●	●	●	●
Intranet/Extranet	○	◗	●	●	○	○	●	◗	●	●	●	●	●	●	●

SME/SOHO and Corporate Application	Downstream Bandwidth				Downstream Mode			Upstream Bandwidth				QoS		Time Mode	
	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Broad-cast	Stagger-cast	Switched	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Best Effort	Real-time	Cache-able	Live
access/link															
Private voice network access/link single line	O	●	●	●	●	●	●	O	●	●	●	◗	●	●	●
Private voice network access/link multiple lines	●	O	●	●	●	●	●	●	O	●	●	◗	●	●	●
Private multiservice network access/link	●	O	◗	●	●	●	●	●	O	◗	●	●	●	●	●

● - not possible ◗ - just about possible O - poor or restricted service ◗ - adequate service ● - good service

TABLE II.3

Characteristic Features Of Alternative Access/Delivery Component Services

Access/Delivery Component Service	Downstream Bandwidth				Downstream Mode			Upstream Bandwidth				QoS		Time Mode	
	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Broad-cast	Stagger-cast	Switched	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Best Effort	Real-time	Stored/ Cached	Live
LLU	●	●	●	◗	●	●	●	●	◗	◗	○	●	●	●	●
PSTN/ISDN line (inc dial access)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Leased line	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
PPC	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
DataStream Asym*	●	●	●	◗	●	●	●	●	◗	●	●	●	●	●	●
DataStream Sym*	●	●	◗	○	●	●	●	●	●	◗	○	●	●	●	●
IPStream*	●	●	●	◗	●	●	●	●	◗	●	●	●	●	●	●
CATV* Broadcast Feed	●	●	●	●	●	◗	●	●	●	●	●	●	●	●	●
CATV*	●	●	●	◗	●	●	●	●	◗	◗	○	●	●	●	●

Access/Delivery Component Service	Downstream Bandwidth				Downstream Mode			Upstream Bandwidth				QoS		Time Mode	
	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Broad-cast	Stagger-cast	Switched	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Best Effort	Real-time	Stored/ Cached	Live
Internet access															
CATV* Voice access	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
CATV/CAP* Fibre Feed	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Satellite Broadcast mode	●	●	●	●	●	◗	●	●	●	●	●	●	●	●	●
Satellite Interactive mode**	●	○	○	●	●	●	●	●	●	●	●	●	●	●	○
Terrestrial Bcast Broadcast mode	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Terrestrial Bcast Interactive mode**	●	○	○	●	●	●	●	●	●	●	●	●	●	●	○
CD/DVD/videotape/ audiotape	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Fixed Mesh	●	●	●	◗	●	●	●	●	◗	◗	○	●	●	●	●

Access/Delivery Component Service	Downstream Bandwidth				Downstream Mode			Upstream Bandwidth				QoS		Time Mode	
	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Broad-cast	Stagger-cast	Switched	64 kbit/s	256 kbit/s	512 kbit/s	2048 kbit/s	Best Effort	Real-time	Stored/ Cached	Live
Radio***															
2/2.5G Mobile	◗	●	●	●	●	●	●	◗	●	●	●	●	●	●	O
3G Mobile	●	●	◗	O	●	●	●	●	◗	◗	O	●	●	●	●

* where geographically available ** assuming PSTN uplink *** where deployment is practical

● - not possible ◗ - just about possible O - poor or significantly restricted service

◗ - adequate or partially restricted service ● - good service

TABLE II.4

Applicability of Access/Delivery Component Services By Consumer Application

Consumer Application Access/Delivery Component Service	Basic ISP Package	Media/ Software Download	Media/ Software Sharing	Free to Air TV	Broadcast Radio	Subscription and Pay per View TV	Video on Demand	Voice telephony single line	Voice Telephony additional line	Video Telephony and conf'ing	Interactive Gaming
LLU	●	◗	◗	○	●	○	○	●	◗	◗	◗
PSTN/ISDN line (inc dial access)	◗	●	●	●	○	●	●	●	●	◗	○
DataStream Asym*	●	◗	◗	○	●	○	○	◗	○	○	◗
DataStream Sym*	●	◗	◗	◗	●	◗	◗	●	◗	◗	◗
IPStream*	●	◗	◗	●	○	●	●	◗	◗	◗	○
CATV* Broadcast Feed	●	●	●	●	●	●	◗	●	●	●	●
CATV* Internet access	●	◗	◗	●	○	●	●	◗	◗	◗	○

Consumer Application Access/Delivery Component Service	Basic ISP Package	Media/ Software Download	Media/ Software Sharing	Free to Air TV	Broadcast Radio	Subscription and Pay per View TV	Video on Demand	Voice telephony single line	Voice Telephony additional line	Video Telephony and conf'ing	Interactive Gaming
CATV* Voice access	◗	●	●	●	◗	●	●	●	●	◗	○
Satellite Broadcast mode	●	●	●	●	●	●	◗	●	●	●	●
Satellite Interactive mode**	◗	◗	◗	●	◗	●	●	●	●	●	○
Terrestrial Bcast Broadcast mode	●	●	●	●	●	●	●	●	●	●	●
Terrestrial Bcast Interactive mode**	◗	◗	◗	●	◗	●	●	●	●	●	○
CD/DVD/videotape / audiotape	●	●	●	●	●	●	●	●	●	●	●
Games Console	●	●	●	●	●	●	●	●	●	●	○
Fixed Mesh Radio***	●	◗	◗	○	●	○	●	●	●	◗	◗

Consumer Application Access/Delivery Component Service	Basic ISP Package	Media/ Software Download	Media/ Software Sharing	Free to Air TV	Broadcast Radio	Subscription and Pay per View TV	Video on Demand	Voice telephony single line	Voice Telephony additional line	Video Telephony and conf'ing	Interactive Gaming
2/2.5G Mobile	O	●	●	●	●	●	●	●	●	●	◗
3G Mobile	●	◗	◗	O	◗	O	●	●	O	O	◗

* where geographically available ** assuming PSTN uplink *** where deployment is practical

● - not possible ◗ - just about possible O - poor or significantly restricted service

◗ - adequate or partially restricted service ● - good service

TABLE II.5

Applicability of Access/Delivery Component Services by SME/Soho and Corporate Application

SOHO/SME Application Access/Delivery Component Service	Basic ISP Package	Media/ Software Download	Voice telephony single line	Voice Telephony multiple line	Video Telephony and conf'ing	Internet access for servers	Intranet/ Extranet access/link	Private voice network access/link single line	Private voice network access/link multiple line	Private multiservice network access/link single line
LLU	●	◗	●	◗	◗	◗	◗	●	◗	◗
PSTN/ISDN line (inc dial access)	◗	●	●	●	◗	○	○	●	●	●
Leased line	●	●	●	●	●	●	●	●	●	●
PPC	●	●	●	●	●	●	●	●	●	●
DataStream Asym*	●	◗	◗	○	○	○	○	◗	○	○
DataStream Sym*	●	◗	●	◗	◗	◗	◗	●	◗	◗
IPStream*	●	◗	◗	◗	◗	○	◗	◗	◗	●

SOHO/SME Application Access/Delivery Component Service	Basic ISP Package	Media/ Software Download	Voice telephony single line	Voice Telephony multiple line	Video Telephony and conf'ing	Internet access for servers	Intranet/ Extranet access/link	Private voice network access/link single line	Private voice network access/link multiple line	Private multiservic e network access/link single line
CATV* Internet access	●	◗	◗	◗	◗	○	◗	◗	◗	◗
CATV* Voice access	◗	●	●	●	◗	○	○	●	●	●
CATV/CAP* Fibre Feed	●	●	●	●	●	●	●	●	●	●
CD/DVD/videota pe/ audiotape	●	●	●	●	●	●	●	●	●	●
Fixed Mesh Radio**	●	◗	●	●	◗	◗	◗	●	●	○
2/2.5G Mobile	○	●	●	●	●	●	◗	●	●	●
3G Mobile	●	◗	●	○	○	○	◗	●	○	○

* where geographically available ** where deployment is practical

● - not possible ◗ - just about possible ○- poor or significantly restricted service

◗ - adequate or partially restricted service ● - good service

19. The following are comments on some of the development of the last few years.

II.i Mass Market Applications

20. Video/TV Content as a Key Discriminator for Broadband. Four years after the last market review, it is clear that video and TV content has not been a primary drive for retail customers migrating from narrowband to broadband or that the inclusion of video/TV content has enabled service providers to charge a premium for broadband over narrowband.

21. In fact the economics of general broadcast TV delivery over broadband has, if anything, become more challenging with the success of Freeview. It is also clearer that the range of premium content is limited focussed principally on major sport, especially premiership football, and films. With this degree of focus in the market, there is little technical limitation to satellite or cable broadcast access technology, and broadband access must compete directly with services using these access technologies. This degree of focus in the market for premium content is probably greater than anticipated by BT in the earlier submissions.

22. BT also commented on the unsatisfactory trade off between the bandwidth of delivery and the reach/penetration of the service inherent in local exchanged based DSL technology. In contrast with satellite or CATV based services, this makes the marketing of a uniform video/TV service problematic as the availability of the service is geographically patchy. To some extent the use of ADSL2+ creates a somewhat different mix on the trade-off by allowing a greater reach at higher bit rates, but at the expense of penetration on the access network infrastructure. A greater number of homes can be served at 2Mbit/s or greater, but access infrastructure can only support around 30% penetration of such a service. The unsatisfactory trade off is still very real.

23. Two other factors which have become clearer over the last four years make this trade off more, not less significant: firstly, HDTV; and secondly the focus on football content. HDTV requires roughly four times the bandwidth of normal broadcast TV and satellite and CATV can support this without too much difficulty. However, this is a very significant 'shift of the goalposts' for broadband service and almost certainly requires fibre to the cabinet (FTTC) or fibre to the home (FTTH) for broadband to compete. Exacerbating this, is the fact that football content is one of the more problematic applications for efficient real time digital encoding. As a result, football normally requires a higher bandwidth that most TV content.

24. Instead, what has emerged has been 'video clips'. These are short tasters or highlights from much longer content. However, this application is not at all focused on broadcast quality. Indeed, most content is available in several quality levels covering mobile phone, narrowband access, and broadband access. Moreover, many content owners explicitly do not want the clips at the same quality of the original as this might detract from sales of the longer content.

25. Download Market. In the previous submissions, BT was aware of the copyright issues inherent in the peer to peer distribution of content. Since then, legitimate download service has emerged and now increasingly dominates the music industry. Following the success with music content, there are signs that video content owners are starting to consider download as a means of selling their content; however, this is still emerging only very slowly.

26. With a download, there is a smooth trade-off between the access bandwidth and the download time. There is no discernable bandwidth cut off below which it is not possible. Indeed, a number of protocol developments have greatly improved the reliability and

practicality of downloads which take a long time, by allowing downloads to resume even after a break in the download.

27. As set out in previous BT submissions, there is a strong incentive on the content owners to make the content available to *all* customers irrespective as to whether they have narrowband or broadband access. This has clearly emerged as the case – it is not the position that a major service is available to broadband customers and not available to narrowband customers such that the former will pay a step change in price.

28. Instant Messenger. Over the last 3-4 years instant messenger services have developed considerably. All the major providers including AOL, MSN, Skype, and Yahoo, all now include a variety of features based around their client application and presence servers. These include voice conferencing/telephony, video conferencing, file/media transfer, as well as chat and instant messaging. Again, these services are available on both narrowband and broadband – the different is a matter of degree of quality.

29. Summary on consumer applications. The development of premium content services which explicitly exploit broadband access - as opposed to narrowband - has not occurred to such an extent that they allow a possible pricing premium for broadband. In so far as this position is changing, services across copper must compete directly with satellite and CATV which have technical advantages and the emergence of HDTV greatly enhances these advantages. Other video applications have developed to be available across different access technologies, notably mobile and narrowband as well as broadband.

30. Some of the copyright issues present at the time of the last market review have been resolved and the download delivery of music content is now well established with services like iTunes. As this starts to extend to video download, it must compete with DVD purchase/rental where increasingly the price covers the content rights and the cover for the cost of delivery is minimal.

31. While broadband has undoubtedly been a great success in terms of sales over the last four years, it is also clear it attracts little or no price premium over narrowband access. In summary, there is little reason to believe that willingness to pay will have increased over this period, which lends support to the relatively high price elasticity which Ofcom's surveys indicate.

II.ii SME/SOHO and Corporate Applications

32. As set out in the previous responses, both SOHO/SME and Corporate applications remain essentially those as set in July 2003:

- Office automation systems. This covers document and presentation production, data modelling and presentation, central electronic file storage, directory systems, information access and retrieval systems.
- Interpersonal communications. This covers voice telephony, email, instant messaging, "collaborative working" and video conferencing.
- Business process systems. This covers B2B and B2C gateways, customer relationship management, invoicing and billing, workforce management systems, supply chain management, personnel management, business expense systems and accounting and finance systems.

33. The last few years has seen the development and widespread use of Web based access to corporate intranets using clients systems as supplied by Citrix or Web based access to Groupware systems such as Microsoft's Outlook Web Access. While at the time of the last review, home workers of corporations might have had a dedicated line for their Corporate intranet access (for example ISDN2 or Broadband with baseband voice), there is now widespread use of a domestic broadband link for the corporate access and voice access is via a mobile phone. This solution has the advantage that the corporate employee is 'mobile' rather than a 'home worker' and is much more flexible.

34. One corporate application not fully anticipated in the BT review is email on mobile devices, especially Blackberry. The success of this application only serves to reinforce the basic conclusion that network reach is critical. The pressure within the market is to make applications available across *all* access technologies irrespective of bandwidth. In fact, rather than applications becoming tailored to broadband as was anticipated by Oftel/Ofcom, the reality is that applications have adapted to cover not just narrowband and broadband, but mobile access as well. Ubiquity/reach is more important than quality.

Appendix 3

The Distinction between Symmetric and Asymmetric Markets

35. Ofcom considers that symmetric and asymmetric services are in different economic markets. BT wishes to make two points with regard to this distinction which concern the nature of technology and regulation.

36. It is clear that some important Internet access applications are asymmetric in the use of bandwidth, notably web browsing and file download applications. However there are others that are not, notably voice and video conferencing based on instant messengers. These applications are undoubtedly held back by the lack of upstream bandwidth.

37. Suppose that SDSL technology did not use baseband frequencies and so symmetric service could be delivered on a shared metallic path facility (SMPF) in the same way ADSL does. There is no technical reason why this could not be the case. The difference that ADSL does not include the baseband while SDSL does, was an 'accident' of a decision made within standards setting bodies. If this were not the case, the costs of supplying symmetric and asymmetric service would be exactly the same (with modern DSL line cards supporting both). In this situation they would presumably not be considered to be in separate economic markets as supply-side switching would prevail.

38. So the distinction between 'symmetric' and 'asymmetric' hinges not on the difference between 'symmetric' and 'asymmetric' Internet access but on the way this service is bundled with PSTN voice service. BT has two observations in this context.

39. Firstly, the issue as to whether or not bundling is a central factor in the assessment of markets arises. In BT's view it is inconsistent to generally dismiss retail bundling (see main text above) and then use retail bundling as the reason for placing 'symmetric' and 'asymmetric' in different economic markets.

40. Secondly, this distinction which hinges entirely on the accident of the specification of a particular technology suggests that it is not compliant with technology neutrality

41. BT acknowledges that this accident of technical specification does create a certain barrier within the marketplace. However, this raises the following questions:

- Is the barrier enduring or will technological solutions overcome it?
- Are there commercial or regulatory factors which overcome or exacerbate the barrier?

42. In fact, there are two forms of technical solution to overcoming the barrier: (i) a version of SDSL which does not include the baseband; and (ii) a solution to carrying PSTN across the SDSL. The first of these is not currently on the horizon while the second is as a solution which can include PSTN in a service bundle and still offer symmetric capacity is technically viable.

43. However, current regulation has a strong impact on the barrier as it is fundamental to the economic cost of switching. LLU regulation mandates that SMPF is priced on the marginal cost over the PSTN baseband service. This is a regulatory decision and has a strong influence on the use of ADSL as opposed to SDSL technology. For a service provider to offer symmetric service, they must bear the full costs of the copper pair rather and the marginal costs over PSTN for asymmetric service. This is a second commercial barrier alongside the existing technical barrier.

44. As a result, most service providers have not given much attention to symmetric services which also means there is currently little volumes of such equipment and hence an absence of volume pricing for symmetric modem equipment.

45. In BT's view, this outcome does not warrant an assessment based on 'Greenfield site' principles which places 'symmetric' and asymmetric' services in different economic markets at the retail level.